



**DEPARTMENT OF WATER AFFAIRS AND FORESTRY
CHIEF DIRECTORATE: SCIENTIFIC SERVICES**

INCEPTION REPORT

MONITORING AND ASSESSMENT INFORMATION SYSTEMS
MAIS Phase 3

Draft for discussion and comment
March 2001

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Monitoring and Assessment Information Systems

Analysis, Design, Implementation Plans and Capacity Building

MAIS 3

1 Introduction

1.1 Purpose of this Document

The history, scope, the proposed process to achieve the project objectives, and the project schedule for Phase 3 (MAIS 3) of an effort to co-ordinate water monitoring and assessment of the Department of Water Affairs and Forestry (DWAF) are presented in this document.

This inception report serves as a discussion document for role players who will participate in the project. Its intended audience has four components; (1) DWAF management who provide approval and the mandate, (2) project members who will be directly involved in activities, (3) DWAF staff who are monitoring and information stakeholders, and (4) key external stakeholders.

The proposed process to achieve the project objectives has been described in this document. There are likely to be changes to the details of the process as greater understanding develops during the course of the project. Stakeholders are requested to comment on the approach and suggest solutions to perceived weaknesses so the approach can be refined or modified.

1.2 MAIS Goal

The overall goal of this multi-phase initiative is to construct a Monitoring and Assessment Information System (MAIS) that delivers water-related information that is effectively used for decision-making in institutions involved in water management. The date by which all the significant milestones should have been accomplished is April 2004.

The results of this phase will strengthen the link between information use and available data by providing a structured process to design integrated monitoring programmes based on specific information requirements. A MAIS master system plan (MSP) for the information system will be developed as part of the project and subsequent applications will conform to the MSP and/or add functionality as needed. The MAIS MSP will be integrated into the overall DWAF MSP. Additional project components will address procedures to ensure adequate skilled capacity can be developed and to identify issues of corporate governance of the MAIS.

Application of the integrated monitoring programme design process to areas not covered in this project's pilot study will be planned in the final stages of this project and executed under subsequent phases or other projects.

1.3 Critical Success Factors

The success of this effort depends on the presence of:

- * adequate specialist skills on the project team,
- * sufficient funding to complete the design process,
- * corporate support for establishing MAIS governance as an integral part of the Department's monitoring and assessment information system,
- * interested and co-operative DWAF staff to develop the internal capacity and knowledge base, and
- * effective participation by key stakeholders.

1.4 Background to MAIS Development

An analysis of DWAF's monitoring and assessment capability was initiated in response to mandates created by new water-related legislation and changing requirements from information users. **Table 1** describes the activities conducted in earlier phases of MAIS and the output from each phase.

Table 1 Phases in MAIS strategy development and implementation

MAIS Phase	Activities	Output – Recommendations
1	Conducted in late 1999 – described stakeholder concerns related to DWAF's efforts to create and manage water information	A strategy should be developed to address the identified concerns.
2	Conducted in early 2000 – Clarify the concerns and develop the strategy (described in Section 1.5 below)	Strategy accepted by DWAF Water Resources Management Committee and approved for implementation by DWAF Management Committee
3	This project – Initial investigations to determine general data requirements, conduct detailed analysis of selected requirements, develop generic integrated monitoring programme design guides, and integrated implementation plans to apply the design guides, build capacity, and establish requirements for MAIS corporate governance.	

1.5 MAIS Strategy

A clear consensus emerged from stakeholder concerns that more integration is needed with respect to providing relevant, consolidated information for different hydrological components (for example, surface and ground water) with excellent, stable, and consistent information technology (IT) platforms. The MAIS strategy, therefore, focused on the need to provide a more co-ordinated effort to identify, produce and use relevant, water-related information.

Four conditions, as shown in **Figure 1**, were identified during Phase 2 that are together necessary and sufficient for the establishment of an integrated MAIS. Two prerequisites were also identified that are not directly part of MAIS, but must be completed by others in collaboration with MAIS, in order to successfully accomplish the objective. The prerequisites are (1) corporate governance of IT in DWAF is effective in establishing consistent data management, access, and storage and (2) the organisational structure and business processes of the Department accurately reflect its mandate and core functions.

1.5.1 Model for DWAF's Water Monitoring and Assessment Information System

A functional model, developed in Phase 2, for DWAF's Monitoring and Assessment Information System underpins the strategy. The model is shown in **Figure 2**. Its main features are a number of monitoring and assessment programmes (hereafter referred to as integrated monitoring programmes) that all have the same functional components, namely:

- * Data acquisition
 - ♦ acquires data within DWAF or from other organisations,
 - ♦ liaison with other organisations to influence their monitoring or data transfer standards
 - ♦ measurements, sample collection, or analysis executed by Catchment Management Agencies (CMAs) or DWAF Regional offices would form core activities

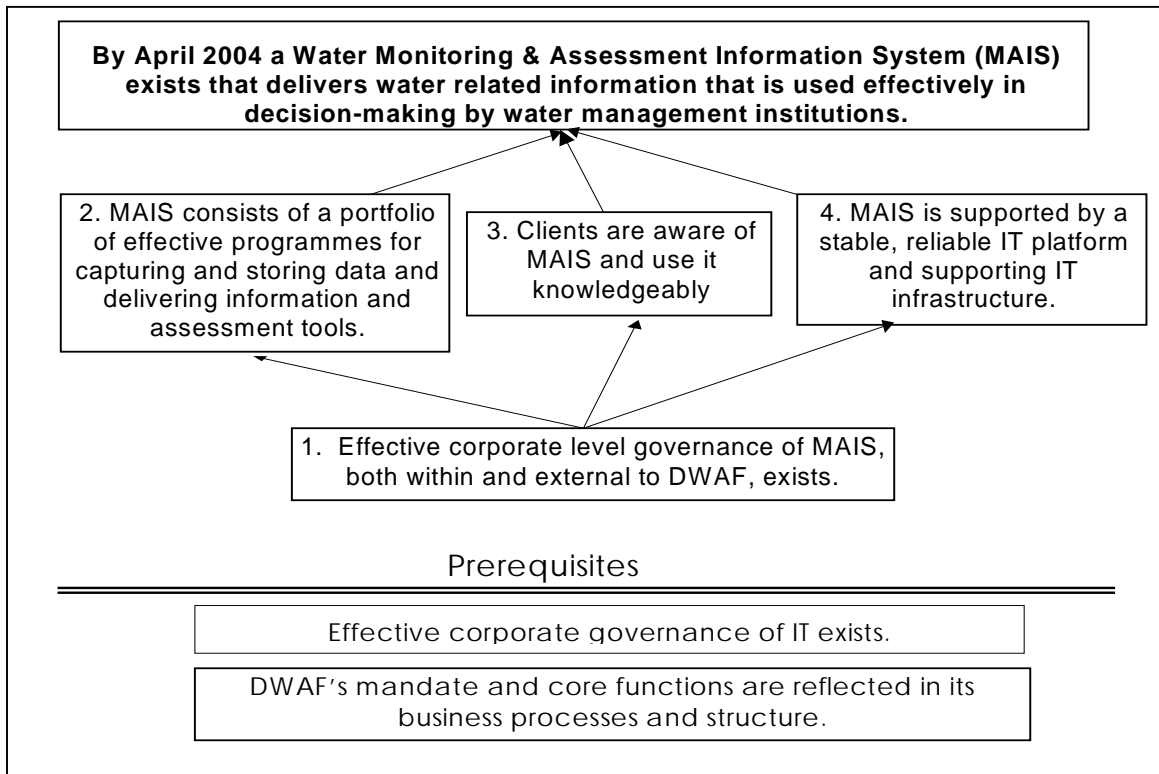


Figure1 Necessary conditions for the proposed Monitoring and Assessment Information System (MAIS) and two prerequisites that are dealt with outside this strategy.

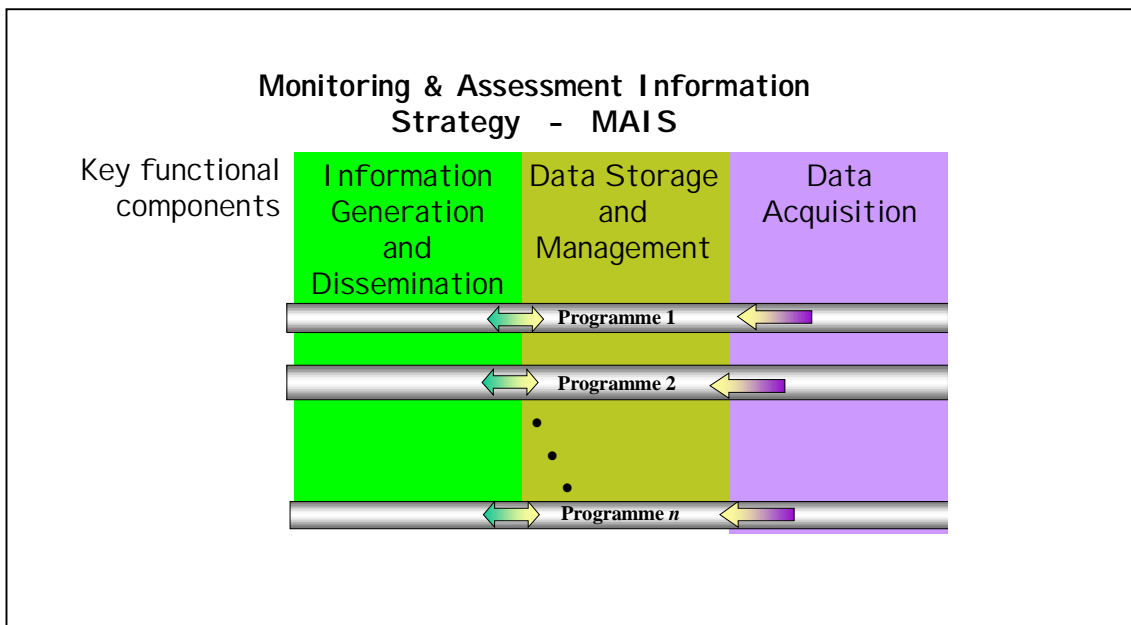


Figure 2 Functional model of MAIS, showing the three key functional components shared by the portfolio of integrated monitoring programmes that comprise MAIS.

- * Data storage and management
 - ♦ controls maintenance, security, access to data,
 - ♦ enforcement of corporate specification for data formats,
 - ♦ provision of access through whichever media is most appropriate,
 - ♦ preparation and delivery of standard data on a regular basis, and
 - ♦ other similar activities.

- * Information generation and dissemination
 - ♦ converts data to information,
 - ♦ arranges with DATA STORAGE AND MANAGEMENT to store processed information,
 - ♦ preparation and distribution of reports,
 - ♦ modelling,
 - ♦ statistical analysis,
 - ♦ patching of missing data,
 - ♦ other similar activities

The programmes are combined as a coherent portfolio into a corporate MAIS, with the content of the DATA ACQUISITION component defined by the INFORMATION GENERATION AND DISSEMINATION requirements. Integrated monitoring programmes are entities defined within MAIS. They are the sets of data acquisition, storage, and management requirements, together with the analysis and publication or access requirements that are necessary to produce a specific series of information products.

Integrated monitoring programmes are likely to be able to share the same logistics and part of the technical infrastructure required for their DATA ACQUISITION functions. They will also share the same monitoring and assessment system-design principles and data and information standards, naming conventions, *etc.* **Figure 3** shows provisional infrastructure relationships for MAIS. Complex knowledge products are described in Section 2.2.

1.5.2 *Benefits of the MAIS Model*

An important implication of the functional model and the provisional infrastructure is that different integrated monitoring programmes would be able to benefit from sharing infrastructure and human resource capacity to perform certain core functions. For example, it is anticipated that almost all the integrated monitoring programmes in MAIS would share the same IT platform and infrastructure for their DATA STORAGE AND MANAGEMENT function. One would expect more integrated monitoring programme-specific requirements to exist around INFORMATION GENERATION AND DISSEMINATION function, because this is where matching with specific user requirements occurs. However, there are a number of ways in which the information generation function of each of the integrated monitoring programmes can be facilitated by sharing generic information generation processes and tools such as graphics or statistical software applications.

A number of efforts, many quite successful, are already underway to report information in a systematic manner. This approach is not intended to obstruct those efforts, but to provide an overall framework in which they, and others, can benefit from similar development.

These benefits and overall consistency will only be achieved with a coherent MAIS system backed by a strong level of corporate governance. The governance must apply to the interactions within each integrated monitoring programme, between all integrated monitoring programmes, and between DWAF and external organisations involved in water monitoring and assessment.

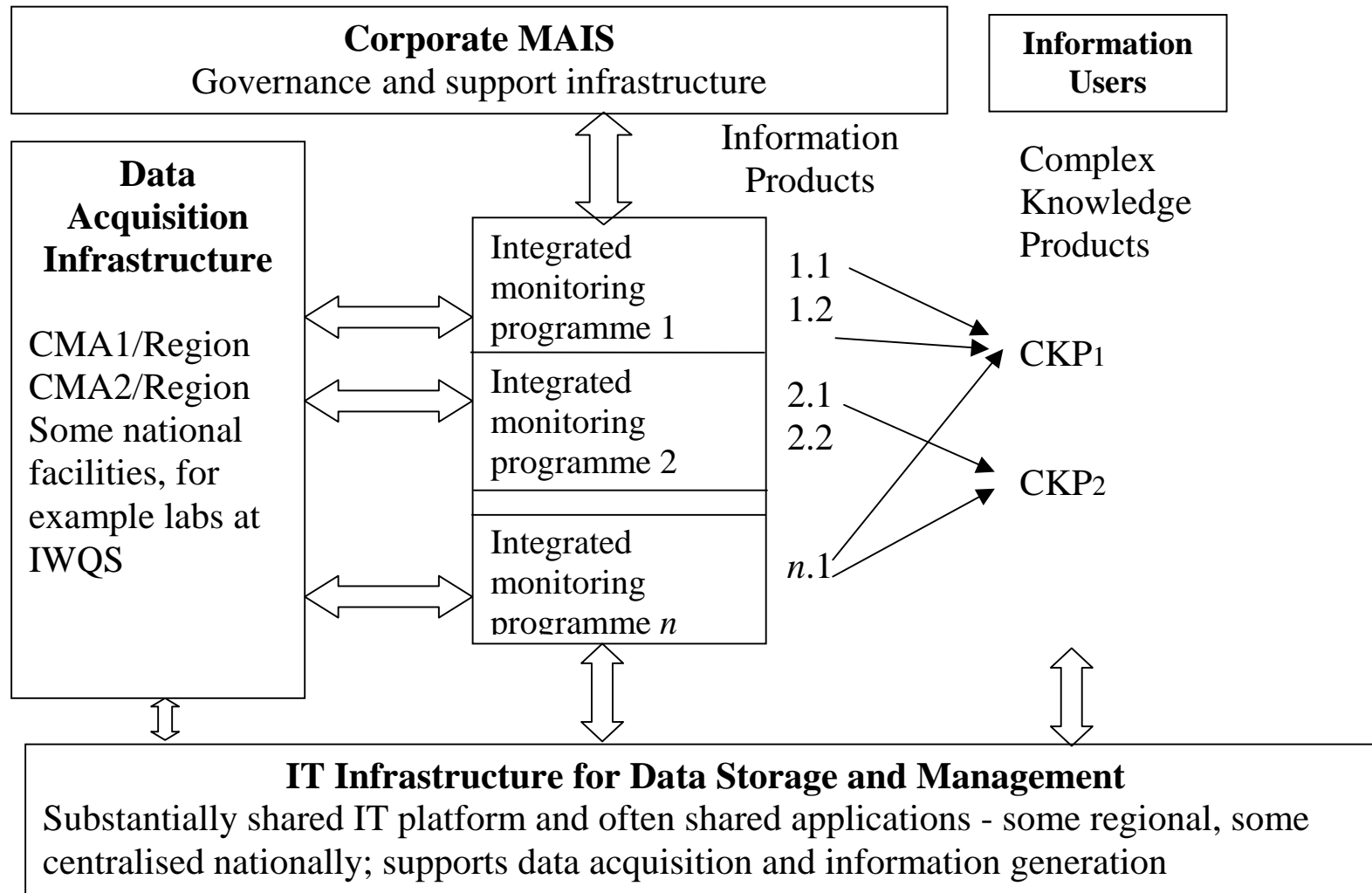


Figure 3 Provisional infrastructure for MAIS

1.5.3 Corporate Governance of MAIS

A key recommendation for an integrated monitoring and assessment system was that strong corporate governance for MAIS should be established in DWAF. Provision is made early in the Phase 3 plan to present a preliminary design for MAIS corporate governance requirements and to refine the design after more detailed analysis. MAIS is likely to be a mission-critical system for DWAF and one must ensure its design supports the Department in fulfilling its mandate and MAIS operations are sustained in the organisation.

The integration of existing disparate operations into a single co-ordinated information system requires a balance of consistency and control with individual accountability for distinct integrated monitoring programmes. On one hand, co-ordination and control will be required to enable synergies between programmes, allow identification and usage of reusable functionality, and reduce duplicated effort. On the other hand, the success and long-term effectiveness of integrated monitoring programmes are likely to require accountability at a single point to ensure the existence and functioning of the diverse components of a integrated monitoring programme to meet its client's needs. The governance structure must account for these opposing requirements.

The business process analysis methodology will be used to guide the development of MAIS governance requirements in terms of specific policy and procedural needs. The actual implementation of the corporate governance of MAIS should proceed in parallel with implementation of the restructuring initiative currently underway in the Department.

1.6 Participation with Corporate Information Technology Management

Information technology is a core enabling technology in each of the components of MAIS. It is obvious there are many and strong interfaces between MAIS and the Department's corporate IT structures. This design and implementation will therefore be conducted with close participation by the IT function in DWAF. The responsibility of Corporate IT Management will be to supervise and provide input to the preliminary design for the MAIS Master System Plan, design and develop implementation plans for data storage and management infrastructure, and provide resources to lead business process analysis. The migration of some of the functions to the State Information Technology Agency (SITA) is likely and will be addressed as appropriate.

1.7 Collaboration with Water Resources Restructuring Initiative

The current initiative to re-structure the water resources functions of the Department should have strong linkages with the MAIS effort. Information Management is one of the six key functions identified within water resources management, together with policy and strategy, physical implementation, regulatory functions, institutional support, and auditing. All these functions deal in some way with information and the business process analysis conducted in MAIS could be invaluable to the re-structuring efforts. Communication between the re-structuring project team and the MAIS project team will be frequent.

2 MAIS 3 Project Scope

This third phase of MAIS is intended to provide a process that will facilitate the development of a monitoring and information system in line with the functional model developed in Phase 2 and described in Section 1.5, above. Condition 1, effective governance as shown in Figure 1, will be addressed by the development of recommendations for corporate MAIS governance; first with preliminary recommendations following an initial investigation, then refined after later detailed analysis. Condition 2, a portfolio of effective programmes, will be addressed by

the provision of generic integrated monitoring programme guides and additional capacity built during their development. The communication and capacity building components of the project will address Condition 3, knowledgeable clients. Condition 4, effective IT platforms, will be addressed by the development of a master system plan for MAIS and implementation of governance recommendations.

The project outcome will be a process to streamline and rationalise data acquisition and data access based on information reporting requirements. Phase 4 will be implementation of a portfolio of projects, planned at the end of this Phase 3, to apply the designed process to the range of integrated monitoring programme requirements.

While the recommended changes will be focussed on DWAF's data acquisition and information dissemination activities, the Department's data relationships with external organisations, including central government departments as well as regional and local institutions, are seen as fundamental to the success of improving the use of water-related information.

2.1 Project Deliverables

Output from the project is expected to be:

1. This inception report.
2. An overview report containing an analysis from a high-level, low-detail perspective of the information required to fulfil DWAF's main water management functions.
3. A business process analysis consolidated report of the information requirements that will relate those requirements to data and data analysis needs.
4. A design for one or more integrated monitoring programmes to produce the information required for the information products. The integrated monitoring programme design will include specifications for data acquisition, for data storage and management, and for applications to generate information.
5. A generic integrated monitoring programme design guide that describes a process of designing integrated monitoring programmes from the perspective of information users' needs and which addresses the three main functions namely data acquisition, data storage and management, and information generation.
6. Proposals for corporate governance to maintain the monitoring and assessment information system.
7. A high-level MAIS master system plan for an appropriate information system.
8. An implementation plan for a portfolio of projects to apply the generic integrated monitoring programme design guide to integrated monitoring programmes (or parts of integrated monitoring programmes) that were not dealt with in Phase 3.

2.2 Complex Knowledge Products

In order to ensure the effective use of data, the starting point for this process design will be the end products of the data collection efforts, that is, complex knowledge products that are subsequently used in the performance of water management functions. "Complex knowledge products" indicate any form of information use and are not restricted to publication of paper documents. The primary perspective would be the production of significant, complex reports that recur on a time interval or cover specific geographic areas. Complex knowledge products would often include the information products from the integrated monitoring programmes as a part of their input requirements. The definition includes those reports that address specific issues, such as a research project, or a unique incident that requires investigation and reports, such as a fish kill, if a similar reporting process will occur again in another instance.

Some examples of such complex knowledge products would be:

- * Policy and strategy
 - The National Water Resources Strategy,

- Catchment Management Strategies, and
- Comprehensive determinations of Resource Directed Measures.
- * Physical implementation
 - Decision support for infrastructure operations,
 - Sequential information required to decide on a water use licence request,
 - Compliance of water users with licence conditions or general authorisations,
 - Assessment of potential impact for the determination of licence conditions, and
 - Strategic environmental assessment reports for water allocation
- * Auditing
 - Annual reports on the status of water resources, including compliance with resource quality objectives, and
 - Compliance of DWAF-owned dams with regulations governing dam safety.

MAIS responsibility would be to supply appropriate information products to facilitate the complex knowledge product owners' efforts. Examples of the relationship between complex knowledge products and information products delivered by MAIS is shown in **Figure 4**. The elements are similar to those shown in the functional model in Figure 2 and the infrastructural model shown in Figure 3, except they have been transposed so that the key functional components are shown in the horizontal plane and instances of each of those components shown in the ovals.

The lower ovals show complex knowledge products that typically require information products or data contained in several of the data storage units or from several of the data acquisition efforts. The graphic is intended to present the configuration and does not include all the instances of the components nor show all the links between them.

MAIS 3 will identify appropriate information products that will facilitate development of complex knowledge products and design appropriate data acquisition, storage, and management, information generation and dissemination procedures to produce them.

Beginning the analysis from the information user's perspective has the advantage of providing clear criteria for selection of data collection priorities. In addition, the products have a defined audience and evaluation of the effectiveness of the supplied information can be determined. A further benefit will be the initiation of closer liaison between the Department's data providers and its information users.

The entire range of data requirements is expected to be very large, therefore, a representative selection of information products will be made and integrated monitoring programmes designed to supply that information. Generic design guides will describe the process so it can more easily be applied to other information products.

2.3 Capacity Building in MAIS

Skills required to continue the design process, establish policies, guidelines and standards, and to maintain and operate the information system are likely to exceed those available currently. Mechanisms to include a number of participants in this project and to establish a strategy to continue skills development for MAIS-related activities are integral parts of the project. More detail on the capacity building activities is given in Section 4.3.

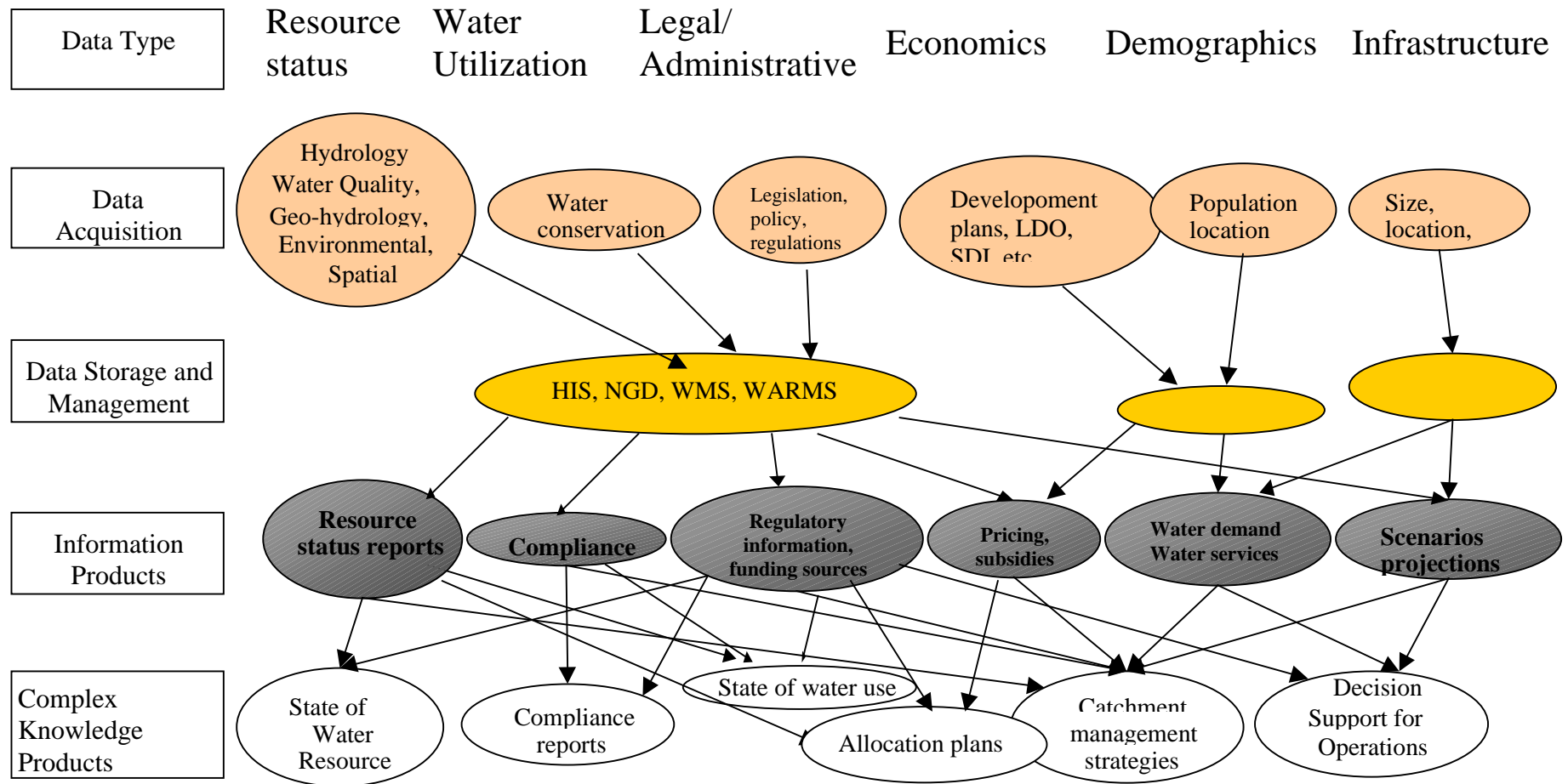


Figure 4 Examples of complex knowledge products derived from MAIS information products

2.4 Corporate Infrastructure for MAIS

Co-ordination of data acquisition and data storage activities is likely to be a centralised activity, with the corporate MAIS providing design specifications, auditing, and implementation support. Corporate MAIS is envisaged as a support facility, serving primarily the information product owners with complex knowledge product owners as clients. MAIS would provide support for monitoring design, liaison with other government departments, liaison with DWAF IT governance, and liaison among data acquisition activities. It will be responsible for developing some policy aspects and providing input into regulations.

Issues addressed by MAIS corporate governance could include such things as:

- * Establish point of accountability for providing effective water-related information
- * Funding (internal and external)
- * Acquisition of technology
- * Ensure availability of skilled resources
- * Establish roles and responsibilities
- * Continued evaluation of information delivered to information users
- * Research and development
- * Establish and maintain quality assurance procedures
- * Policies and procedures, including the following items:
 - Data collection
 - Storage
 - Delivery
 - Use
 - Development, testing, deployment, implementation, and maintenance of information systems
- * Commercial models for data acquisition
- * Properly designed systems with appropriate standards
- * Infrastructure for monitoring/measurement
- * Liaison with SITA
- * Information delivery
 - Access
 - IT infrastructure
 - Appropriate information
- * Communication strategy
- * Compliance to statutory requirements

2.5 Funding

Investigation into potential sources of funding to support the development of an effective information system will be an integral part of the project. Potential sources include budgets within DWAF, other domestic sources, and international initiatives. Efforts will be made to identify sources for specific components, for example, establishing training courses, and for more general, and more long-term, support. This investigation will include discussions

- * within the Department to determine possibilities for
 - joint funding of some parts of the development and
 - collaboration with existing internationally funded projects with related objectives,
- * discussions with South African institutions to identify the possibility of joint development initiatives,
- * discussions with international agencies to determine whether MAIS development is consistent with their objectives and eligible for funding.

3 Project Plan

Implementation of the MAIS strategy is planned for execution in six modules that are described in the following sections.

3.1 Inception Module

This inception module is a detailed planning exercise to construct plans for the project at sufficient detail for execution of the initial activities, with more general plans for later modules.

The output from the module will be

- * this inception report, and
- * a project plan listing activities, their duration, and the resources assigned to the activity for the Initial Investigation, and generalised activities and estimates of their duration for later modules

3.2 Initial Investigation Module

The initial investigation module is the initiation of the plans developed during the inception phase. Assembly and analysis of background information to create an operational definition of complex knowledge products will comprise the first major set of activities. Stakeholders involved in the production of the complex knowledge products that serve the main water management functions of the Department will be identified and interviews conducted with them to develop a description of their information needs. Results will be used to describe a consolidated set of the information required as input to the combined set of complex knowledge products. Results of the interview analysis will also include:

- * the preliminary identification of the information products that exist or could be developed to meet identified needs for information,
- * identification of candidate groupings of information requirements that will be combined to form integrated monitoring programmes (as shown in the models in Figures 2 and 3),
- * preliminary design recommendations for MAIS governance requirements,
- * high-level design specifications for a MAIS master system plan to address information technology infrastructure, and
- * a draft communication strategy that identifies stakeholders and the process to interface with them..

A description of existing monitoring activities – data acquisition, data storage and management, and information generation and dissemination – will be compiled as a parallel activity. The description will include the present delineation of monitoring programmes and the rationale for the delineation. General descriptions of human resource skills applied to design and operations will also be included.

Communication with stakeholders will begin with this module, including constitution of a Task Team to facilitate project co-ordination and communication, presentations to a wide range of stakeholders who will be affected by project activities, and orientation sessions with those identified as critical to the production of complex knowledge products.

A capacity building plan that describes in general the approach to develop sufficient expertise to operate and maintain MAIS during and after Phase 3 will be developed. Concurrent project capacity building activities will be initiated, primarily the identification and secondment of selected DWAF staff who will participate in the interviews and subsequent analyses.

Preliminary investigations to identify potential sources of funding will also form a component of this module.

The final component of this module will be the construction of detailed plans for the analysis and design module that follows.

3.3 Business Process Analysis Module

This module will increase the detail of the analysis begun in the previous module. The business processes required to produce the groupings of information requirements identified in the Initial Investigation will be agreed.

The analysis will identify inputs, governing controls, outputs and mechanisms required to produce the information. Inputs will be broken down to the point where data requirements can be identified. Mechanisms required for relevant activities will be described in terms of information system requirements, including items such as statistical analysis, human resource skills, and technical infrastructure. Controls that govern the activities will be described in terms of policies and procedures required, guidelines, and other related items. Those requirements that are similar in several related activities will indicate the need for co-ordination in MAIS governance. Specialists in business process analysis, information provision, and integrated monitoring programme design will comprise the teams conducting the information gathering and analysis.

The results of the analysis will be documented in a report that consolidates all the data requirements identified as essential to the inputs and the analyses required to produce specific information during generation of information products. Feasible integrated monitoring programmes will be identified that combine related data acquisition and analysis requirements and create optimum synergy by their combination. More specific criteria for inclusion in a integrated monitoring programme will be developed during the analysis.

Detailed plans for the subsequent design module will be developed following this analysis.

3.4 Selected Integrated Monitoring Programmes Design Module

The integrated monitoring programmes identified in the previous module will be designed by specification of criteria for:

- * requirements for information generation, including data content and types of analyses required
- * data collection, including measurement locations, frequency, *etc* and sample analysis requirements
- * data storage and management, including quality assurance requirements, hardware, software, access, *etc*

The design process will include participation by both information users and information providers to ensure an opportunity for negotiation of a feasible design that meets the information needs to the maximum extent possible within practical limits. The intention is to design a integrated monitoring programme that will provide the information required to produce the complex knowledge product. This is likely to include acquisition of data collected from other agencies. Liaison mechanisms will be required and will be addressed as part of the design process.

Capacity building and extension of project resources is addressed in this module though the use of DWAF staff assigned to the project to assist in the design activities.

3.5 Development of Generic Integrated Monitoring Programme Design Guides

The design process followed in the previous module will be documented as a generic process for application to other information products. The Guides are intended to serve as reference documents for continued MAIS implementation and will contain relevant design criteria and standards.

3.6 Development of an Implementation Plan

The implementation plan will be based on knowledge gained during the execution of the project activities. Implementation priority selection will be informed by the results of the initial investigation and the scope of the integrated monitoring programmes designed. Results of the investigation of funding sources will also influence implementation priorities.

Experts in application of information technology to business processes will refine and add detail to the MAIS master system plan for the information system, under supervision of the DWAF IT Integrator. The proposed framework for MAIS corporate governance will be refined with additional detail during the analysis and documented in a report to management.

4 Communication and Capacity Building

4.1 MAIS 3 Task Team

On-going communication will be effected through the establishment of an inter-directorate Task Team on monitoring information. The Task Team should comprise stakeholders who are information providers, information users, and information technology specialists.

The role of the proposed Task Team would be to provide input to the MAIS project team, review progress, provide liaison within DWAF Directorates, and review interim deliverables. This mechanism would play a major role in securing broader DWAF input into the design process and dissemination of project learning. The Task Team will have meetings and workshops outside their normal operations, therefore, there must be formal agreements with their supervisors and understandings with their colleagues. Each member will act as a communication representative who will facilitate the flow of information between stakeholders and the project team.

The overall purpose of the Task Team will be to address;

- * Institutional collaboration
- * Priority data / information requirements
- * Standardisation of methods, procedures, formats, naming conventions, quality control
- * Information management tools
- * Identification of data gaps or duplication
- * Reporting

4.2 Stakeholders

Stakeholders are persons, groups or institutions who will be affected by the changes to the status quo, or those who have vested interests in these changes. MAIS, by its integrated nature attracts a variety of stakeholders. The challenge is how to involve all the stakeholders to gain maximum mutual benefit from their participation. A coordination process must ensure stakeholder efforts complement and reinforce each other, leveraging resources while avoiding duplication and irrelevance.

Effective stakeholder involvement will be a critical component of MAIS. A stakeholder communication strategy for MAIS will be developed as part of the Initial Investigation. A major objective of the communication strategy is to achieve a wide understanding of and support for MAIS as a corporate water information system. There must be broad stakeholder participation to enhance ownership of, and accountability for, project outcomes. The successful implementation of the communication strategy requires a communication network, adequate funding, and adequate specialist skills. The main stakeholders identified in the strategy and their roles and responsibilities are outlined in **Table 2**. Information exchange will be continuous throughout the project to obtain stakeholder input and to provide technical information that would help stakeholders embrace the new technology, its management, and the resultant change. Information provision will address the availability and distribution of timely and relevant project information, appropriate notification and proper stakeholder access to it. Communication mechanisms with stakeholders will vary among the distinct groups identified. Presentations to describe plans, status, and obtain feedback and request approval to proceed will be the most common mechanisms for interactions with DWAF management.

4.3 Human Resource Capacity Building

Access to the required HR capacity is a key success factor to the development, implementation, maintenance and effective use of MAIS. A capacity building strategy will be developed as a component of MAIS 3 after a preliminary skills assessment during the initial investigation. The objective of the strategy is to establish institutional capacity within water management institutions to develop, maintain, and use MAIS. The required capacity consists of;

- * A core team of monitoring and assessment specialists within DWAF to establish MAIS and support its on-going governance.
- * The teams that will design and operate the integrated monitoring programmes (skills in monitoring design and operation and in specialist fields, for example, hydrology, microbiology, *etc*)
- * Users of water information who are capable of effectively using MAIS information products in executing their functions.

A human resource development plan will be established during MAIS 3 and implemented as part of MAIS 4 or in other projects.

It is envisioned that a significant amount of capacity building will take place during MAIS 3. For example, the enhancement of the capacity required for the MAIS core team could be achieved through the participation of Task Team members in the design and development of MAIS.

Candidates from DWAF staff will be identified and requested to participate in various parts of the project from inception through to roll-out. It is envisaged that this group will be mainly from Directorates responsible for providing water-related information and will contribute to the initial investigation and subsequent design components.

Table 2 Identification, roles and responsibilities of stakeholders in MAIS 3

Stakeholder	Composition/Description	Mechanism for communication	Role
Water Resources Management Committee	Deputy Director General: Water Resources, Chief Directors, and Directors	Presentations and reports	To provide strategic direction
CD:Scientific Services	Chief Director	Presentations, reports, progress meetings	Project Sponsor; review progress, approve interim deliverables and ensure alignment with DWAF strategic objectives
D: IWQS	Director, Project Manager, and various staff members	Presentations, reports, meetings	Project management; funding; project execution
Information Providers	Responsible for DWAF monitoring programme operations and delivery of information, represented in MAIS primarily by the Task Team	Presentations, reports, working sessions, workshops	Advise on and confirm data requirements and the design of MAIS; co-ordinate MAIS development process and ensure key stakeholders have been identified and consulted. Task Team will also facilitate collaboration between the project team and DWAF and relevant external information providers.
Information providers external to DWAF	Responsible for data production and delivery of water related information	Presentations, reports, working sessions, workshops	Advise on and confirm data requirements and the design of MAIS
CKP owners (information users)	Individuals or groups responsible for complex knowledge products that are used in DWAF water management	Meetings, working sessions, interviews	Provide input on information requirements and negotiate information product requirements
Information users external to DWAF	Individuals responsible for activities that require water related information	Meetings, working sessions, interviews	Provide input on information requirements and negotiate information product requirements
Specialist Teams, including consultants	Senior members of DWAF's water resources directorates and external specialists who have a deep knowledge of DWAF's business or what the business should be	Presentations, reports, working sessions,	Confirm information requirements; participate in the initial investigation process and participate in the business process analysis.

Stakeholder	Composition/Description	Mechanism for communication	Role
Restructuring team/s	Consultants tasked with the restructuring of the Water Resources functions in DWAF	Presentations, reports, working sessions, workshops	Make input on recommendations for MAIS Corporate governance and infrastructure; update MAIS team on restructuring progress
TINWA	TINWA was established to monitor implementation of the NWA	Submission of inception report, update project plan and progress	Monitor key result areas of information management. Provide feedback to MAIS on achievement of plans.
Integrator & CIO	Supports DWAF's information management processes	Presentations, reports, working sessions, workshops	Provide preliminary design for MAIS Master System Plan; Design and develop implementation plans for data storage and management infrastructure; Provide resources to lead business process analysis

5 MAIS 3 Project Management Structure

The integrative nature of MAIS will create an impact that will be felt in many of the water management functions of DWAF. The inclusive manner in which the project activities are planned will also require input from a number of distinct organisational units. A project reporting structure has been designed to address the need for co-ordination, communication, and defined approval routes. Because an integrated approach to information management is a mission critical requirement in DWAF, reporting to senior management is an essential component

A strong interface with DWAF's corporate IT is vital to the success of the planning and implementation aspects of the project. **Figure 5** shows the schematic representation of the project reporting and collaboration structure.

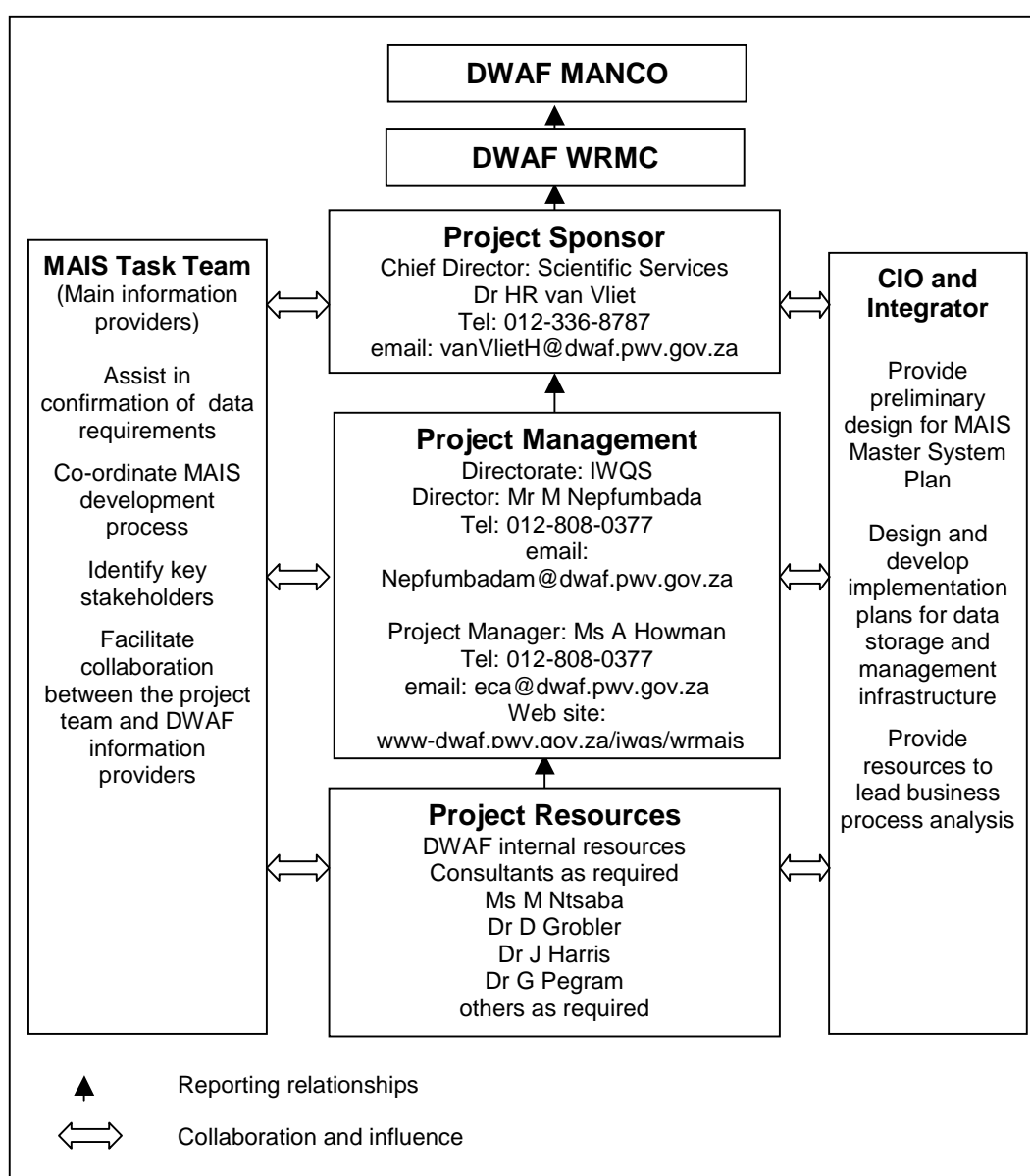


Figure 5 MAIS 3 project management structure

