

**A STRATEGY FOR MONITORING AND
ASSESSMENT TO SUPPORT WATER
RESOURCES MANAGEMENT**

APPENDIX 2

TERMS OF REFERENCE FOR THE PROJECT

DEPARTMENT OF WATER AFFAIRS AND FORESTRY

The Development of a Monitoring and Information Plan to Support Water Resource Management and Water Supply in the Implementation of the National Water Act and the Water Services Act: Terms of Reference

1 Introduction

Chapter 14 of the National Water Act specifies a requirement for monitoring, recording, assessing and disseminating information on water resources. To fulfil this requirement, it is necessary to establish national monitoring systems, collect appropriate data and provide information to assess all aspects of water resources. These aspects include, but are not limited to, quantity, quality, use, rehabilitation, compliance with resource quality objectives, health of aquatic ecosystems, atmospheric conditions which may influence water resources, and floods and droughts. National information systems and infrastructure have to be established to store and provide the data and information. Clearly, prioritisation of water resource quality monitoring programmes and information systems must be established. Co-ordination and collaboration between institutions, including Government, Provincial and private institutions, has to be in place. An implementation plan to achieve effective co-ordination in a phased and progressive manner is essential.

2 Background

2.1 Statement of the problem

There are a number of activities, structures and systems that can currently provide aspects of the information required for water resources management and water services information, however, it is uncoordinated and disparate. It is necessary to initiate a process that will provide comprehensive, efficient and effective collection, storage and dissemination of data and reporting of information.

Management of the water resource for sustainable use requires an extensive range of data including environmental, social, economic, health, disaster management, land and water use. Integration of these separate data sets into information that can be effectively used to support decision-making requires an infrastructure that facilitates communication and integration. The tools to utilise information effectively for assessment, allocation and predictions need to be generally available. Active reporting to inform Parliament and other stakeholders, including the general public, of the status of water resources is an integral responsibility of water resource managers and relies on accurate and relevant information.

As Catchment Management Agencies become established, the need will intensify to provide standard data, analytical tools, procedures and information systems to support high quality, transparent and defensible decision-making.

Policies and guiding principles that address issues such as data access, data sharing, intellectual property, data standards, copyright, custodianship, responsibilities, terminology and financial matters have to be developed.

To fulfil the requirements of the Act and overcome major problems, it is proposed that a monitoring and information plan to support water resource management and water services be developed. This document outlines the proposed process to develop the plan.

It should be noted that an additional component in developing a monitoring and information plan is the outsourcing of Directorate: Information Services functions to that of an Integrator to manage information systems in DWAF, and the introduction of a Chief Executive Officer (CIO) for the Department. It is envisaged that parts of this effort will overlap with responsibilities assigned to the Integrator and CIO. The initial situation analysis required from the Integrator is necessary to plan effective implementation of the development plan. Close communication will be maintained with the Integrator and the CIO during this planning process.

2.2 Progress to date

To initiate the development of a monitoring and information strategy, a workshop was held on 13 September 1999, with a number of internal influential stakeholders, to agree on a goal, or desired state, for the information development plan and to describe some of the generalised objectives that would lead to achieving the goal.

The aims of the workshop were to:

- Reach agreement on a desired state for the development of a monitoring and information system implementation plan.
- Initiate participation in the development of the plan.
- Prioritise requirements and key components.
- Identify current and planned initiatives and their champions.
- Discuss and obtain agreement on the way forward.

The workshop followed an outcomes-based scoping and design process. That process identifies a desired state (end objective) that the participants agree on, and then lists the constraints or obstacles to achieving the desired state, that is, the reasons why the desired state has not yet been achieved. For each obstacle or constraint an intermediate objective (IO) is developed that when achieved, will have overcome the obstacle or constraint.

Subsequently, each IO is sub-divided into components (lower level intermediate objectives) and structured into a road map (IO map) for achieving the end objective according to the time dependencies between the IOs. The IO map serves as the framework for defining the tasks or activities that need to be executed to achieve each IO, and through that, the end objective. The definition of tasks must be at a level of detail where the resources required to execute the task can be clearly specified and where the duration (costing and elapsed time) of the task can be specified. Depending on its complexity, these tasks, or activities that must be executed to achieve an IO, are structured into one or more individual projects. The entire effort to achieve the end objective is incorporated into a portfolio of projects (programme) in which individual projects and certain tasks with dependencies across more than one project are synchronised. The Outcomes-based scoping and design process is shown schematically in Figure 1.

2.3 Achievements

The workshop reached agreement on the desired state and a comprehensive list of almost 50 constraints, which were consolidated into 10 key obstacles.

The accepted desired state description was:

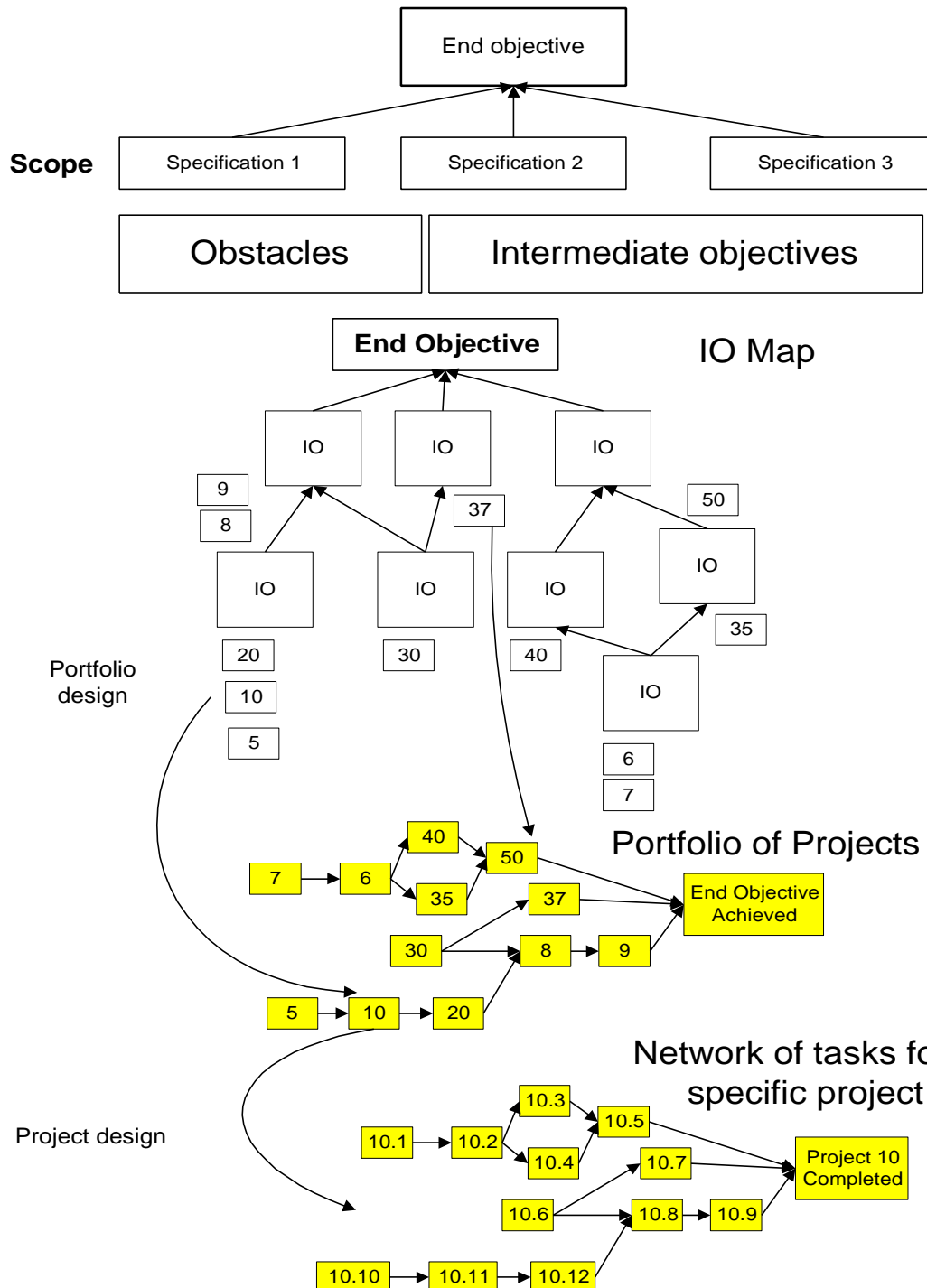
DWAF has led the development of easily accessible information and knowledge systems to support wise decision making for sustainable water use at all levels.

The Obstacles and Intermediate Objectives were:

	Obstacle	Intermediate objective
01	There is a lack of stakeholder empowerment	IO01 Stakeholders have been identified and information and knowledge is accessible to enable participation in wise water resources decision making
02	There is a lack of alignment around the emerging vision	IO02 We have a shared understanding and vision regarding the use of enabling information systems in support of water resources management amongst all stakeholders

	Obstacle	Intermediate objective
03	There is a lack of agreed conceptual models for information and knowledge management systems	IO03 There are agreed enduring concepts for the business processes, data elements, and reference information sets
04	There are a number of uncertainties regarding technologies for I&KMS	IO04 A goal information technology framework (architecture) is maintained as the focal point for technology management
05	There are uncertainties from the external environment	IO05 All stakeholders acknowledge the value of monitoring water resources and water services delivery and are committed to the use and long-term development of information systems for sustainable water services and water resource management.
06	There is an inadequate and inappropriate distribution of resources	IO06 Adequate and appropriate financial, technical, and human resources are developed, planned, acquired and deployed in accordance with an agreed upon National Monitoring And Information Systems (MAIS) Implementation Plan.
07	There is a lack of data sharing	IO07 Policies and effective procedures are in place to promote standards and to ensure the security and confidentiality of the data and its source and to facilitate the identification, access and purchase of data and information.
08	There is inadequate data acquisition and management	IO08 We have a thorough understanding of appropriate data acquisition, processing, quality control, information generation and reporting requirements to ensure accurate assessments and predictions of the nature and status of water resources and their
09	There is a legacy of past failures of IT initiatives	IO09 A participative process has been established to capture innovative ideas from all stakeholders as input to an interactive plan that results in successful implementation of IT products.
10	There is insufficient common understanding of the current reality.	IO10 We have a clear articulation of the needs of the water business arena and DWAF's role and structure within it.

Figure 1: Outcomes-based Scoping & Design Process



3 Proposed way forward

3.1 Development of the plan

The proposal for the next phase is that, for these IOs, an Outcomes-based scoping and design process is applied to expand each the initial IOs to activity / task level. Champions for each IO will take the lead in expanding the IO to a set of project plans that includes a description of the required resources and time. Both internal and external participants will be engaged to provide input to the planning process. Once this is achieved, these individual plans will be incorporated into a single integrated programme / portfolio of projects that can be sequenced and resourced as part of the 2000/2001 budget cycle.

It is anticipated that the expansion of IO's into projects will identify relevant current initiatives being undertaken within DWAF. These initiatives will be incorporated into the overall programme.

3.2 Intermediate Objectives that will be dealt with in other processes

Two areas will not be dealt with in detail as primary outputs of this project. These are business processes (IOs 03 and 10) which will be dealt with during identification of the business process description for departmental restructuring and IO 04 which deals with goal information architecture and is specifically assigned as the responsibility of the Integrator. However this project cannot be successfully completed without considering both business processes and the anticipated information architecture and will therefore have to deal with these issues at high (not detailed) level. For this purpose close interaction with the people involved in business process design and the Integrator (for IO 04) will be maintained as part of this planning process.

3.3 Workshops

A series of five workshops are proposed.

1. One workshop will address task identification for IOs 01, 02, 05, and 09 that involve stakeholder issues.
2. A second workshop would address task identification for IO 07, data sharing.
3. A third workshop would address task identification for IO 08, data acquisition to information generation.
4. The fourth workshop would consolidate output from the previous three workshops, ensure training and capacity building issues have been adequately addressed, and produce a unified project plan with resource allocations, time frames, and budget requirements. Training and capacity building will be specifically addressed at this point to ensure they can be dealt with effectively.
5. A fifth workshop may be required to deal with additional issues identified during the previous workshops.

4 Time Frame

The proposed workshops will be conducted between January and March 2000. The completed plan would be presented at the end of March 2000.

5 Budget

Funds for the project are available in the current 1999/200 financial year budget from Programme 2.