



# EDTEA Environmental Information Management Strategy



**edtea**

Department :  
Economic Development, Tourism and  
Environmental Affairs  
**PROVINCE OF KWAZULU-NATAL**



Institute of  
Natural Resources



## EDTEA Environmental Information Management Strategy

PREPARED FOR:	PREPARED BY:
 <p><b>edtea</b> Department : Economic Development, Tourism and Environmental Affairs PROVINCE OF KWAZULU-NATAL</p>	 <p>Institute of Natural Resources</p>
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Please direct any queries to:

Leo Quayle

P O Box 100396, Scottsville, 3209

Tel: 033 3460 796

E-mail: [lquayle@inr.org.za](mailto:lquayle@inr.org.za)

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## List of Acronyms

CD: EM	Chief Directorate: Environmental Management	CIPS	Central Integrated Permitting System
COGTA	Department of Cooperative Governance and Traditional Affairs	DARD	Department of Agriculture and Rural Development
DEA	Department of Environmental Affairs	DWS	Department of Water and Sanitation
EDMS	Electronic Document Management System	EDTEA	Department of Economic Development, Tourism and Environment Affairs
EI&MP	Environmental Implementation and Management Plan	EIM	Environmental Information Management
EKZNW	Ezemvelo KZN Wildlife	EPGIM	Environmental Planning, Governance and Information Management
GIS	Geographic Information System	ICT	Information Communication Technology
INR	Institute of Natural Resources	JPOI	Johannesburg Plan of Implementation
KZN	KwaZulu-Natal	MDG	Millennium Development Goal
MEC	Member of the Executive Council	MoU	Memorandum of Understanding
MTSF	Medium Term Strategic Framework	NASSA	National Archives of South Africa Act
NDP	National Development Plan	NEMA	National Environmental Management Act
PAIA	Promotion of Access to Information Act	PGDS	Provincial Growth and Development Strategy
PSCGICT	Public Service Corporate Governance of Information and Communication Technology	SDG	Sustainable Development Goals
SEMA	Specific Environmental Management Act	SoE	State of Environment
SP	Strategic Planning	UN	United Nations







## 1.1 Background to the development of the strategy

The Sub-Directorate: Environmental Planning, Governance and Information Management (EPGIM) of the Chief Directorate: Environmental Management (CD: EM) of the KwaZulu-Natal (KZN) Department of Economic Development, Tourism and Environment Affairs (EDTEA) is mandated to enable sound environmental management in KZN by supporting both internal and external users and clients through the efficient generation, management and dissemination of a variety of environmental management information. For the dissemination of information, EPGIM relies on data collection and information outputs from the various environmental sub-directorates and other environmental information custodians.

The SD: EPGIM has identified the need to develop their existing information management system in order to achieve their objectives and to give effect to key legislation, policies and plans such as:

- 1) the legislated mandates, values and principles described in the National Environmental Management Act (107 of 1998) (NEMA) and the Specific Environmental Management Acts (SEMAs) e.g. Air Quality Act (39 of 2004), Biodiversity Act ( 10 of 2004) etc.,
- 2) the goals described in the National Development Plan's (NDP) Medium Term Strategic Framework (MTSF),
- 3) the goals and strategic objectives of the KZN Provincial growth and development strategy, and
- 4) the values and envisioned in the Public Service Corporate Governance of Information and Communication Technology (PSCGICT) Policy Framework,

This includes the need to streamline data capture, storage, organisation and information dissemination to meet the requirements of their clients and users and to comply with the legislation which applies to state information custodians such as the Promotion of Access to Information Act (No. 2 of 2000), the



Spatial Data Infrastructure Act (No. 54 of 2000) and the National Archives of South Africa Act (No. 43 of 1996). The Institute of Natural Resources NPC (INR) was appointed to lead this strategy development project in partnership with Quartex Technologies.

## 1.2 Strategy requirements

As described in Section 1.1 of this document, the requirement for this strategy stems from the need for the Chief Directorate - Environmental Management (CD: EM) to improve their information management systems in order to achieve their objectives and achieve compliance with their legislated mandates. Information management is a key component of the work that is undertaken and is vital to enabling efficient workflows and efficient service delivery.

The following principles have been applied during strategy development:

- **The strategy must address identified challenges** – Many operational challenges which currently hinder effective management of environmental information have been identified through the development of this strategy. The most important requirement of the strategy is therefore that it addresses these challenges and puts the CD: EM in a stronger position to effectively meet its mandated responsibilities.
- **The strategy must provide the ‘game plan’ as to how to move information management forward beyond the operational challenges towards the vision for sustainable development in KZN** – The ultimate goal for environmental management in KZN is to achieve the vision set out, firstly in the constitution: “An environment which is not harmful to health or well-being; an environment protected from pollution and ecological degradation, an environment where conservation is promoted and ecologically sustainable development is secured whilst justifiable economic and social development is promoted’, and secondly in the 18 NEMA principles which place environmental sustainability at the heart of development management. The strategy should therefore guide the CD: EM towards this vision and achieve progress towards the intermediate goals and objectives laid out in the National Framework for Sustainable Development and the National Development Plan’s Medium Term Strategic Framework.





- **The strategy must be practical, adaptable and robust** - It is well known that strategies that are impractical are at best, poorly implemented or at worst, abandoned. It is therefore critical that this strategy provides simple, practical steps that can be implemented to achieve progress towards attaining the goals and vision set out at the beginning. In addition, the complexity of information management systems in general and the fact that in the case of government, they are embedded in a complex and ever changing political landscape, requires that the strategy be adaptable and robust, being able to accommodate changes in context whilst still aiming environmental information management towards the original vision. There has therefore been a deliberate effort to generate a concise strategy, partitioned into a set of individual goals, objectives and actions, each of which contribute tangible and visible benefits and moves the CD: EM towards the achievement of the overall vision.
- **The strategy must be adopted and 'owned'** - Without the adoption of the strategy by key information users, failure is almost a certainty. For this reason the strategy has been developed in consultation with key users and has been guided primarily by the issues that have been raised by them. It is vital that those tasked with implementing the strategy focus on its adoption by all participants. Implementation of actions will then be more likely to succeed.

### 1.3 Policy and legislative alignment

Although this strategy is for implementation at a provincial level, it has been developed to align with provincial, national and international legislation, policies and plans. A list is provided below of key legislation, policies and plans which have guided the formulation of this strategy. This list is not exhaustive and only includes those instruments which have materially influenced the development of the strategy.

#### Key legislation guiding this strategy:

1. **The Constitution of South Africa** - In particular, this fundamental legislation defines the vision for the environment in South Africa through everyone's right to an environment which is not harmful to health or well-being; an environment protected from pollution and ecological degradation, an environment where conservation is promoted and ecologically sustainable development is secured whilst justifiable economic and



social development is promoted. It is clear that to uphold this right, information regarding the state of the environment is required to be collected and managed.

**2. The National Environmental Management Act (107 of 1998) – In particular:**

- a. the 18 principles which describe the national commitment to sustainable development, chapter three which describes the requirement for environmental implementation plans which allow the minister to monitor the achievement, promotion and protection of a sustainable environment and chapter five which provides the foundation for integrated environmental management.
- b. the 2014 EIA regulations (as amended) published under this act – in particular, section five which outlines the responsibilities of the competent authority with respect to information relevant to the authorisation application.

**3. The Specific National Environmental Management Acts (SEMAs)**

- a. Biodiversity Act (10 of 2004)
  - b. Protected Areas Act (57 of 2003)
  - c. Integrated Coastal Management Act (24 of 2008)
  - d. Waste Act (59 of 2008)
  - e. Air Quality Act (39 of 2004)
4. The National Archives of South Africa Act (43 of 1996)
  5. The Promotion of Access to Information Act (2 of 2000)
  6. The South African Spatial Data Infrastructure Act (54 of 2003)

**Key national and provincial policies and plans to which this strategy is aligned:**



1. **The National Development Plan and its Medium Term Strategic Framework** – In particular Strategic Outcome 10 (Protect and enhance our environmental assets and natural resources) which highlights the need for sustainable development and identifies the lack of adequate information systems as a key cause of uninformed decision making.
2. **The National Framework for Sustainable Development and the National Strategy for Sustainable Development and Action Plan** – In particular, Priority 1: Enhancing systems for integrated planning and implementation, which identifies the need to 1) Enhance effective governance and institutional structures and mechanisms to achieve sustainable development and meet the Millennium Development Goals (MDGs) and the Johannesburg Plan of Implementation (JPOI) goals and targets. And to 2) Strengthen monitoring and reporting for improved environmental performance by government and the private sector.
3. **Public Service Corporate Governance of Information and Communication Technology Policy Framework** – In particular, this framework identifies 1) government architecture, 2) economies of scale and 3) reduced duplication as primary goals and 1) interoperability, 2) security and 3) digital inclusion as secondary goals influencing the achievement of Outcome 10 and the linked value outputs of lower costs, citizen convenience and increased productivity.
4. **The KZN Provincial Growth and Development Strategy** – In particular, the need for environmental sustainability (Strategic Goal 5), and support for the principle of environmental planning being the building block on which all provincial spatial planning should be based (Provincial SDF).
5. **The KZN Department of Economic Development, Tourism and Environmental Affairs – Strategic Plan 2015 – 2020** – In particular this plan lists sustainable development as being a key component of EDTEA's mission, and Strategic Outcome Oriented Goal 4 which is to 'Promote conservation of environmental assets and natural resources to yield sustainable development through: • Enhanced governance systems and capacity (amongst others)'





## 2.1 Institutional context

Information is a key driver of government activities at all levels. Increasingly, information is required to be effectively managed so as to inform decisions, effectively plan, deliver essential services and measure performance. The context in which information management is undertaken is a key factor in understanding the level to which it is effective. The broader institutional context in which this information management strategy has been formulated is as follows:

In 2014, the CD: EM was split from the Department of Agriculture and Rural Development and merged with the Department of Economic Development and Tourism. As a 'splinter section' going from one department to another, it carried with it no Information Communication Technology (ICT) capacity and now relies on the newly constituted Department of Economic Development, Tourism and Environmental Affairs' (EDTEA) ICT department. This transition has not yet been effectively implemented, with the CD: EM largely located in a separate building to the rest of the department and limited or no connectivity to Departmental Information Technology (IT) infrastructure having been effectively established.

Information management within the CD: EM is the responsibility of the EPGIM sub-programme. This section is under-staffed with crucial information management posts currently being vacant. A key category of information held is Geographic Information System (GIS) data. There are however currently no dedicated GIS staff employed to manage this information. Information management is thus currently not being effectively undertaken within the CD: EM.





## 3.1 Consultation

### 3.1.1 Project Steering Committee

The following stakeholders were invited to participate on the project steering committee (Table 1):

Table 1: Stakeholders invited to participate in the project steering committee

Officer	Organisation	Officer	Organisation
Mr. Ntokozo Ngubo	KZN EDTEA (Climate Change)	Mr Siya Buthelezi	National DWS (KZN)
Mrs Heather Sheard	KZN EDTEA(Pollution and Waste Management)	Ms Seokwang Modise	National DAFF
Mr. Alfred Matsheke	KZN EDTEA (Integrated Coastal Management)	Mr Malebo Makgabo	KZN COGTA
Dr Peter Kuyler	KZN EDTEA (Environmental Impact Assessment)	Mr Rudi Pretorius	National DEA
Mr Jay Puckree	KZN EDTEA (Air Quality and Monitoring)	Mr Mdumiseni Buthelezi	KZN EDTEA (Information Technology)
Dr Khumbulani Mbatha	KZN EDTEA (Compliance Monitoring and Enforcement Programme)	Mr Siphwe Mbatha	KZN DARD
Ms Zanele Linda	KZN EDTEA (Invasive Alien Species Programme)	Dr Neeta Behari	KZN OTP
Mr Mduduzi Zondo	KZN EDTEA (Environmental Policy and Coordination Programme)	Mr Boyd Escott	Ezemvelo KZN Wildlife
Mr Xolani Biyela	KZN EDTEA (Environmental Empowerment and Advisory Services)	Mr Caiphus Ngubo	KZN EDTEA (Geohydrologist)

Project steering committee meetings were further attended by stakeholders identified by the project management committee. Attendance at the Project Steering Committee meetings is documented in Addendum 1.





### 3.1.2 Stakeholder engagement

The strategy has been developed almost entirely based on the outcomes of a detailed consultative process. This primarily comprised a user profiling exercise where key users were interviewed regarding their workflows and information management responsibilities. It was initially planned that interviews should be undertaken based on the different roles identified in the organogram that was approved by the Member of the Executive Council (MEC) of Agriculture, Environmental Affairs and Rural Development in 2010. It however became apparent that the existing approved organogram and the current operating structure were very different. It was therefore decided that the interview framework would be structured around line function (i.e. different environmental management programmes) rather than the departmental organogram.

A purposive sampling strategy was then used to identify key users of information in charge of different programmes in EDTEA (Figure 1). The user interviews were structured around the legislative mandates of the various sub-programmes of the CD: EM. The aim of the interviews was to capture information flows, including sources of information, recipients of information and mechanisms for the analysis, storage, archiving of information and the interviewees' information concerns. Interview responses were then analysed and documented in the user profile report. The users interviewed are recorded in Table 2.

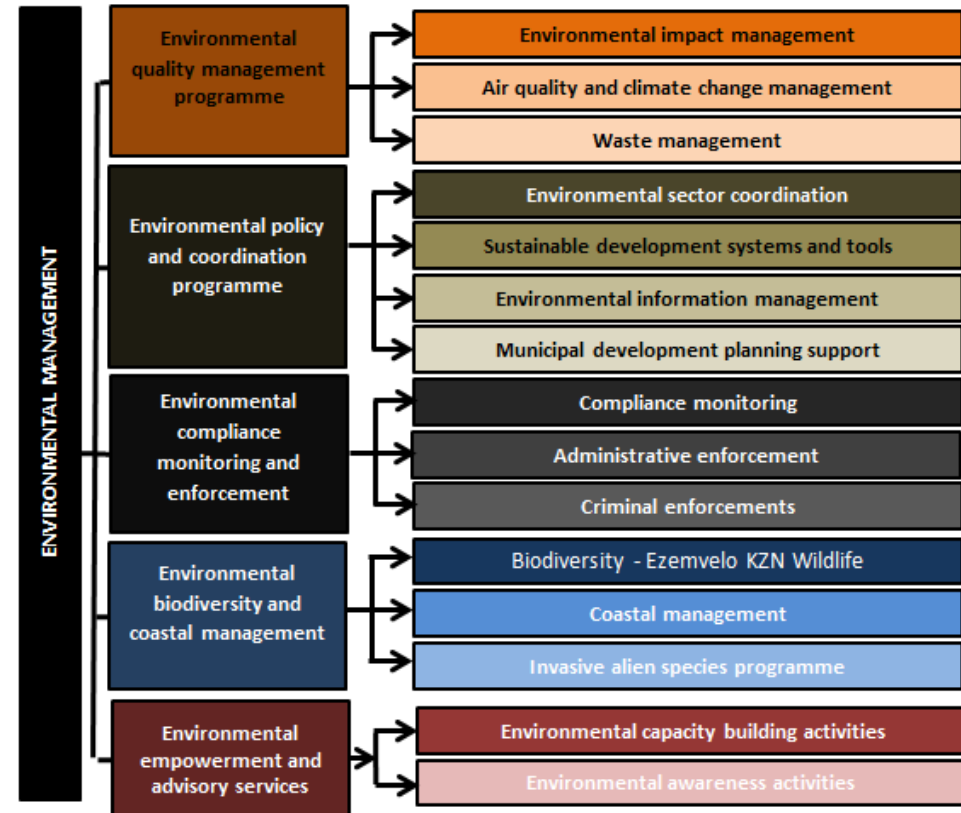


Table 2: List of users interviewed

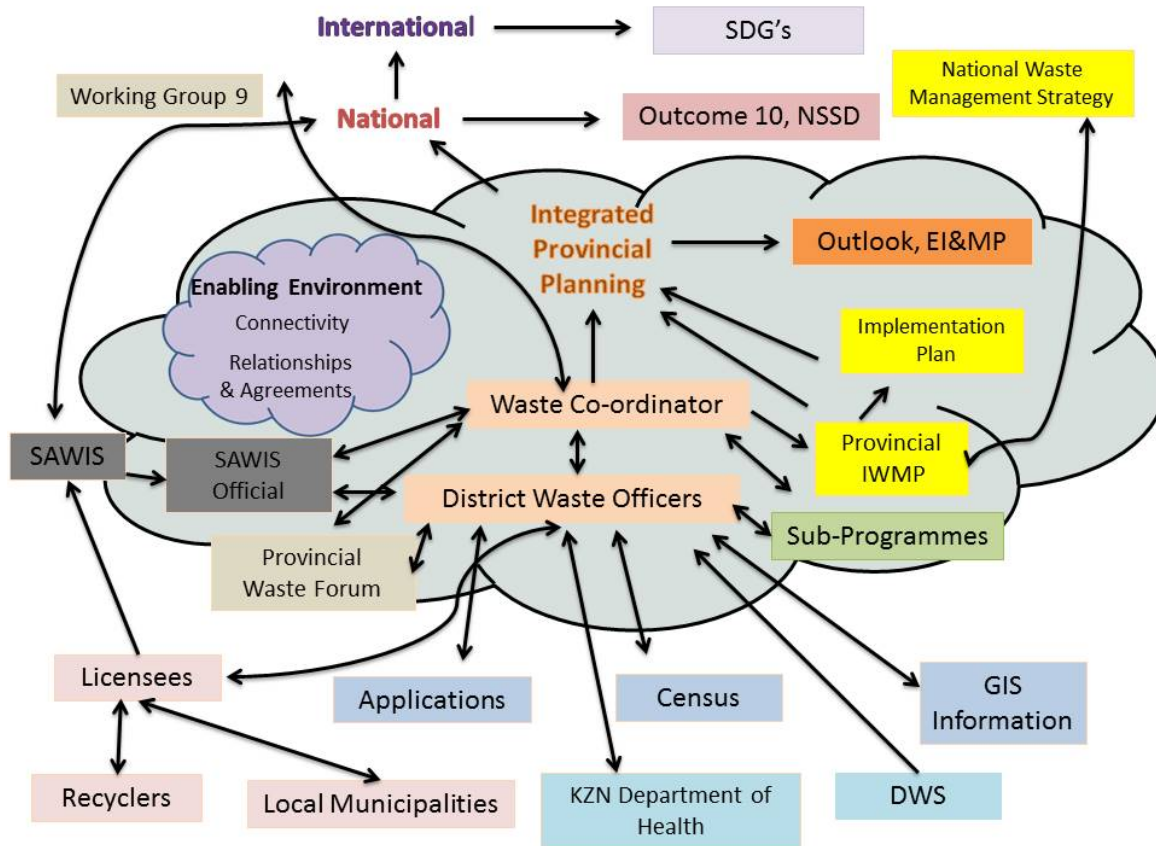
Programme	Sub-programme	Interviewee	Job title
Environmental quality management programme	Environmental Impact Management	- Malcolm Moses	- Control Environmental Officer Grade B
	Waste Management	- Heather Sheard - Ntuthuko Makhubu - Dankie Buthelezi	- Head Office (Control Environmental Officer) - Control Environmental Officer Grade B - Control Environmental Officer Grade B
	Air Quality	- Jay Puckree	- Provincial Air Quality Director
Environmental Policy and Coordination Programme	Environmental Information Management	- Mduduzi Zondo - Scelokuhle Ziqubu - Thelumusa Mtethwa - Caiphus Ngubo	- Environmental Officer, Sustainable Planning - Environmental Control Officer - Environmental Control Officer - Specialist Input: Hydrology
Environmental compliance monitoring and enforcement	Compliance Monitoring	- Xoli Madiba	- Umgungundlovu Environmental Control Officer Grade A
Environmental biodiversity and coastal management	Ezemvelo KZN Wildlife	- Boyd Escott	- Manager of Biodiversity, Spatial Planning and Information
	Coastal Management	- Omar Parak - Alfred Matsheke	- Both Control Environmental Officer Grade B
Environmental empowerment and advisory services	Environmental Capacity Building Activities	- Letty Mathonsi - Xolani Biyela	- Control Environmental Officer - Environmental Support
District level implementation management	1. Impact Assessment; 2. Pollution & Waste; 3. Compliance Monitoring & Enforcement; 4. Empowerment; 5. Environmental Planning	- Kim Van Heerden - Ian Felton	- Umgungundlovu District Environmental Manager - Control Environmental Officer.

### 3.2 Engagement outcomes



**3.2.1 Information Flow Profiles**

All information flows within the sub-programmes were interrogated and key communication links mapped out. These have been represented in conceptual diagrams as illustrated in the example of Waste and Pollution Management (Figure 2).



The diagrams illustrate the key information linkages between sources of information (which are most often found outside of EDTEA), the CD: EM's information management environment, and national and international users of information.

The other sub-programmes' information flow maps are presented in Addendum 2 of this document.

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**3.2.2 ICT Audit**

In addition to information flows, users' personal computers were assessed and the hardware, software and networking specifications documented. This infrastructural audit provided important insights into issues facing CD: EM staff, particularly with respect to the lack of access to EDTEA ICT infrastructure.



### 3.2.3 Issues Identified

Criteria were developed to evaluate issues raised during the user profiling review into key and non-key issues. Key issues were defined as those which will or may result in non-compliance with legislated requirements and issues that severely impact on the efficiency and effectiveness of the sub-programme to fulfil their mandates. Key issues were also required to be consistent across most of the sub-programmes, with a variety of users raising them as major concerns impacting on their ability to carry out their responsibilities. The following is a summary of key issues identified during the user profiling process:

1. The number of **vacant leadership and executive posts** in the CD: EM and the confusion surrounding the structure and staffing of the various sub-programmes going forward is a clear hindrance to effective information management and the implementation of an information management strategy going forward.
2. There are currently **insufficient capacity and technical structures** within the CD: EM to undertake effective management of information and the associated analysis and use of the information for reporting purposes. The CD: EM is thus non-compliant with several legislated requirements for plans and reports.
3. There is currently **no structured information management framework** in the CD: EM which means that important information for informing planning and reporting is not acquired or available in-house and that information which is available is not easily accessible. State of Environment **reporting is contracted out** to consultants who undertake extensive and costly information sourcing and review in order to produce the required report.
4. With some exceptions, there is a general **lack of information collection and reporting systems** in place in the various sub-programmes to generate adequate information for reporting on the state of the environment in the province and its progress towards sustainable development.
5. Performance indicators for CD: EM are at this stage almost entirely related to administrative performance such as the proportion of applications finalised within required timeframes. **There are very few environmental indicators** related to performance with respect to the national vision for the environment (Constitution and NEMA) and to sustainable development. Progress is thus not measured or reported.
6. Data and information are currently predominantly exchanged and kept in **hard copy format** making it susceptible to loss through hazards and disasters (fires, silverfish, etc.). Where information is in electronic format, it is kept on local hard drives which are susceptible to loss through hard drive failure or computer theft.
7. Data archiving is currently decentralised with districts responsible for archiving their own information. This has led to **poor archiving practices** and files going missing. There is also currently **no formalised information backup system** in place resulting in exposure to risks of information loss and resultant non-compliance with several Acts.



8. There is currently **no policy or standard in place** guiding internal information management. The way electronic and hard copy information is managed varies across the different sub-programmes and across offices. This is currently driven by individual choice with no standardised protocol for file management. This exposes the Department to the risk of information loss when a staff member resigns and to severe inefficiency while remaining colleagues try to find fragmented information. For spatial data, metadata is not consistently captured and there is no standardisation of information formats, storage or distribution.
9. There is currently **no mechanism in place to facilitate information management** in the department. This is particularly problematic with the decentralised system that the department has, with no intranet facility. Work therefore happens in isolation, with a lack of connectivity severely limiting communication between the various offices. As an example, there are no shared databases, so users have to capture data into a rudimentary database and then email it, instead of being able to access and filling it in on a shared drive. Due to the lack of a proper information management system there is currently a lack of information sharing between the different sub-programmes, a user has to personally contact another sub-programme directly to gather information. This is reducing the efficiency and effectiveness of the department.
10. There is currently very **limited ability to exchange and source electronic information**. A key driver of this is the limitation of file sizes able to be emailed and the restriction of users' access to web-based file sharing mechanisms such as Dropbox and restricted access to other legitimate web based sources of information.
11. The EDTEA **website is not configured to meet the CD: EM's information sharing needs**. It currently has very little environmental information loaded at all, and no dedicated pages for environmental notifications and information. This means that there are currently no active EDTEA platforms sharing environmental information with the public.
12. **Internet connectivity in the less developed districts is slower and less reliable** than the more developed districts and their equipment (laptops) struggles to handle applications that require high processing speeds such as ArcMap.
13. There are **no digital linkages between the CD: EM and key information holders** such as Ezemvelo KZN Wildlife, COGTA and Office of the Premier. This results in versions of data sourced from these custodians being couriered to Districts on CD or other physical media and becoming outdated.
14. EDTEA currently has **no PAIA manual available** on their website. This is partially the responsibility of the CD: EM who are required to catalogue and classify all information that they hold.







The vision for EIM in the KZN CD: EM is that:

EIM contributes to the achievement of sustainable development in KZN by continually improving environmental management and its governance through:

- a. **Improving the ability** of decision makers and all interested stakeholders **to collect, store, retrieve and report relevant, accurate and updated information;** and
- b. **Reducing the risk of non-compliance** with information management related legislation and legislation prescribing timeframes for the completion of functions of Organs of State due to the loss of important information.

This vision is aligned with addressing one of the key challenges identified in the National Development Plan's (NDP) Medium Term Strategic Framework (MTSF) Outcome 10 (Protecting and enhancing our environmental assets and natural resources) which is:

**"- Inadequately informed decision-making and governance:** Information management systems for environmental sustainability are still inadequate."

The NDP Outcome 10 goes on to highlight that **better informed decision-making** will be achieved through "harnessing research and **information management capacity** to identify, develop and maintain datasets to generate policy-relevant statistics, indicators and indices in **collaboration** with other key contributors outside the sector."





In broad terms, effective information management is recognised to consist of four critical components:

- **Content:** What information is to be managed;
- **Process:** Clearly defined workflows defining the generation and use of information;
- **People:** Good governance structures and institutional capacity to facilitate and undertake the required management tasks;
- **Technology:** Appropriate ICT infrastructure and systems.

Based on the user profiling and stakeholder engagement carried out as part of the strategy development process, three elements of EIM strategic importance have been identified for the KZN CD: EM which echo these recognised components. These are (also see Figure 3):

1. **Environmental information generation, sharing and use in meeting mandated responsibilities (Content and Process);**
2. **EIM Governance: Leadership, institutions and partnerships (people);**
3. **Connectivity and systems management (information communication technology (ICT)).**

Elements 2 and 3 support Element 1 and provide the enabling environment for the effective generation, sharing and use of information.

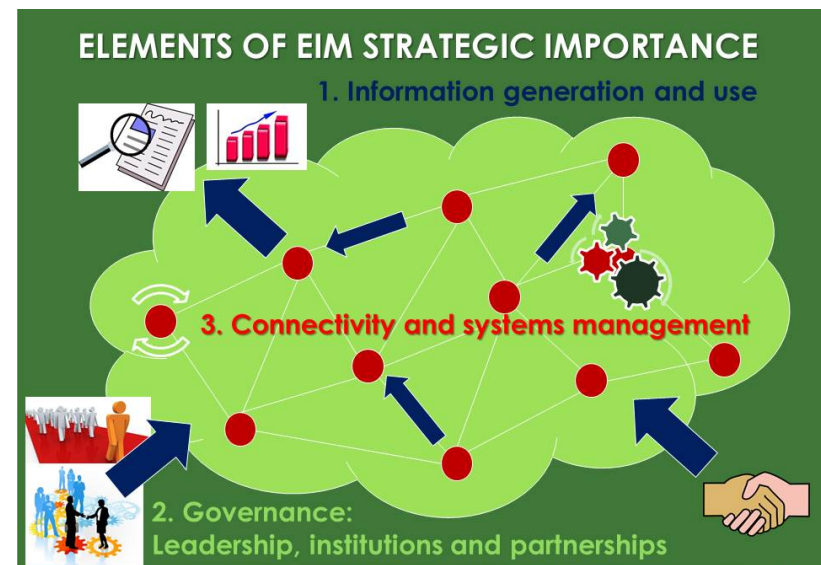


Figure 3: Elements of EIM strategic importance



## 5.1 Element 1 – Environmental Information Generation and Use

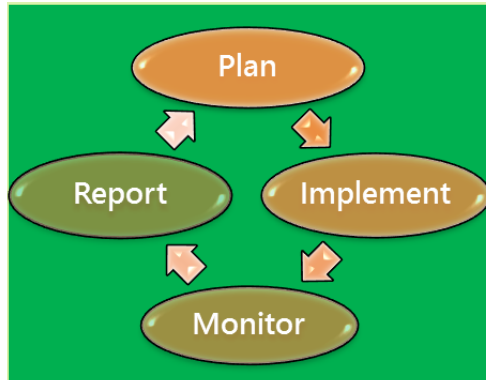
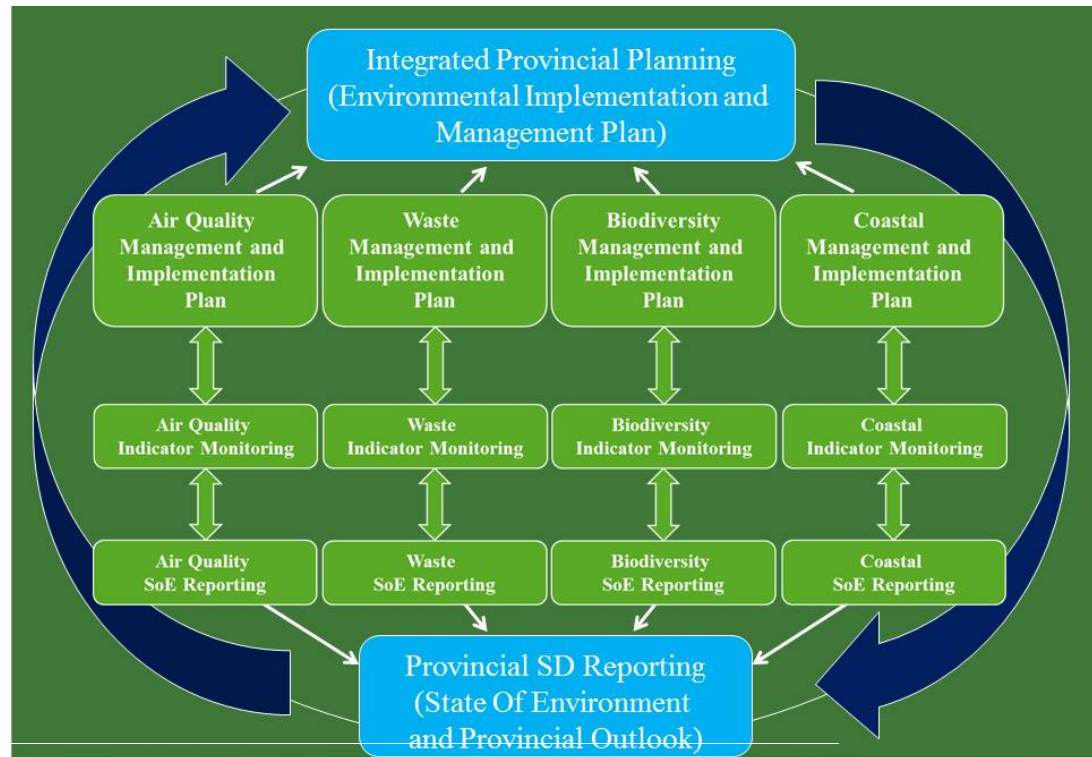
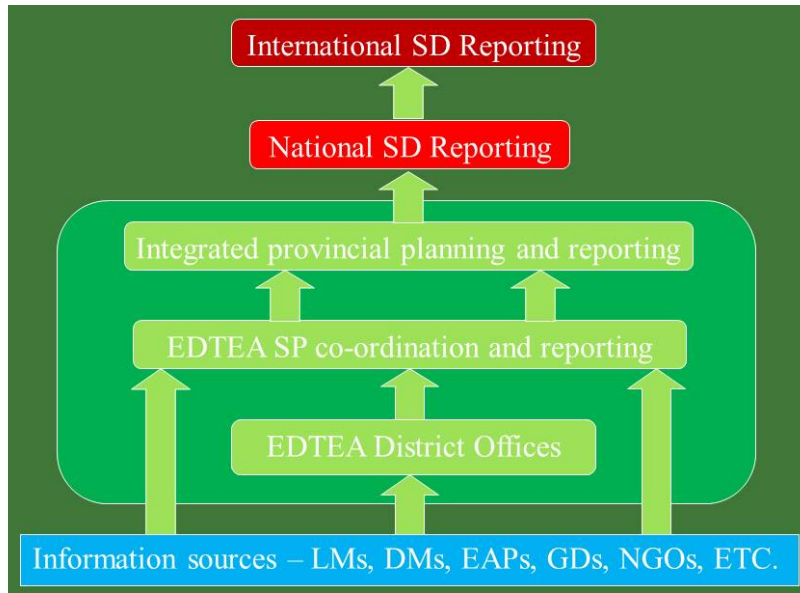


Figure 4: Planning, implementing, monitoring and reporting cycle

Information management is important in all steps in the planning, implementing, monitoring and reporting cycle (Figure 4). The CD: EM, like all government bodies is required to produce numerous plans and reports at different levels. Two key levels interact in achieving the principles laid out for environmental management in the National Environmental Management Act. These are illustrated in Figure 5 which shows how environmental planning and state of environment reporting at a sub-programme level (not all sub-programmes are included here for the purposes of illustration) informs a broader cycle of integrated environmental planning and state of environment reporting for KZN.

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and international agreements (Figure 6).

A key component of this cycle is the availability of information with which to evaluate the environmental performance of management interventions. Effective monitoring of key indicators of the state of environment and the capture, storage, analysis and sharing of appropriate monitoring data are critical links in the cycle for achieving the vision of sustainable development in the province.

Importantly, the provincial monitoring and reporting functions form the basis for national information gathering and reporting against development plans and strategies and for reporting against international targets and goals for sustainable development. Environmental Information Management is thus a vital component of ensuring compliance with key South African legislation, national goals and strategies

The strategy's first aim is thus formulated to reflect this important role.

**Aim 1: Ensure that EIM effectively supports the implementation of legislatively mandated environmental management activities and the achievement of national and international Sustainable Development strategies, goals and outcomes.**





## 5.2 Element 2 – EIM Governance: Leadership, institutions and partnerships

A critical component of achieving improved information management is establishing the governance and institutional framework to successfully implement information management measures. This element underpins the other two elements as the facilitating environment for sound environmental information management. This is illustrated in Figure 7 where this element supports the implementation of key activities associated with the other two elements. Key areas of this element are:

1. **Leadership** towards, and executive support for, the implementation of good EIM practice;
2. The establishment of a **champion** to push forward the EIM agenda
3. Building the **capacity** of information managers to effectively engage with the EIM framework;
4. The provision of **clerical support** to facilitate sound EIM; and
5. **Partnerships** with key information custodians to facilitate efficient access and informed use.

This element have been crystallised into the second strategy aim:

**Aim 2: Ensure that environmental management governance arrangements support and enable effective and efficient Information Management.**

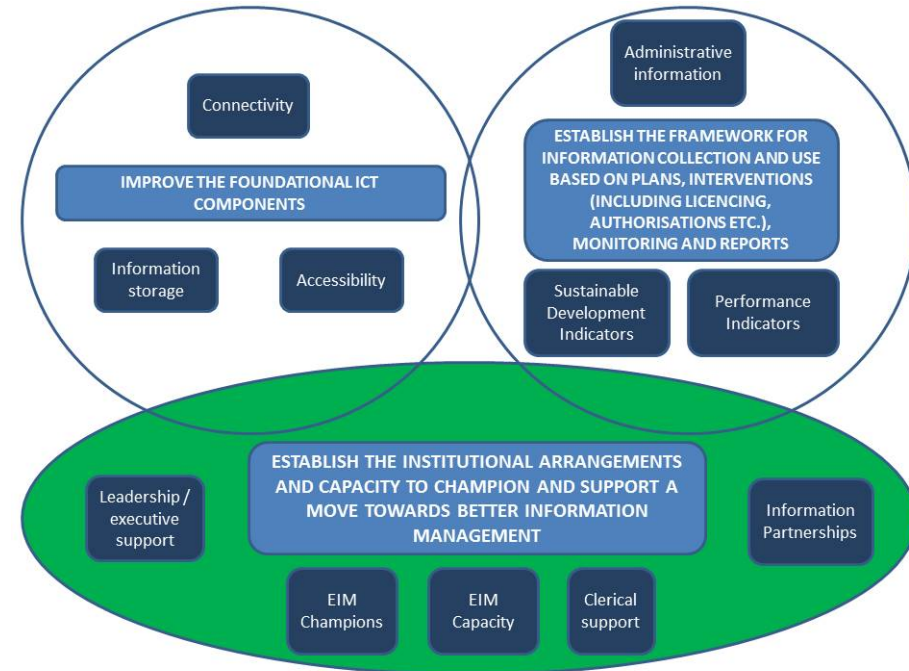


Figure 7: Establishing a governance and institutional framework to successfully implement information management measures





### 5.3 Element 3 – Connectivity and systems management

Information management in the age of the internet, apps, smart phones, hash tags and data contracts is all about connectivity and systems management. International trends in information management are inseparably bound to digital media, software, hardware and to Information Communication Technologies (ICT). Government functions and service delivery in South Africa are increasingly hinged on the ability of the various organs of state to interact with 1) each other, 2) a range of stakeholders and 3) the public in general via electronic channels and via the internet in particular. The CD: EM is no exception, but, with the majority of its functions currently largely reliant on paper based processes, it is under pressure to improve the management and security of its information and accessibility to it.

Importantly, the South African government has identified the need for a more strategic approach to information management and has developed various legislative tools, policies and frameworks to this end. It is obviously critical that any work done on information management systems at a provincial level aligns with initiatives established at a national level.

Connectivity and systems management are a key element in this strategic plan in order to progress the CD: EM towards the vision of improved decision making and sustainable development through better information management. This element has been encapsulated into the third foundational aim for this strategy:

**Aim 3:** Ensure that EIM aligns with international information management trends and best practice, national principles and policies for ICT and provides for national goals of efficient service delivery.





The EIM strategy is laid out in terms of the three broad aims developed from the three identified strategic elements (Table 3). These are then broken down into more refined goals with a more defined focus on the components required to achieve the broad aim. Strategic objectives are then given to provide a more tangible plan of action for achieving the stated goals. These specific objectives are given effect through a set of practical and measurable actions or interventions.

Table 3: Strategic elements built into Aims which encapsulate the EIM strategy

Strategic Element		Associated Aim
1.	Environmental Information: Generation, sharing and use	Ensure that EIM effectively supports the implementation of legislatively mandated environmental management activities and the achievement of national and international Sustainable Development strategies, goals and outcomes.
2.	EIM Governance: Leadership, institutions and partnerships	Ensure that environmental management governance arrangements support and enable effective and efficient Information Management.
3.	Connectivity and systems management	Ensure that EIM aligns with international information management trends and best practice, national principles and policies for ICT and provides for national goals of efficient service delivery.



## **AIM 1 - Ensure that EIM effectively supports the implementation of legislatively mandated environmental management activities and the achievement of national and international Sustainable Development strategies, goals and outcomes.**

One of the key requirements of the strategy is that it needs to ensure that the CD: EM achieves compliance with NEMA and the various SEMAs. It should also ensure that the various sub-programmes are supported in undertaking their mandated environmental management activities and that they have the appropriate information to successfully plan, implement interventions, monitor indicators and report against all these activities. Importantly, reporting should not only consist of internal performance indicators, but must include indicators of the impacts of their activities and the activities they manage on the environment and the vision for sustainable development. These indicators should be appropriate for reporting on the state of the environment at a provincial, national and international level.

The strategy therefore aims to facilitate the efficient movement of information throughout this cycle, which in turn will contribute to

- 1) The achievement of sustainable development in KZN (as envisioned in NEMA and the United Nation's (UN's) Sustainable Development Goals (SDGs));
- 2) The protection and enhancement of our environmental assets and natural resources (NDP MTSF Outcome 10);
- 3) enhancement of the resilience of ecosystems taken from the Provincial Growth and Development Strategy (PGDS) guidelines;
- 4) effective decision making based on sound information from the measurement of the impacts of development on the environment; and
- 5) improved service delivery and improved performance.

This aim will be achieved through the attainment of a number of goals as outlined below.



**Goal 1.1 - Establish a framework for information collection and use that supports compliance with NEMA (cycle of plan, implement, monitor, report) and effectively contributes to the sustainable management of the environment.**

To effectively manage the environment towards sustainable development in a continuously changing context, an adaptive management approach is required. To effectively adapt the management of a changing environment to ever changing contexts, information is continuously required regarding the current state of the environment, the drivers and pressures imposing themselves on the environment, the impacts of these drivers and pressures on the environment and the appropriate management response to these drivers, pressures and impacts. It is therefore important to establish a framework of information requirements to facilitate the continuous requirement for information in the planning, implementing, monitoring and reporting cycle. Achievement of this goal will facilitate the efficient management of information and contribute towards achieving the aim of providing effective support to legislated activities.

**STRATEGIC OBJECTIVES**

**1.1.1. Ensure that CD: EM's performance with regards to managing the environment is measured using reliable indicators of the state of the environment that are aligned with national and international indicators of sustainable development.**

A key challenge facing the CD: EM is the fact that indicators currently used to measure performance are purely based on internal administrative measures of function, and they do not provide any indication of the current state of the environment or of progress towards environmentally sustainable development. It is therefore important to develop a set of indicators which allow the monitoring and reporting of the state of the environment and the impact of development activities.



Action	Timeframe	Priority
1.1.1.1. Develop and adopt a set of provincial sustainability indicators for monitoring and reporting against Plans which align with provincial (Environmental Implementation and Management Plan (EI&MP), Provincial Environmental Outlook), national (NDP MTSP Outcome 10, NSSD, State of the Environment (SOE)) and international (SDGs) plans, strategies and reporting indicators.	Short term	Critical
1.1.1.2. Develop a consolidated monitoring programme to ensure all sustainability indicators are addressed, to consolidate current monitoring effort and to develop monitoring for indicators which are not currently included in monitoring	Short term	Critical

#### 1.1.2. Ensure monitoring information is effectively managed and efficiently stored.

Action	Timeframe	Priority
1.1.2.1. Appoint a consultant to undertake a functional specification for the development of a process management system to facilitate the collection, management and interaction with information resources.	Short term	Critical
1.1.2.2. Appoint a consultant to develop and maintain a process management system to facilitate the efficient and secure storage, querying and reporting of information	Short term	Critical
1.1.2.3. Where information is held locally, develop and implement a sustainability database (as part of the process management system) of indicator information accessible to appropriate staff for the purposes of storing, querying and reporting.	Short term	Critical
	Short term	Moderate





1.1.2.4. Where information required is held by outside parties, establish agreed channels of communication e.g. Memoranda of Understanding (MoU's) etc. to enable efficient reporting processes.		
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## Goal 1.2 - Achieve compliance with NEMA and SEMAs with respect to planning and reporting

The NEMA and the SEMAs provide the vision for the environment to which environmental management in South Africa is aligned. They also provide the legislative backbone of the Environmental Affairs Department and provide legislative mandates for the various sub-programmes. Many of the CD: EM sub-programmes are required through NEMA and the SEMAs to establish management plans and implementation plans to co-ordinate their monitoring and reporting. Due to a variety of circumstances, few of these plans are in place, and reporting on the state of the environment is infrequent and is a long and protracted exercise requiring the appointment of consultants. The Department is thus not yet compliant with these important acts and the achievement of this goal will not only achieve compliance with the legislation, but will also ensure that the various sub-programmes' activities are planned and co-ordinated.

### STRATEGIC OBJECTIVES

#### 1.2.1 Ensure EDTEA's activities are guided by co-ordinated plans and strategies.

It is absolutely vital for **integrated environmental management** to succeed and for the Department to achieve compliance with NEMA, that the activities of the Environmental Affairs Department are guided by co-ordinated plans and strategies. For this reason it is vital that the individual sub-programmes prioritise the development of management plans which will allow the Department to integrate the plans and activities for the province. It is acknowledged that challenges of capacity and funding exist in achieving this objective. These challenges are addressed in other sections of this strategy. Two actions have been identified to enable the achievement of this strategic objective<sup>1</sup>:

<sup>1</sup> It is important to note that the strategic objectives identified are not seen in isolation and for individual objectives to be achieved, it may require the achievement of a number of other linked objectives.



Action	Timeframe	Priority
1.2.1.1. Sub-programmes to prioritise the development of SEMA / Sub-programme management and action plans for the province.	Short term	Critical
1.2.1.2. Development of the provincial EI&MP as soon as Strategic Plans (SP) plans are in place.	Short - Medium term	Critical

### **1.2.2. Ensure EDTEA's performance with regards to managing the environment is effectively communicated through provincial outlook and state of environment reporting**

It is a NEMA legislative requirement that the Department produce a regular State of Environment Report. This integrated report should be synthesised from the state of environment reports generated by each of the sub-programmes and through co-operative reporting with other key environmental management partners (e.g. Department of Water and Sanitation and Department of Agriculture and Rural Development). A key challenge in establishing a regular and efficient reporting programme is the development, for each of the sub-programmes, of an information requirement framework for planning, monitoring and reporting. This should include a reporting template based on an approved monitoring programme and a set of accepted sustainability indicators. Two actions have been identified to enable the achievement of this strategic objective:

Action	Timeframe	Priority
1.2.2.1. Development of SEMA SoE reporting templates, focusing on alignment with integrated reporting requirements, inclusion of relevant indicators of performance with respect to the vision of sustainable	Short term	Critical



development, efficiency of reporting and reliability of information.		
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## **AIM 2 - Ensure that environmental management governance arrangements support and enable effective and efficient EIM**

A key obstacle to effective EIM that has been identified during the strategy development is the current institutional arrangement present in the department. The most important component of this obstacle is the high number of vacancies in important functions and in particular, the high number of vacancies in Chief Director and Director level positions. To ensure that EIM contributes positively towards the improvement of environmental management, it must be well supported and resourced with complete buy-in from Departmental leadership. Success of this information management strategy requires that a stable and strong institutional foundation needs to be in place, with key staffing positions filled, key partnerships cemented and strong leadership present to drive the strategy through. Confusion is also apparent amongst staff with respect to the current organisational structure and frustration exists with the current inefficient arrangement of functions. To achieve this aim two goals have been set with associated objectives and actions to ensure that the aim is successfully achieved.

### **Goal 2.1 - Ensure that appropriate and effective internal institutional structures and capacity are in place to support effective EIM.**

Key institutional structures required are:

1. Leadership to make decisions, formalise partnerships and to oversee functions;
2. Technical capacity to implement sound information management; and
3. Clerical/administrative capacity to support information capture and maintenance.



Currently, key decision making posts are vacant and there is no director level leadership present to ensure this strategy is successful. Information management positions are currently also vacant. District offices, in many cases have no administrative support at all.

This strategy will require staff to be appointed to ensure that environmental information is appropriately managed and to aid in stimulating the movement of information to the correct channels. Formalised partnerships with outside organisations will need to be developed to allow for key Information exchanges to occur efficiently.

The Department needs to ensure that it's staffing and leadership roles are formalised as swiftly as possible to ensure that key decisions can be taken and key partnerships formalised. The proposed strategy has a strong reliance on IT and measures need to be put in place to develop the IT capacity of the staff and to ensure that the ICT aspect of this strategy is implemented right away. The following Strategic Objectives provide the actions required to achieve this goal.

## STRATEGIC OBJECTIVES

### 2.1.1. Ensure that EDTEA is able to implement action plans and make executive decisions with respect to EIM and cooperation.

Action	Timeframe	Priority
2.1.1.1. Achieve stability in staffing, organisation and leadership through the formalisation of the Directorate's organogram and filling of leadership positions.	Long term	Critical

### 2.1.2. Improve the Environmental Directorate's capacity to develop EIM and to make use of existing infrastructure



Action	Timeframe	Priority
2.1.2.1. Appoint Information Management Officer for management of sustainability information and the development of the sustainability information database	Short term	Critical
2.1.2.2. Allocate interim responsibility for ICT matters in the Environmental Affairs Department to a senior staff member to facilitate engagement with the EDTEA ICT manager and to facilitate the establishment of the central information repository. This responsibility will be passed to the Information Management Officer as soon as they are appointed.	Short term	Critical
2.1.2.3. Appoint a dedicated GIS officer to manage CD: EM's GIS, to develop a robust Spatial Data Infrastructure and to facilitate sharing of spatial data to district offices via internet services.	Short term	Critical
2.1.2.4. Establish an Environmental Information Management working group tasked with implementation of strategy actions. This should be chaired by the Information Management Officer and should consist of representatives from each of the sub-programmes and from EDTEA's ICT section.	Short term	Critical

### 2.1.3 Develop the CD: EM's capacity to administer information flows.

Action	Timeframe	Priority
2.1.3.1. Ensure that every district office has at least one dedicated administrative staff member to assist with information management tasks	Short - Medium term	Critical





2.1.3.2. Assess the opportunity to reorganise and consolidate district staffing to realise efficiencies and allow for the appointment of reception and clerical positions in consolidated district offices to assist with the administration of information.	Short - Medium term	Moderate
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## Goal 2.2 - Ensure appropriate external relationships exist to support efficient information collection

A number of outside organisations are currently holding valuable information pertinent to State of the Environment Reporting and other reporting mechanisms. Currently much of the information sharing between EDTEA and outside organisations is based on an informal relationship between staff members, this can be a problem if a staff member suddenly leaves and that key information is contact, therefore a formalised agreement needs to be established to ensure constant information flow between the organisations.

### STRATEGIC OBJECTIVES

#### 2.2.1. Enable information exchange between EDTEA and outside organisations

Action	Timeframe	Priority
2.2.1.1. Identify additional key information partners for each sub-programme based on monitoring and reporting requirements	Short term	Moderate
2.2.1.2. Where relationships exist with key partners, these relationships should be further developed and formalised into data sharing agreements or MoUs with detailed mechanisms and responsibilities for information sharing.	Short term	Moderate



<p>2.2.1.3. Where relationships don't exist, appropriate staff members should be identified and engaged with over the opportunities for information sharing. Once opportunities have been identified, the relationship should be formalised into data-sharing agreements of MoUs with detailed mechanisms and responsibilities for information sharing.</p>	<p>Short - Medium term</p>	<p>Moderate</p>
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**2.2.2. Ensure that SoE themes not accounted for in the Environmental Directorate are addressed through agreements with appropriate external partners**

Action	Timeframe	Priority
<p>2.2.2.1. Engage with the Department of Water and Sanitation over existing monitoring and reporting activities and identify opportunities to incorporate existing monitoring and reporting products that satisfy "Aquatic Environment" SoE reporting requirements into data sharing agreements.</p>	<p>Short - Medium term</p>	<p>Moderate</p>
<p>2.2.2.2. Engage with the Department of Agriculture and Rural Development over existing monitoring and reporting activities and identify opportunities to incorporate existing monitoring and reporting products that satisfy "Terrestrial Environment - Land" SoE reporting requirements into data sharing agreements.</p>	<p>Short - Medium term</p>	<p>Moderate</p>

**AIM 3 - Ensure that EIM aligns with international information management trends and best practice, national principles and policies for ICT and provides for national goals of efficient service delivery.**



ICT is a vital component of EIM that facilitates the effective and efficient management of information. It is a complex field with technologies rapidly advancing and becoming more mobile, more pervasive and more entrenched in society's approach to life. It is becoming an essential part of good governance to make information easily available through digital media and for stakeholders to be able to interact with the government via the internet. Digital information transactions can also realise efficiencies in governmental processes and thus speed up service delivery and realise goals set within the radical economic transformation agenda. Digital transactions also provide mechanisms to achieve compliance with national information management legislation such as the South African National Archives Act and the Promotion of Access to Information Act.

Most of the key challenges that have been identified by stakeholders during the strategy development relate to the current ICT arrangement, with poor connectivity, no reliable backup or archiving, limited opportunities to share digital information and a strong reliance on inefficient paper based processes. A number of these issues can be traced to the instability resulting from political decisions and the restructuring of provincial government departments, but many are through the stagnation of information management advancement. It is absolutely critical that Environmental Affairs makes strong advances with respect to its ICT infrastructure, taking ownership of its information systems and assets and developing them in alignment with international trends/best practice and national legislation and policies. Most important is a move away from paper based processes towards a more efficient and accessible digital environment.



### **Goal 3.1 - Optimise the accessibility of information whilst reducing the information collection and storage burden and risk of document/data version conflicts.**

Information availability is essential as employees with limited access to information will be unable to perform their job effectively. It is therefore vital that every employee will be able to access and store information continuously from a central storage facility. The Storage facility needs to be set out in a way that it allows for documents to be stored in an organised manner and users to be able to retrieve specific documents easily and efficiently. EDTEA relies on data from a variety of data rich custodians, mechanisms need to be put in place that allows key information to flow seamlessly from these data rich custodians to the users of information at EDTEA. One such mechanism that needs to be in place is a Web Map service which would not only reduce the reliance on procuring ArcGIS licensing but will allow data rich custodians to host information for users at EDTEA to be able to access easily via the internet and be able to aid them in decision manner in a timely manner. The following Strategic Objectives provide the actions required to achieve this goal.

#### **STRATEGIC OBJECTIVES**

##### **3.1.1. Establish a central storage facility and optimise use of storage space by removing redundancy in the storage of information whilst enabling its use it in multiple areas.**

<b>Actions</b>	<b>Timeframe</b>	<b>Priority</b>
3.1.1.1. Establish a central information repository that is accessible to all relevant staff (including district office staff) with access managed using permission levels. This repository to be used for central file storage and access minimising the requirement for hard-copy printing and courier.	Short term	Critical
	Short term	Critical



3.1.1.2. Prioritise the stabilisation and improvement of connectivity in District offices to support online workflows and the transfer of large files.

### 3.1.2. Provide a mechanism for organised electronic document storage and retrieval

Actions	Timeframe	Priority
3.1.2.1. Implement an Electronic Document Management System (EDMS) for the central repository to ensure managed and organised access to documents, files etc.	Short term	Critical
3.1.2.2. Establish user protocols to ensure that user data is stored and accessed centrally (not locally) using a standardised and systematic filing system (EDMS) and that user permissions are adequate. To be reviewed annually.	Short term	Critical
3.1.2.3. Develop a standardised cataloguing and referencing / numbering system applicable to all types of documents and files, taking note of the requirement to integrate information with National Information Management initiatives such as CIPS.	Short term	Critical
3.1.2.4. Catalogue and reference all existing electronic documents using the standardised referencing system & upload documents to the central repository.	Short - Medium term	Critical

### 3.1.3. Limit the need for local information storage by increasing the ability to exchange information efficiently with external custodians

Actions	Timeframe	Priority
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3.1.3.1. Establish the use of web maps and web mapping services to allow EDTEA users access to spatial data held centrally and elsewhere (e.g. KZN Wildlife).	Medium - Long term	Moderate
3.1.3.2. Invest in and optimise the return from existing investments made by EDTEA through Ezemvelo KZN Wildlife (EKZNW) in information generation and storage by developing their already significant information management capability and by establishing a formalised relationship to create digital links (primarily GIS data using Web GIS) to relevant data and information currently held by them.	Medium - Long term	Moderate
3.1.3.3. Establish MoUs with partners such as Department of Water and Sanitation (DWS), Department of Agriculture and Rural Development (DARD), and Cooperative Governance and Traditional Affairs COGTA to facilitate efficient information sharing.	Short - Medium term	Moderate

#### 3.1.4. Leverage existing data generation and collection responsibilities to ensure all relevant data is captured into the EDTEA Database

Actions	Timeframe	Priority
3.1.4.1. All authorisation applications should be accompanied by a spatial delineation (not just co-ordinate points) which can be built into EDTEA's GIS database. Authorised areas should likewise be captured.	Short - Medium term	Moderate
3.1.4.2. The supply of GIS data as a deliverable should be written into the contracts for all service providers generating spatially referenced products such as plans or environmental assessments, together with specifications for meta-data and data format.	Short term	Critical
		Moderate



3.1.4.3. Identify where compliance and enforcement can support effective information collection and engage with them to include these opportunities in work programmes.	Short - Medium term	
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### 3.1.5. Reduce reliance on District ArcGIS licencing and data storage and move to implementing customised Web Map based workflows

Action	Timeframe	Priority
3.1.5.1. Develop capacity to generate and serve web maps or establish a relationship with EKZNW to undertake this.	Medium term	Moderate

## Goal 3.2 - Enhance information sharing as a key component of service delivery

Currently the ability of the Environmental Branch to share information is very limited and needs to be addressed to ensure compliance with the Promotion of Access to Information Act (PAIA), No 2 of 2000. This goal seeks to ensure an efficient portal/mechanism is in place to allow an improved transfer of information with the public; this will include updating the Department's website to allow greater publishing of environmental information to the public. The processing of applications will be hastened by ensuring that various district offices are able to transact and access centrally stored information from the storage repository. The establishment of a Customer Relations System will allow a direct and easy access for the public to request information and to be able to provide queries and comments on certain issues. The following Strategic Objectives provide the actions required to achieve this goal.



## STRATEGIC OBJECTIVES

### 3.1.1 Improve the ability of the CD: EM to share information with public clients

Action	Timeframe	Priority
3.2.1.1. Develop the Department's website to better accommodate the CD: EMs requirements for the sharing of plans and associated documents including GIS components to publish spatial plans.	Short term	Moderate
3.2.1.2. Identify and standardise mechanisms and formats for sharing information with public clients	Short - Medium term	Moderate
3.2.1.3. Develop the capacity to share spatial information publically using Web maps through the EDTEA Website	Medium - Long term	Moderate

### 3.1.2 Speed up processing of applications through improved information transaction mechanisms

Action	Timeframe	Priority
3.2.2.1. Assess, document and develop (where necessary) connectivity to allow reliable access and ability to transact with centrally stored information and relevant information from the internet from across all district offices.	Continuous	Critical

### 3.1.3 Minimise administrative time and costs associated with retrieval of information and monitoring of information requests



Action	Timeframe	Priority
3.2.3.1. Establish an efficient web based Customer Relations System with appropriate mechanisms for registering customers, monitoring progress of the enquiry and channels for the supply of information.	Long term	Moderate - Low

### Goal 3.3 - Achieve compliance with PAIA and with NASAA by securing information and limiting risks of loss of critical information

To achieve compliance with PAIA and National Archives of South Africa Act 43 of 1996 (NASAA), information needs to be stored securely and to be retrievable if requested. This goal seeks to secure information that the environmental branch owns, this includes: establishing as backup system to ensure that no electronic information is ever lost and that existing hardcopy documents are scanned, referenced and uploaded to the central storage where the documents will be successfully backed up. Once the documents are stored in the central repository, public requests for data will be able to be efficiently met as the documents will easily be able to be retrieved, The following Strategic Objectives provide the actions required to achieve this goal.

#### STRATEGIC OBJECTIVES

##### 3.3.1 Secure current and future documentation

Actions	Timeframe	Priority
3.3.1.1. Establish a secure backup system to back up the central information repository including daily backup and offsite backup.	Short term	Critical
	Short term	Low



3.3.1.2. Segment the central repository to provide a mirrored repository for archiving of information more than 20yrs old.





### 3.3.2 Secure historical documentation

Action	Timeframe	Priority
3.3.2.1. Scan all hardcopy documents currently stored in the District Offices and store in the central repository using the standardised referencing system.	Short - Medium	Critical

### 3.3.3 Address information access requirements of PAIA

Action	Timeframe	Priority
3.3.3.1. In consultation with the EDTEA Information Officer, establish and document the responsibilities of the CD: EM with respect to compliance with the Promotion of Access to Information Act.	Short term	Critical
3.3.3.2. If so required, in consultation with the EDTEA Information Officer, appoint deputy information officers to facilitate access to information held by the Environmental Affairs section.	Short term	Critical
3.3.3.3. Catalogue all information held in terms of its nature and if it is automatically available information or if it would require access to be sought through the Act.	Short term	Critical
3.3.3.4. Develop PAIA manual content regarding what information is held and how the information is accessible.	Short term	Critical



### Goal 3.4 - Align ICT development with DEA initiatives

The National Department of Environmental Affairs (DEA) has undertaken and is undertaking various ICT related initiatives. It is imperative that the CD: EM's ICT arrangements align with these initiatives. The most significant of these initiatives on the horizon is the implementation of the Central Integrated Permitting system (CIPS), but this goal applies in principle to all such initiatives. The following Strategic Objectives provide the actions required to achieve this goal.

#### STRATEGIC OBJECTIVES

##### 3.4.1 Ensure connectivity of District Offices

Action	Timeframe	Priority
3.4.1.1. All district Offices to be assured of internet bandwidth appropriate for the use of essential internet based systems such as CIPS.	Continuous	Critical

##### 3.4.2 Ensure standards and specifications align with DEA initiatives for integrated environmental management and co-operative governance.

Action	Timeframe	Priority
3.4.2.1. Document referencing system must align with national document referencing system.	Short term	Critical





## 7.1 Roles and responsibilities

Although it must fall on the shoulders of identified individuals to drive this strategy, information management is the responsibility of all CD: EM staff. It is absolutely key that this is acknowledged and that staff members at all levels (most notably the Chief Director) support and participate in the implementation of this strategy, whether actively involved in decision making, or simply in understanding the importance of effective information management and supporting and complying with the strategy's recommended actions. Practically though, the implementation of this strategy will rely on key defined roles and responsibilities. The key structures and roles recommended for the implementation of the strategy are defined in Table 4 below:

Table 4: Strategy implementation roles and structures

<b>Strategy implementation institution:</b>	Chief Directorate: Environmental Management, Sub-Directorate: Environmental Planning, Governance and Information Management (EPGIM)
<b>Strategy champion:</b>	Environmental Information Officer (or acting information officer if this position is not filled)
<b>Implementation structures:</b>	Environmental Information Management working group, chaired by the strategy champion and comprising senior representatives from each of the sub-programmes, including district office representation and a representative of the Department's IT section.
<b>Key implementation partners:</b>	State Information Technology Agency (SITA)
<b>Key information partners:</b>	Department of Environmental Affairs, Department of Water and Sanitation, Department of Agriculture, Fisheries and Forestry, KZN Department of Agriculture and Rural Development, Department of Cooperative Governance and Traditional Affairs, KZN Office of the Premier, Department of Minerals and Energy.



## 7.2 Timeframes and budget

To facilitate the implementation of the strategy, a Strategy Implementation Plan has been provided which outlines potential time frames and estimated budgets associated with the tasks needed to achieve various objectives and goals. Table 5 below reflects the timeframes and costs associated with the action tasks associated with the three aims.

### Aim 1

Table 5: The Strategic Implementation Plan to achieve the 1<sup>st</sup> aim of the strategy

Action	Short Term								Medium Term								Long Term								Costing	Cost justification
	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
1.1.1.1. Develop and adopt a set of provincial sustainability indicators for monitoring and reporting against Plans which align with provincial (EIMP, Environmental Outlook), national (NDP MTSP Outcome 10, NSSD, SOE) and international (SDGs) plans, strategies and reporting indicators.																									R	Assume no cost as this will be conducted internally.
1.1.1.2. Develop a consolidated monitoring programme to ensure all sustainability indicators are addressed, to consolidate current monitoring effort and to develop monitoring for indicators which are not currently included in monitoring																									R	Assume no cost as this will be conducted internally. The implementation of the monitoring programme may require investment.



Action	Short Term				Medium Term				Long Term				Costing	Cost justification	
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
1.1.2.1. Appoint consultant and undertake a functional specification for the development of a process management system to facilitate the collection, management and interaction with information resources.														R 250 000.00	Development of the process management system must take workflows into account and must ensure integration with CIPS and other national IT initiatives.
1.1.2.2. Appoint a consultant to develop and maintain a process management system to facilitate the efficient and secure storage, querying and reporting of information														R 500 000.00	The appointment of the consultant is expected to last 6-8 months, but product testing and maintenance will take longer.
1.1.2.3. Where information is held locally, develop and implement a sustainability database (as part of the process management system) of indicator information accessible to appropriate staff for the purposes of storing, querying and reporting.														R -	Part of the Process management System - include database for monitoring information and templates for outputting relevant indicator statistics.
1.1.2.4. Where information required is held by outside parties, establish agreed channels of communication (MoU's etc.) to enable efficient reporting processes.														R -	Assume no cost as this will be conducted internally.





Action	Short Term				Medium Term				Long Term				Costing	Cost justification			
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6						
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
1.2.1.1. Sub-programmes to prioritise the development of SEMA / Sub-programme management and action plans for the province.															R -	Assume no cost as this will be conducted internally.	
1.2.1.2. Development of the provincial EIMP as soon as SP plans are in place.																R -	Assume no cost as this will be conducted internally.
1.2.2.1. Development of SEMA SoE reporting templates, focusing on alignment with integrated reporting requirements, inclusion of relevant indicators of performance with respect to the vision of sustainable development, efficiency of reporting and reliability of information.																R -	Assume no cost as this will be conducted internally.



# Aim 2

Action	Short Term				Medium Term				Long Term				Costing	Justification				
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6							
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			Q1	Q2	Q3	Q4
2.1.1.1. Achieve stability in staffing, organisation and leadership through the formalisation of the Directorate's organogram and filling of leadership positions.																	R -	Assume no cost as this will be conducted internally.
2.1.2.1. Appoint Information Management Officer for management of sustainability information and the development of the sustainability information database																	R -	No cost is included here as this position is already advertised and assumedly budgeted for.
2.1.2.2. Allocate interim responsibility for ICT matters in the CD: EM to a senior staff member to facilitate engagement with the EDTEA ICT manager and to facilitate the establishment of the central information repository. This responsibility will be passed to the Information Management Officer as soon as they are appointed.																	R -	Assume no cost as this will be conducted internally.
2.1.2.3. Appoint a dedicated GIS officer to manage CDEM's GIS and to develop a robust Spatial Data Infrastructure and facilitate sharing of spatial data to																	R -	No cost is included here as this position is



Action	Short Term				Medium Term				Long Term				Costing	Justification				
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6							
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			Q1	Q2	Q3	Q4
district offices via internet services.																		already advertised and assumedly budgeted for.
2.1.2.4. Establish an Environmental Information Management committee tasked with implementation of strategy actions. This should be chaired by the Information Management Officer and should consist of representatives from each of the sub-programmes and from EDTEA's ICT section.																		
2.1.3.1. Ensure that every district office has at least one dedicated administrative staff member to assist with information management tasks																	R -	No cost is included here as the current status with respect to administrative staffing needs to be assessed.
2.1.3.2. Assess the opportunity to reorganise and consolidate district staffing to realise efficiencies and allow for the appointment of reception and clerical positions in consolidated district offices to assist with the administration of information.																	R -	Assume no cost as this will be conducted internally.
2.2.1.1. Identify additional key information partners for each sub-programme based on monitoring and reporting requirements																	R -	Assume no cost as this will be conducted internally.



Action	Short Term				Medium Term				Long Term				Costing	Justification				
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6							
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			Q1	Q2	Q3	Q4
2.2.1.2. Where relationships exist with key partners, these relationships should be further developed and formalised into data sharing agreements or MoUs with detailed mechanisms and responsibilities for information sharing.																	R -	Assume no cost as this will be conducted internally.
2.2.1.3. Where relationships don't exist, appropriate staff members should be identified and engaged with over the opportunities for information sharing. Once opportunities have been identified, the relationship should be formalised into data-sharing agreements of MoUs with detailed mechanisms and responsibilities for information sharing.																	R -	Assume no cost as this will be conducted internally.
2.2.2.1. Engage with the Department of Water and Sanitation over existing monitoring and reporting activities and identify opportunities to incorporate existing monitoring and reporting products that satisfy "Aquatic Environment" SOE reporting requirements into data sharing agreements.																	R -	Assume no cost as this will be conducted internally.
2.2.2.2. Engage with the Department of Agriculture and Rural Development over existing monitoring and reporting activities and identify opportunities to incorporate existing monitoring and reporting products that satisfy "Terrestrial Environment - Land" SOE reporting requirements into data sharing agreements.																	R -	Assume no cost as this will be conducted internally.



# Aim 3

Action	Short Term				Medium Term				Long Term				Costing	Justification				
	Year 1		Year 2		Year 3		Year 4		Year 5									
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
3.1.1.1. Establish a central information repository that is accessible to all relevant staff (including district office staff) with access managed using permission levels. This repository to be used for central file storage and access minimising the requirement for hard-copy printing and courier.	█	█	█	█											R -	Assume no cost since hardware and networking infrastructure already exist. This is an internal ICT function with server space to be provided by SITA		
3.1.1.2. Prioritise the stabilisation and improvement of connectivity in District offices to support online workflows and the transfer of large files.	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	R -	Cost will be determined by the preceding audit
3.1.2.1. Implement an Electronic Document Management System (EDMS) for the central repository to ensure managed and organised access to documents, files etc.	█	█	█	█													R 500 000.00	Addition of R50 000 a year for licence fees need to be considered.
3.1.2.2. Establish user protocols to ensure that user data is stored and accessed centrally, not locally, using a standardised and systematic filing system (EDMS) and that user	█	█			█				█					█			R -	Assume no cost as this will be conducted internally.



Action	Short Term				Medium Term				Long Term				Costing	Justification	
	Year 1		Year 2		Year 3		Year 4		Year 5						
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
permissions are adequate. To be reviewed annually	Orange	Orange				Orange			Orange						
3.1.2.3. Develop a standardised cataloguing and referencing / numbering system applicable to all types of documents and files, taking note of the requirement to integrate information with National Information Management initiatives such as CIPS.	Orange	Orange												R -	Assume no cost as this will be conducted internally.
3.1.2.4. Catalogue and reference all existing electronic documents using the standardised referencing system & upload documents to the central repository		Orange	Orange	Orange	Orange	Orange	Orange							R -	Assume no cost as this will be conducted internally.
3.1.3.1. Establish the use of web maps and web mapping services to allow EDTEA users access to spatial data held centrally and elsewhere (e.g. KZN Wildlife).								Orange	Orange	Orange	Orange			R -	Assume no cost as this will be conducted internally.
3.1.3.2. Invest in and optimise the return from existing investments made by EDTEA through EKZNW in information generation and storage by developing their already significant information management capability and by establishing a formalised relationship to create digital links (primarily GIS data using Web GIS) to relevant data and information currently held by them.			Orange	Orange	Orange	Orange	Orange							R 100 000.00	This cost includes the cost of hardware upgrades only. A key issue for EKZNW is the lack of resources and EDTEA should aim to improve information management human resources.





Action	Short Term				Medium Term				Long Term				Costing	Justification	
	Year 1		Year 2		Year 3		Year 4		Year 5						
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
3.1.3.3. Establish MoUs with partners such as DWS, DARD, and COGTA to facilitate efficient information sharing														R -	Assume no cost as this will be conducted internally.
3.1.4.1. All authorisation applications should be accompanied by a spatial delineation (not just co-ordinate points) which can be built into EDTEA's GIS database. Authorised areas should likewise be captured.														R -	Assume no cost as this will be conducted internally.
3.1.4.2. The supply of GIS data as a deliverable should be written into the contracts for all service providers generating spatially referenced products such as plans or environmental assessments, together with specifications for meta-data and data format.														R -	Assume no cost as this will be conducted internally.
3.1.4.3. Identify where compliance and enforcement can support effective information collection and engage with them to include these opportunities in work programmes.														R -	Assume no cost as this will be conducted internally.
3.1.5.1. Develop capacity to generate and serve web maps or establish a relationship with EKZNW to undertake this.														R -	Assume no cost as this will be conducted internally.



Action	Short Term				Medium Term				Long Term				Costing	Justification
	Year 1		Year 2		Year 3		Year 4		Year 5					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
3.2.1.1. Develop the Department's website to better accommodate the Environmental Department's requirements for the sharing of plans and associated documents including GIS components to publish spatial plans.													R 25 000.00	Cost estimate based on the current service provider enabling the EDTEA website to allow for sharing of documents and other critical information.
3.2.1.2. Identify and standardise mechanisms and formats for sharing information with public clients													R -	Assume no cost as this will be conducted internally.
3.2.1.3. Develop the capacity to share spatial information publically using Web maps through the EDTEA Website													R -	Assume no cost as this will be conducted internally by GIS staff.
3.2.2.1. Assess, document and develop (where necessary) connectivity to allow reliable access and ability to transact with centrally stored information and relevant information from the internet from across all district offices.													R 200 000.00	Network infrastructure audit and recommendations
3.2.3.1. Establish an efficient web based Customer Relations System with appropriate mechanisms for registering customers, monitoring progress of the enquiry and channels for the supply of information.													R -	No cost has been assigned since this is a medium to long term action.
3.3.1.1. Establish a secure backup system to back up the central information repository including daily backup and offsite backup.													R -	Assume no cost since hardware and networking infrastructure already exist. This is an internal ICT function



Action	Short Term				Medium Term				Long Term				Costing	Justification	
	Year 1		Year 2		Year 3		Year 4		Year 5						
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
3.3.1.2. Segment the central repository to provide a mirrored repository for archiving of information more than 20yrs old.														R -	with server space to be provided by SITA  Assume no cost since hardware and networking infrastructure already exist. This is an internal ICT function with server space to be provided by SITA
3.3.2.1. Scan all hardcopy documents currently stored in the District Offices and store in the central repository using the standardised referencing system.														R 1 500 000.00	A cost estimate has been generated for the following parameters: Off-site scanning, including 3 metadata fields and rebinding of the documents, all calculated at 50c per page. The cost is estimated number of pages is 2.5 million for EIA's.
3.3.3.1. In consultation with the EDTEA Information Officer, establish and document the responsibilities of the Environmental Affairs section with respect to compliance with the Promotion of Access to Information Act.															



Action	Short Term				Medium Term				Long Term				Costing	Justification	
	Year 1		Year 2		Year 3		Year 4		Year 5						
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
3.3.3.2. If so required, in consultation with the EDTEA Information Officer, appoint deputy information officers to facilitate access to information held by the Environmental Affairs section.	Orange	Orange													
3.3.3.3. Catalogue all information held in terms of its nature and if it is automatically available information or if it would require access to be sought through the Act.	Orange	Orange	Orange	Orange	Orange	Orange	Orange								
3.3.3.4. Develop PAIA manual content regarding what information is held and how the information is accessible.					Orange	Orange	Orange	Orange	Orange						
3.4.1.1. District Offices to have internet bandwidth suitable for the use of CIPS.	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
3.4.2.1. Document referencing system to align with CIPS document referencing system.	Orange	Orange													

R -

Cost of establishing suitable bandwidth will be determined by the audit.

R -

Assume no cost as this will be conducted internally.



# ADDENDUM 1 – RECORDS OF CONSULTATION

**1st STEERING COMMITTEE MEETING FOR THE DEVELOPMENT OF AN ENVIRONMENTAL INFORMATION MANAGEMENT STRATEGY FOR THE KZN DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS (EDTEA) CONDUCTED ON THE 8th NOVEMBER 2016 AT THE SIMUNYE BOADROOM, 270 JABU NDLOVU STREET, PIETERMARITZBURG**

## PRESENT:

Mr. M. Moses	: KZN EDTEA
Ms S. Modise	: DAFF
Ms A. Mnyungula	: DAFF
Mr S. Radebe	: KZN Wildlife
Mr. J. Gillham	: Institute of Natural Resources (INR)
Ms L. Mathonsi	: KZN EDTEA
Ms. H. Sheard	: KZN EDTEA
Mr A. De Klerk	: Quartex
Mr M. Zondo	: KZN EDTEA
Mr S. Ziqubu	: KZN EDTEA
Mr C. Ngubu	: KZN EDTEA
Mr. L. Quayle	: Institute of Natural Resources (INR)

## Agenda

<b>Opening &amp; welcome</b>	MR. S. ZIQUBU
<b>Apologies</b>	ALL
<b>Adoption of agenda</b>	ALL
<b>Inception Report update</b>	INR
<b>Literature review</b>	INR
<b>Draft questionnaire template</b>	INR
<b>General matters</b>	ALL
<b>Way forward</b>	ALL



Closure

MR. S. ZIQUBU





**2<sup>nd</sup> STEERING COMMITTEE MEETING FOR THE DEVELOPMENT OF AN ENVIRONMENTAL INFORMATION MANAGEMENT STRATEGY FOR THE KZN DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS (EDTEA) CONDUCTED ON THE 31<sup>ST</sup> OF MAY 2017 AT THE SIMUNYE BOADROOM, 270 JABU NDLOVU STREET, PIETERMARITZBURG**

PSC meeting for Environmental Information Management Strategy  
 Date: 08 November 2016  
 Time: 10:00  
 Venue: SIMUNYE BOARDROOM



**PRESENT:**

Mr A. De Klerk	: Quartex
Mr M. Zondo	: KZN EDTEA
Mr M. Ndlovu	: KZN EDTEA
Mr S. Ziqubu	: KZN EDTEA
Mr C. Ngubu	: KZN EDTEA
Ms T. Gwamanda	: KZN EDTEA
Ms. H. Sheard	: KZN EDTEA
Mr. J. Gillham	: Institute of Natural Resources (INR)
Mr. M. Moses	: KZN EDTEA
Mr. L. Quayle	: Institute of Natural Resources (INR)

**AGENDA:**

Opening & welcome	Mr L. Quayle
Apologies	All
Adoption of agenda	All
Profiling Report update	



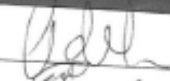



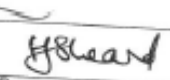
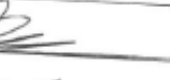

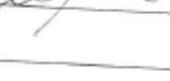


No	Name	Surname	E-mail Address	Telephone No.	Fax No.	Signature
1.	Malcolm	Moses	Malcolm.Moses@kznedtea.gov.za	0824618303		
2.	Seobwang	Madise	Seobwang.Madise@kznedtea.gov.za	0335927731	0862604377	
3.	Manda	Mngweni	Manda.Mngweni@kznedtea.gov.za	0333927731	0323728783	
4.	Sibhiwe	Kadebe	Sibhiwe.Kadebe@kznedtea.gov.za	0338451237		
5.	Jarryd	Gillham	Jgillham@inr.org.za	0794650116	-	
6.	Letty	Mathonsi	letty.mathonsi@kznedtea.gov.za	0828301983		
7.	Heather	Sheard	heather.sheard@kznedtea.gov.za	0829220700		
8.	Scelokuhle Ziqubu	Ziqubu	scelokuhle.ziqubu@kznedtea.gov.za	0338979235		
9.	Leo Quayle	Quayle	lquayle@inr.org.za	0723518723		
10.				0826699298		
12.						

- Comments received	INR
- Profiling outcomes	INR
- Any further comments	All
Visioning exercise	All
General matters	All
Way forward	All
Closure	Mr L. Quayle



THE DEVELOPMENT OF AN ENVIRONMENTAL INFORMATION MANAGEMENT STRATEGY  
FOR THE KZN DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND  
ENVIRONMENTAL AFFAIRS

Attendance register - 2<sup>nd</sup> Steering Committee Meeting - 31<sup>st</sup> of May 2017

NAME	ORGANISATION / DEPARTMENT	EMAIL ADDRESS	SIGNATURE
ANDREW DE KLERK	INR	andrew@auratex.co.za	
Mdu ZORRO	KZN-EDTEA	mduduzi.zorro@kznedtea.gov.za	
Mlu Ndlovu	KZN EDTEA	mlu.ndlovu@kznedtea.gov.za	
Selokuhle Ziqubu	KZN EDTEA	selokuhle.ziqubu@kznedtea.gov.za	
Caiphas Ngweni	KZN EDTEA	caiphus.ngweni@kznedtea.gov.za	
Thabisile GWAMANDA	EDTEA: HEAD OFFICE	thabisile.gwamanda@kznedtea.gov.za	
Heather Sheard	EDTEA: Waste Mgt	heather.sheard@kznedtea.gov.za	
Jarryl Gillham	INR	jgillham@inr.org.za	
Malcolm Moses	KZN: EDTEA	malcolm.moses@kznedtea.gov.za	
Leo Quayle	INR	lquayle@inr.org.za	



**3rd STEERING COMMITTEE MEETING FOR THE DEVELOPMENT OF AN ENVIRONMENTAL INFORMATION MANAGEMENT STRATEGY FOR THE KZN DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS (EDTEA) CONDUCTED ON THE 16th OF AUGUST 2017 AT THE SIMUNYE BOADROOM, 270 JABU NDLOVU STREET, PIETERMARITZBURG**

**PRESENT:**

Mr M. Ndlovu	: KZN EDTEA	Mr D. Cox	: INR
Mr M. Zondo	: KZN EDTEA	Ms H. Sheard	: KZN EDTEA
Mr S. Ziqubu	: KZN EDTEA	Mr J. Gillham	: INR
Ms T. Msani	: KZN EDTEA	Mr M. Moses	: KZN EDTEA
Ms N. Mhlongo	: KZN EDTEA	Mr L. Quayle	: Institute of Natural Resources (INR)
Mr C. Ngubu	: KZN EDTEA	Mr K. Nomsa	: KZN EDTEA
Mr A. de Klerk	: INR	Mr T. Gambu	: KZN EDTEA
Mr T. Mtethwa	: KZN EDTEA	Mr S. Mathenjwa	: KZN EDTEA
Mr B. Mathenjwa	: KZN EDTEA		

**AGENDA:**

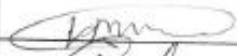
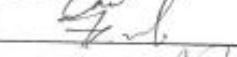

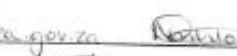

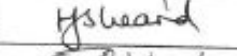

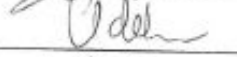

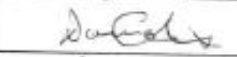



Opening & welcome	Mr. Mdu Zondo
Apologies	All
Adoption of agenda	All
Strategy Presentation	
- Vision	INR
- Elements of strategic importance	INR
- Key issues	INR
- Strategy	INR
- Workshop barriers and action points	All
General matters	All
Way forward	All
Closure	Mr. Mdu Zondo





THE DEVELOPMENT OF AN ENVIRONMENTAL INFORMATION MANAGEMENT STRATEGY  
FOR THE KZN DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND  
ENVIRONMENTAL AFFAIRS

Attendance register - 3<sup>rd</sup> Steering Committee Meeting - 16<sup>th</sup> of August 2017

NAME	ORGANISATION / DEPARTMENT	EMAIL ADDRESS	SIGNATURE
Mlungisi Ndlovu	EDTEA	ndlovum@kznedtea.gov.za	
Mduduzi Zorob	"	mduduzi.zorob	
Thando Msani	"	Thando@wethu.Msani@kznedtea.gov.za	
Nozuko Mhlongo	"	Nozuko.Mhlongo@kznedtea.gov.za	
Scelekuhle Ziqubi	Edtea	Scelekuhle.ziqubi@kznedtea.gov.za	
Heather Sheard	EDTEA	heather.sheard@kznedtea.gov.za	
Leo Quayle	INR	lquayle@inr.org.za	
Andrew De Klerk	INR	ANDREW@COUNTEK.CO.ZA	
Jarryd Gillham	INR	jgillham@inr.org.za	
DAVE COX	INR	Dcox@INR.ORG.ZA	
Ngubo Caprice	EDTEA	Caprice.Ngubo@kznedtea	
NOMSA KHANYILE	EDTEA	nomsa.khanyile@kznedtea.gov.za	
Malcolm Moss	EDTEA	Malcolm.Moss@kznedtea.gov.za	





THE DEVELOPMENT OF AN ENVIRONMENTAL INFORMATION MANAGEMENT STRATEGY  
FOR THE KZN DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND  
ENVIRONMENTAL AFFAIRS

Attendance register - 3<sup>rd</sup> Steering Committee Meeting - 16<sup>th</sup> of August 2017



NAME	ORGANISATION / DEPARTMENT	EMAIL ADDRESS	SIGNATURE
Thabani Gamba	EDTEA - AMATHA PLANNING	<del>Thabani.Gamba@kznedtea.gov.za</del> Thabani.Gamba@kznedtea.gov.za	
Sichali Mathenjwa	EDTEA - KEDM: ENVIRO PLANNING	sichali.mathenjwa@kznedtea.gov.za	
Thelwisa Mkhethwa	EDTEA: UGU: ENVIRO PLANNING	thelwisa.mkhethwa@kznedtea.gov.za	
MR. BZ MATHENJWA	EDTEA: NORTH REGION	bz.mathenjwa@kznedtea.gov.za	





## Record of user profiling interviews

Interviewee	Position	Date consulted
Malcolm Moses	Control Environmental Officer Grade B	23 <sup>rd</sup> February and 22 <sup>nd</sup> August 2017
Heather Sheard Ntuthuko Makhubu Dankie Buthelezi	Head Office (Control Environmental Officer) Control Environmental Officer Grade B Control Environmental Officer Grade B	21 <sup>st</sup> February 2017 and 15 June 2017
Jay Puckree Jethan Dass	Provincial Air Quality Director Scientific Technician	1 <sup>st</sup> March 2017 22 <sup>nd</sup> August 2017
Mduduzi Zondo Scelokuhle Ziqubu Thelemusa Mtethwa Caiphus Ngubo	Environmental Officer, Sustainable Planning Environmental Control Officer Environmental Control Officer Specialist Input: Hydrology	22 <sup>nd</sup> February 2017 22 <sup>nd</sup> February 2017 and 22 <sup>nd</sup> August 2017 10 <sup>th</sup> April 2017 22 <sup>nd</sup> February 2017
Xoli Madiba	uMgungundlovu Environmental Control Officer Grade A	30 <sup>th</sup> March 2017
Boyd Escott	Manager of Biodiversity, Spatial Planning and Information	28 <sup>th</sup> February 2017
Omar Parak Alfred Matsheke	Both Control Environmental Officer Grade B	22 <sup>nd</sup> February 2017 and 22 <sup>nd</sup> August 2017
Letty Mathonsi Xolani Biyela	Control Environmental Officer Environmental Support	22 <sup>nd</sup> of February 2017 and 22 <sup>nd</sup> August 2017 23 <sup>rd</sup> February 2017 (done telephonically)
Kim Van Heerden Ian Felton	uMgungundlovu District Environmental Manager Assistant Manager for Environmental Planning for uMgungundlovu DM.	2 <sup>nd</sup> March 2017

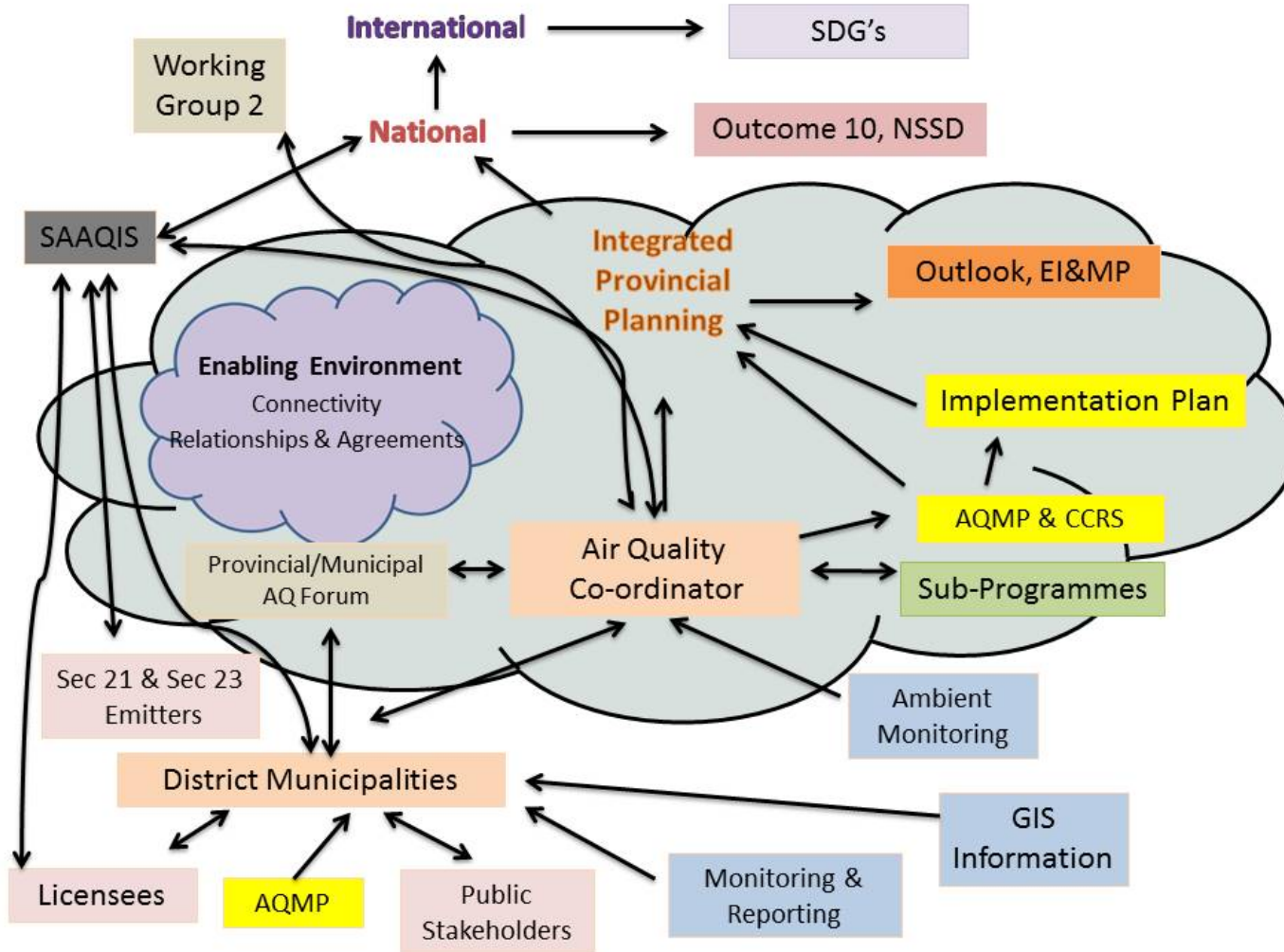


## ADDENDUM 2 – INFORMATION FLOW MAPS



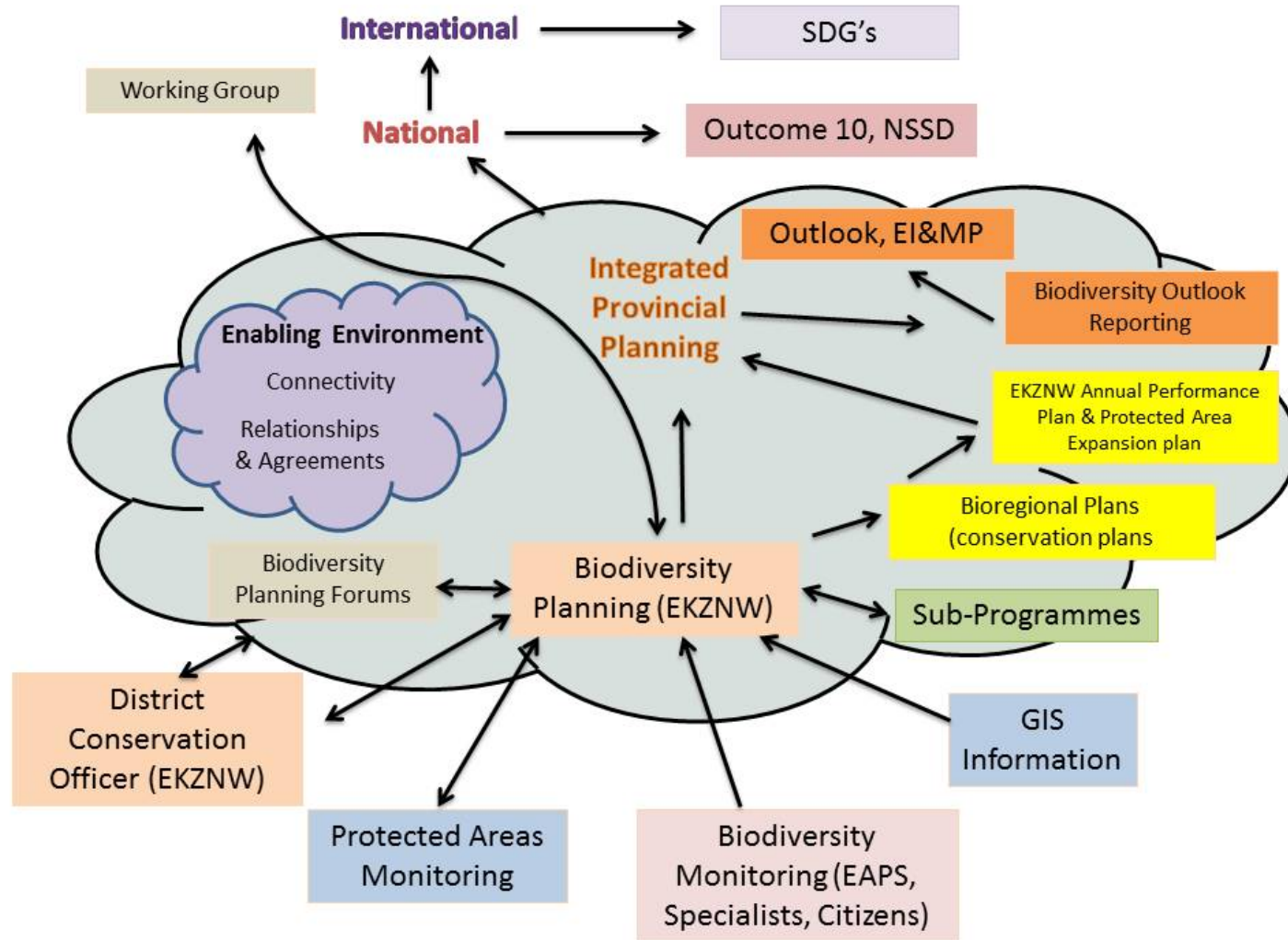
## Environmental Quality Management - Air Quality





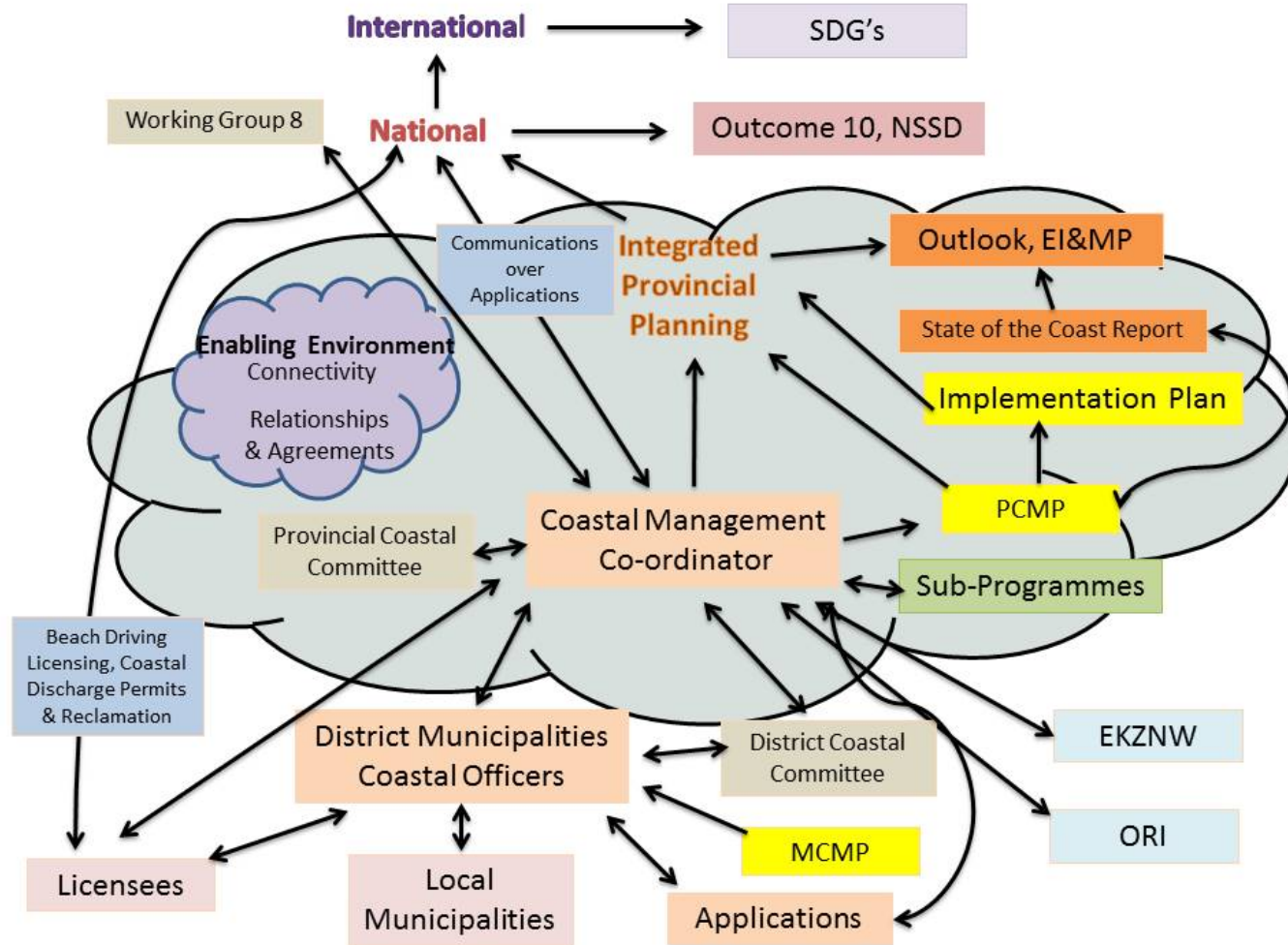
## Biodiversity Management



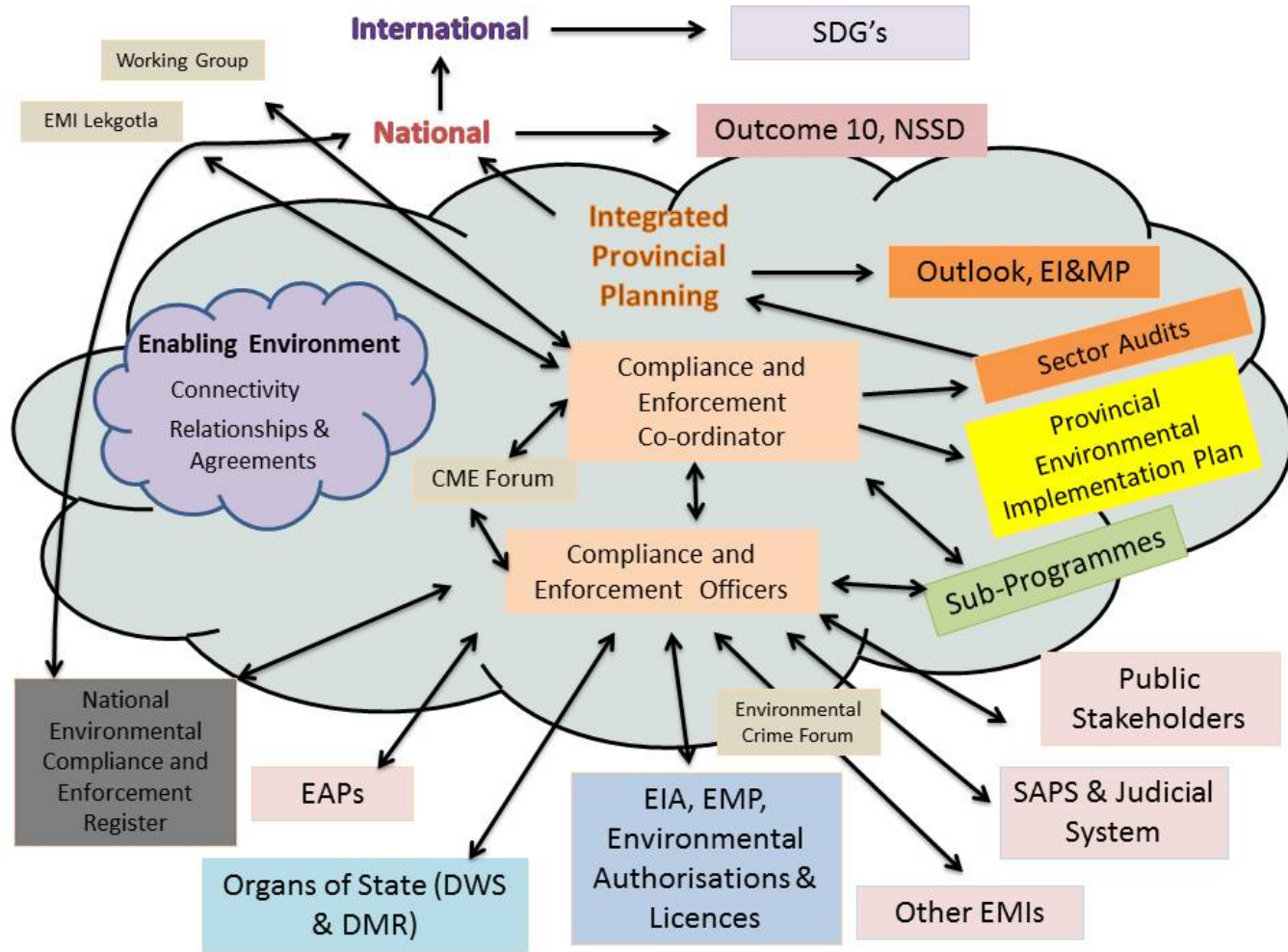




# Integrated Coastal Management

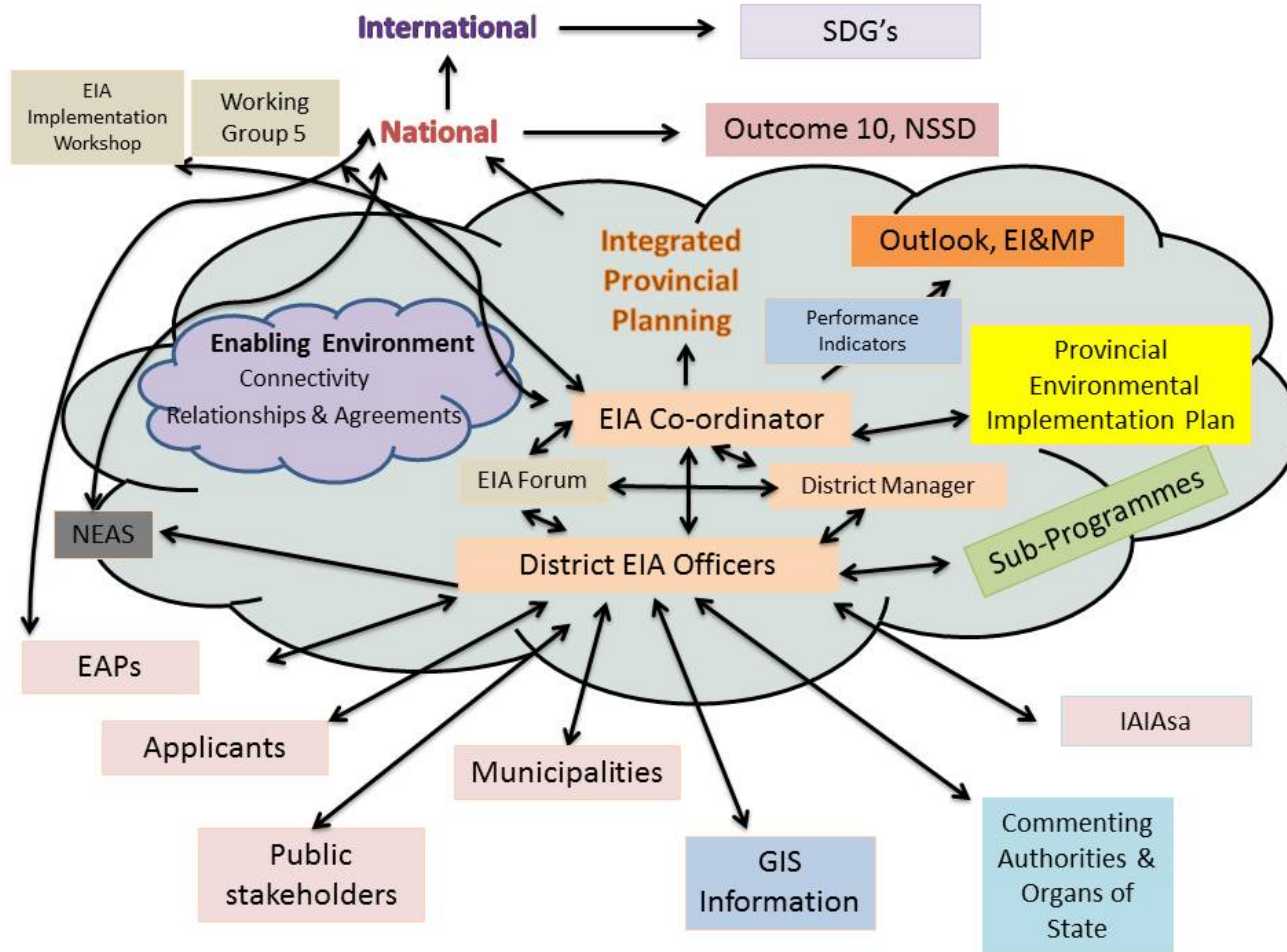


### Compliance and Enforcement Management



## Environmental Quality Management - EIA

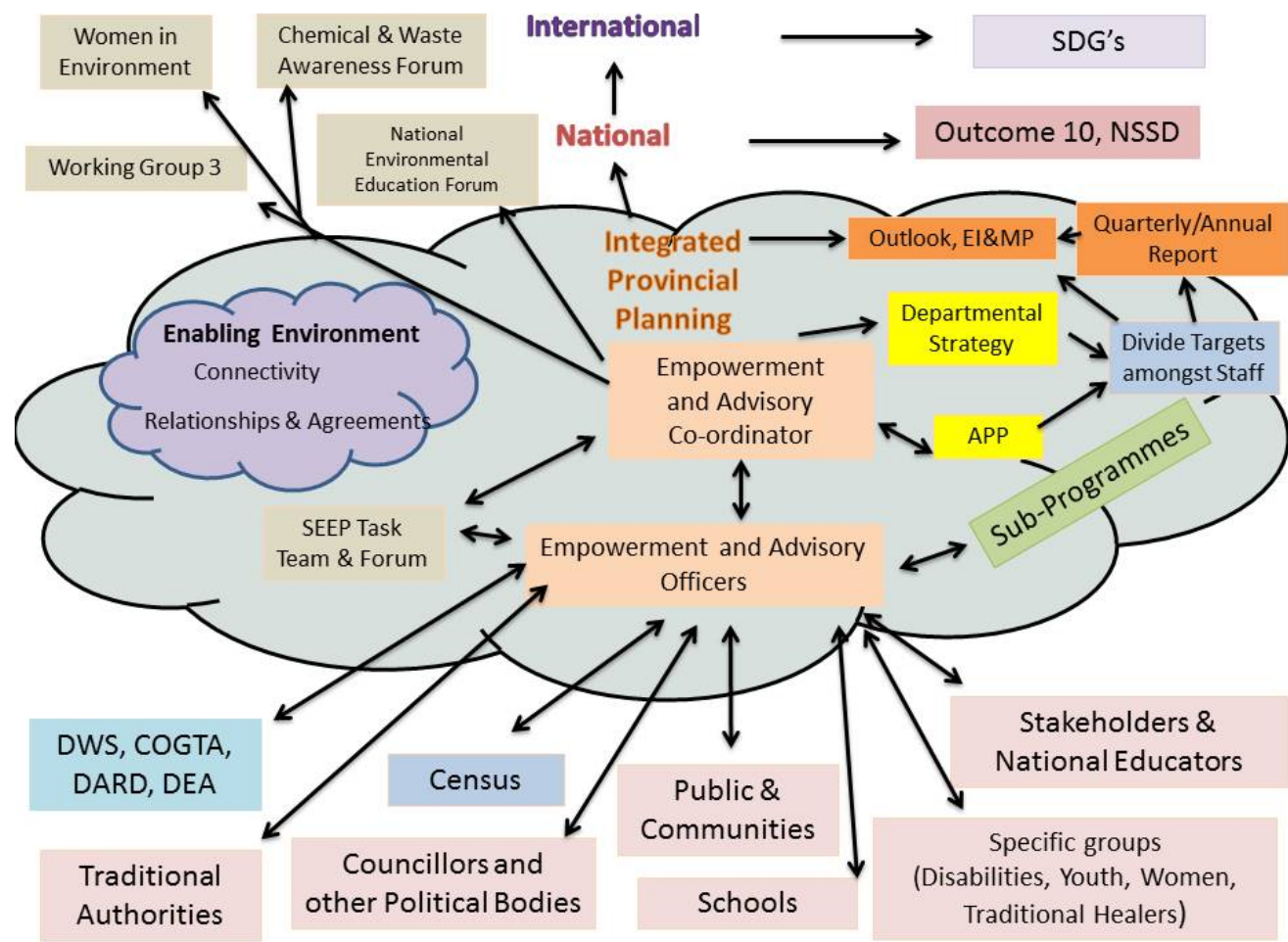




### Empowerment and advisory







## Waste and Pollution Management

