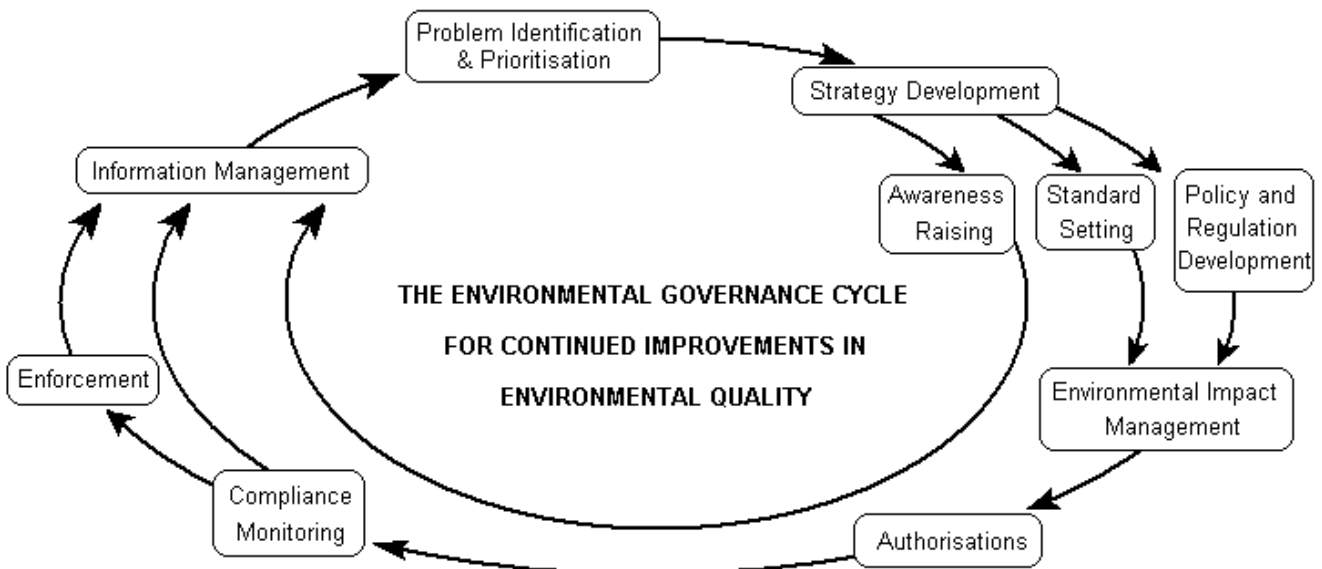
 environment & tourism Department: Environmental Affairs and Tourism REPUBLIC OF SOUTH AFRICA	Reference:	CD:AQM&CC/12/01/07/
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PURPOSE

This document provides the detailed terms of reference for the specialist consultants to be appointed to assist the department and the South African Weather Service (SAWS) in developing and implementing the 1st phase of the South African Air Quality Information System (SAAQIS). This document must be read in conjunction with the Bid Specification.

1 INTRODUCTION

As illustrated in the following diagram, “Informed decision-making” is fundamental to good governance and decisions can only be informed if decision-makers have ready access to accurate, relevant, current and complete information. Thus, the information management component of the governance cycle is crucial and is often described as the engine that drives the cycle towards continuous improvements in environmental quality.



Given the above, the information and knowledge management needs of government may be divided into: (i) local information and knowledge management needs; and (ii) international information and knowledge management needs.

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1 Information Management and the Air Quality Act

Given the above, it is hardly surprising that the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (hereinafter “the AQA”) makes numerous references to information and information management requirements, including, among others:

- The inclusion of national norms and standards for air quality information management within the National Framework (S. 7(1)(f));
- Public access to air quality information (S.7(2)(b));
- An entire section on national monitoring and information management standards (S.8); and
- The consideration of sound scientific information when declaring a Controlled Emitter (S.23(2)(d)(i)) or a Controlled Fuel (S.26(2)(d)(i)).

With respect to the AQA’s information management standards, S.8 dealing with “National monitoring and information management standards” requires that the national framework for air quality management, that must be published by 11 September 2007 in terms of S.7, must establish national standards for - (a) municipalities to monitor - (i) ambient air quality; and (ii) point, non-point and mobile source emissions; (b) provinces to monitor - (i) ambient air quality; and (ii) the performance of municipalities in implementing this Act; and (c) the collection and management of data necessary to assess- (i) compliance with the Act; (ii) compliance with ambient air quality and emission standards; (iii) the performance of organs of state in respect of air quality management plans and priority area air quality management plans; (iv) the impact of, and compliance with, air quality management plans and priority area air quality management plans; (v) compliance with the Republic’s obligations in terms of international agreements; and (vi) access to information by the public.

2 Information management and Multilateral Environmental Agreements (MEAs)

As alluded to above, AQA also requires the department to establish national standards for information management in compliance with the Republic’s obligations in terms of international agreements. In this regard, there are information management requirements relating to greenhouse gas emissions under the UNFCCC and information on ozone-depleting substances under the Montreal Protocol.

2 THE PROPOSED NATIONAL AIR QUALITY INFORMATION SYSTEM (SAAQIS)

Given the requirement for informed decision-making and the statutory requirements contained in the AQA, the information and knowledge management needs of government are to be met through the development and implementation of a comprehensive South African Air Quality Information System (the SAAQIS). The proposed SAAQIS should give effect to the AQA requirements and provide a tool and technical support to all spheres of government in the implementation of the following sections of the Act: Section 7 – National Framework; Section 8 – National Monitoring and Information Management Standards; and Section 50 – International Air Quality Management.

As such, the objective of the SAAQIS may be framed as - The SAAQIS shall provide all stakeholders with easy access to all relevant information about air quality in South Africa and further provide different stakeholders with different useful on-line applications to support the effective and efficient management of air quality.

A phased approach will be followed to achieve the completion of the full system, allowing for modification and separate tendering at each phase. In this regard, a five-phase approach is envisaged (see 2.13). The suitability and user requirements of the proposed modules will be accessed and clarified before the implementation of each phase and adjusted where necessary.

1 Benefits of proposed solution

The envisaged benefits for the various stakeholders that will result from the proposed solution can be summarised as follows:

- One stop site for users to get an overview of what air quality information exists, from thematic or geographical perspectives;

- Centralised verified applications for practical implementation of the AQA to facilitate compliance with norms and standards by the different stakeholders;
- Vertical integration of the 3 spheres of government – national, provisional and local; and
- Flexible technological solution allowing for utilisation of various current and future air quality management solutions for different stakeholders.

2 The proposed core components of the SAAQIS

Figure 1 gives a schematic view of the proposed SAAQIS. The tools can comprise different kinds of modules and can be built in the different phases. The SAAQIS will consist of information and services accessed from a user-friendly interface. A variety of stakeholders can contribute with data and information, and in return, they will be benefit by having access to other information and a range of services.

It is proposed that the system will have 3 main types of modules:

- Information input modules;
- Information extraction modules; and
- Application tools.

Each one of these modules will have a number of different sub-modules that will be designed for the different tasks needed by the system's users.

1 Information input modules

These modules should cover a complete range of pollutants dependant on the different information providers. The input can be done manually, automatically or by different solutions dependant on the information providers.

2 Information Extraction modules

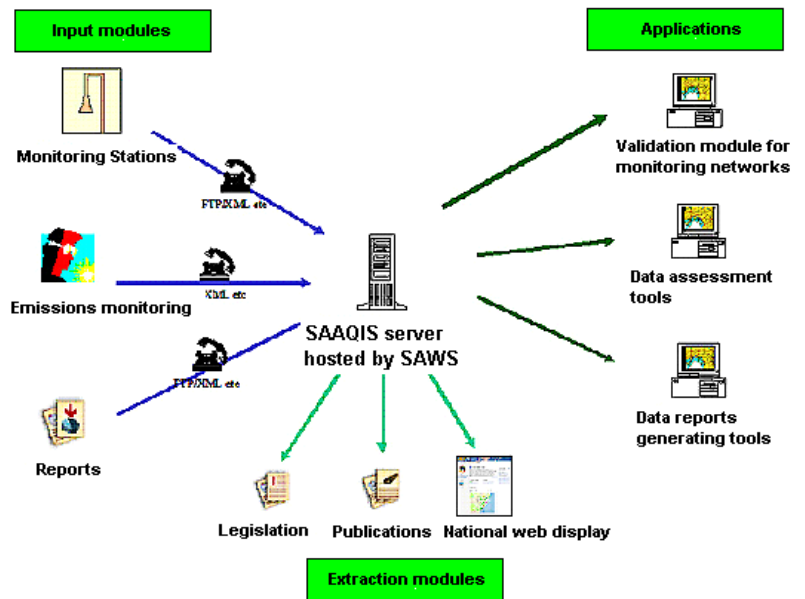


Figure 1: Schematic Presentation of the SAAQIS. Note that the modules are only examples.

These modules should provide suitable interfaces for a range of different kinds of data extraction from the content of the SAAQIS. The interfaces should be constructed in collaboration with different stakeholders to serve their specific needs. There are likely to be two main cross-reference modules looking at the content of the system in addition to visualisation and data extraction solutions for each module.

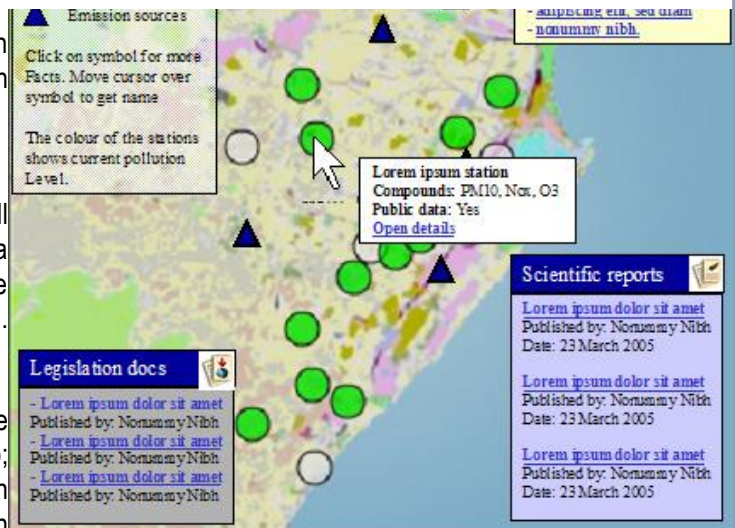
3 Thematic view of information

The thematic views allow users an instant view of all information related to, for example, emissions, in a suitable interface designed for this purpose. Extensive use of easy-to-use search solutions should be provided.

4 Geographical view of information

The geographic interface should be a GIS view where the content of the SAAQIS can be displayed on a map; thereby identifying what kind of information exists for an area and providing the ability to retrieve this information by making selections on the interactive map. The GIS interface is planned to be very user friendly and with limited complexity in searching for the desired information (See Figure 2: Rough illustration of possible concept for GIS view of SAAQIS content.).

Figure 2: Rough illustration of possible concept for GIS view of SAAQIS content.



5 Information applications

The information applications are essentially small programs that, through user commands and inputs, execute data extractions, visualisations and/or calculations on the content of the SAAQIS. These applications can be called services since they provide the user with suitable solutions for executing a task, for instance reporting data correctly to government that is consistent with reporting norms and standards.

3 Principles for the SAAQIS

Given the fact that the SAAQIS will be a centralised repository for air quality information, its successful implementation and application is dependent on the interest and benefits of using it by all stakeholders. It is critical that users not just populate it, but also contribute to its function as the main central resource of information suitable for stakeholders to execute their tasks.

In order to ensure the success of the SAAQIS, the system must be based on the following principles:

- Must be able to contain all relevant types of information and data;
- Will host data within a common database and communicate with other data sources where reliable solutions already exist;
- Support services suitable for different stakeholders;
- Information must be updated regularly;
- The “ownership” of data must be properly addressed; and
- Users who update SAAQIS must receive value/benefits from their participation.

4 Relevant Types of Data and Information

Based on the overall goal, the SAAQIS will be constructed to be able to contain all kinds of data and information that are relevant to the management of air quality in South Africa. Even if a decision is made to start from a comprehensive system,

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it will have to be re-evaluated as the system is developed and used. The important aspect now is to ensure that the solution framework allows for the possible incorporation of additional types of data and information over time.

5 Support Services for Different Stakeholders

The support services should utilise the data and information, but in addition should also contain extra data and information to be combined with the core SAAQIS content. This may further be linked up with other information providers.

The kinds of services that may be provided include:

- Interactive reporting functions following norms and standards for air quality reporting
- Validation on-line tool for station operators;
- Monthly automatic air quality status reports;
- Comparison and trend analysis tools;
- Data export (manual or automatic);
- Data “sniffer” (tool for identifying instrument errors and peak episodes)
- Interactive guidelines for air quality management;
- On-line air quality management training courses; and
- A Public website to disseminate information.

6 Regular Content Update

The different content described above should be updated by a variety of stakeholders at different intervals, as specified in the National Framework. As such, the SAAQIS must be constructed to be able to accept information from the following population/updating options:

- Manual - direct physical input
- Automatic - upload through import interface
- Automatic - import through data exchange

The SAAQIS must be flexible enough to equip content providers that have data in different formats with the ability to import/exchange such data with the developed interfaces. This flexibility is critical to allow information providers to populate and update the SAAQIS.

7 “Ownership” of Data

Given the fact that the SAAQIS will physically be a large central database with a variety of data, information and reports, ownership issues are crucial and must be taken into account when designing the systems and procedures. The system could, for instance, provide security and workflow functions to ensure that a municipality that uses the validation module in the system (which implies the sending of raw data directly to the system) is certain that only they are able to view and process the data. When datasets are approved, they might automatically be accessible for the provincial departments, and when the province has reported the data by using the reporting module, then only would the department assess the data.

The user should find a wide variety of information in the SAAQIS but in some cases, actual data or reports may not necessarily be stored within the SAAQIS. Ownership rights should be addressed and respected. Should the user require access to a specific data set or reports not housed within the SAAQIS, the user will be directed to the data/report custodian, either through a web address or physical contact details. The accessing of datasets/ reports distributed across various remote computers should not be precluded either. The ownership and the access to information by the public will be designed according to the norms and standards defined by the AQA in general, and the National Framework in particular.

8 Benefits of Participation in the SAAQIS

In order to get the information provider to keep the system updated over time there needs to be a benefit for participating in the SAAQIS. Stakeholders providing automatic updates also need this benefit approach to encourage them to provide the automatic transfer of data or information. As such, benefits of participation should include the provision of, among others:

- Tools for the execution of specified management tasks;
- Tools for the execution of reporting tasks;
- Helpdesk to support the use of the above tools; and
- Access to information tools of value.

The first tool could be a validation module which local municipalities can use for their monthly validation procedures on their monitored data. The provision of this tool avoids the need to purchase and maintain such software and the municipality will also have access to a help desk.

The second tool could be an integrated reporting module for provincial governments that must report exceedences of ambient air quality standards. They receive a web-based reporting tool, ensuring speedy completion and compliance with the reporting requirements as specified in the National Framework.

The third could be a staffed support centre, providing telephonic and e-mail support.

The fourth could be for industry to get easy access to the latest scientific reports, or searchable tools for all publications covering air quality issue within a specific area.

The fifth could be that the department is able to produce monthly compliance reports of all those industries and local and provincial authorities that have reported in accordance with the National Framework and/or a national web solution showing compliance with ambient air quality standards within cities.

9 Suggested Modules

Based on the principles described above, the information management and reporting requirements specified in the Air Quality Act, experience from solutions currently in operation in South Africa and international experience, a preliminary suggestion on the modules that can be incorporated into the SAAQIS is provided in the following sections.

These modules build on the assumption that the SAAQIS framework will include a Relational Database Management System (RDBMS), a data exchange/transfer system, a menu system for interacting with modules and content, a user administration solution, a search system, a content management system, a GIS solution and the establishment of the basic design and structure of the user interface. A modular approach has been proposed, with descriptions of some basic modules, modules relying on common data sources, and others that are quite comprehensive. The benefit of applying the modular approach is that the required functionality is contained within smaller simpler modules, avoiding larger more technically complex modules and limiting redundancy (apply only that functionality that is required).

1 Interfaces/menus

The user interfaces/menus should allow for navigation within individual modules and should also provide access across different modules, especially when using the advanced search options and GIS interface.

OVERVIEW OF POSSIBLE MODULES TO BE DEVELOPED AS PART OF THE SAAQIS.				
<i>Type is I= Information input modules, E=Information extraction modules and A=Information applications</i>				
Nr	Type	Working title	Description	Comments
air quality monitoring modules				
1	E	Ambient monitoring station description	This module gives an overview of the monitoring stations across the country and the basic metadata	Data is available from the output of Task C1 of the NAQMP Phase II project
2	E	Emission sources library	This module gives an overview of all emission sources and relevant metadata.	Data will be available from the Registration Certificate review process – tender to be awarded soon

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3	E	Emission monitoring archive	Similar function to nr 1	Data will be available from the Registration Certificate review process.
4	I	Ambient raw data import module	This module ensures the raw data transfer from ambient monitoring stations to the SAAQIS.	Data can be pushed or pulled from a variety of sources using a variety of techniques
5	I	Emission raw data import module	Similar function to nr 4.	Data can be pushed or pulled from a variety of sources using a variety of techniques
6	A	Ambient data validation module	Gives the user a tool for validation and approving datasets in accordance with the National Framework	Dependent on module 4
7	A	Emission data validation module	Similar function to nr 6, but for emission data.	Dependent on module 5
8	A	Instrument “sniffer”	Scans all the incoming raw data and based on criteria specified in the National Framework and local and international experience to look for potential instrument errors. Reports to operators by e-mail and/or SMS	Dependent on module 4 or 5
air quality data assessment modules				
9	A	Ambient data assessment module	Basic time series graphical comparison tools	Dependent on module 4
10	A	Emission data assessment module	Similar function to nr 8, but for emission data.	Dependent on module 5
11	A	Ambient data export module	Provides for manual or automatic export of ambient time series, or reported exceedences in different formats	Dependent on module 4, 5 or 14 and 15 for the exceedences.
12	A	Emission data export module	Similar function to nr 11, but for emission data.	
13	E	National air quality status website	Gives a public display of the reported exceedences and core content for the SAAQIS for general public use.	Summary display of relevant air quality information
air quality reporting modules				
14	I/A	Ambient data reporting module	By defined steps in accordance with the norms and standards specified in the National Framework.	See also Annex 1
15	I/A	Emission data reporting module	Similar function to nr 14, but for emission data.	See also Annex 1
16	E/A	Ambient data report/view generating module	This module gives a number of reports using predefined templates.	Access/design depending on user requirements
17	E/A	Emission data report/view generating module	Similar function to nr 16, but for emission data.	Dependant on module 2 & 3
18	I/E	Air quality management planning – reporting and viewing	This module uploads management reports in defined steps, where metadata is recorded. Also summary of all available AQMP's and impact reports.	Approval process of submitted report might be included. Pulls from municipal IDP's, provincial and national EMP's
19	I/E	State of air reports –reporting and viewing	Same as 18, for State of Air reports.	Pulls from national and provincial SoE reporting
20	E	air quality scientific literature resource library	Provides a searchable tool for all kinds of scientific reports related to AQ. An upload/update function will be designed.	Data will be available from the Air Quality Research database – in progress
Air quality resource modules				
21	A	International report generating module	Generates report in defined templates for international reporting for RSA from data in the SAAQIS	Formats of the reports will need to be specified during development of the module

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22	E	air quality media archive	Overview and metadata about air quality related media items.	Information available from web-based sources
23	E	Legislation	This module contains all relevant legislation, notices, policy documents relating to air quality management	Module manually updated on a regular basis i.e. monthly as new information comes available. It will enhance an existing DEAT page on “Policy and legislation”
24	E	Guideline documents	This module contains all relevant guideline documents relating to air quality management	Module manually updated on a regular basis i.e. monthly as new information comes available. It will be linked to an existing DEAT page on “Documentation”
25	A	Interactive training module	This module gives an interactive training (e-learning) in key aspects of air quality management.	Module manually updated on a regular basis i.e. monthly as new information comes available
26	E	Key Stakeholder Database	This module contains a listing of the key stakeholders for air quality management in South Africa	Module will contain the details of all air quality officers appointed throughout South Africa, air quality professionals, equipment suppliers and monitoring consultants
General support tools				
27	A	Support centre/help desk	This module allows the user of the SAAQIS to get help on use/content related issues.	Help is provided through e-mail, phone, fax, FAQs etc.

10 Technological Principles

The SAAQIS is likely to be developed based on the following technological building blocks:

- A SQL compliant RDBMS (e.g. Oracle database) will be used for storing air quality data;
- Data exchange between modules and between data sources and the central SAAQIS will be formatted as XML (eXtensible Markup Language). This will ensure that the system can be extended and that data can be read by all components of the system and by external systems. Common schemas will be provided;
- Modules and applications will be built and run in a modern software environment such as Microsoft .net, Java or Python;
- The Graphical User Interface will be web browser based and consist of customised web pages; and
- Where possible and practical, the system will adhere to metadata and data access standards such as those developed by the Open Geospatial Consortium/ ISO generating bodies.

The solution should be made available as sets of modular applications, built from individual software modules, working off the same database. The module interfaces will be structured in suitable menus allowing for easy access and easy understanding of the function of each module.

At times, the SAAQIS may need to allow for information to be pushed or pulled into the central databases from external data services and databases. The SAAQIS will utilise modern web service orientated architecture approaches to provide this mechanism. The common schemas described above will be utilised for data transfer encodings.

11 User Principles

Many different potential users of such a system may be identified. Most users will only use it as a source of information, which is the core idea, but others will also use it for processing different data for different purposes by using some of the modular applications provided.

There will be a public area, allowing users access to the part of the system and the information that is public available. There will be a controlled area of the system that requires access rights and where each user has a profile accommodating the nature of information, data and modules the user has access to.

12 Local Authority and Provincial Government Functionality

The different local and provincial governments will probably execute their air quality management tasks differently, based on existing systems and knowledge. The SAAQIS will accommodate the different needs to ensure that those who have

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currently implemented their own solutions can continue to use these systems, whilst those who want to use solutions provided by the SAAQIS have the facility to do so.

As an example, if a municipality sets up a direct raw data transfer to the SAAQIS from its stations or through a local database, that municipality can use the validation module or the assessment module that is planned for the SAAQIS. This saves investments on system software at the local level and ensures standardised processing of the data. The important thing is that security levels and workflows are provided, such that it is only the municipality that can access this raw data until the time when the data are ready for reporting to the next level. The municipality gets the same control and ownership of the data, as if the data were processed locally.

13 Proposed Phased Development

A five-phase development plan is envisaged with the following phases:

- Phase I - Establish framework and central database, core ambient air quality modules and scientific resource library
- Phase II - Establish complete air quality ambient modules and national web solution
- Phase III - Roll-out of 1 & 2 to all national stakeholders
- Phase IV - Establish core emission modules and links to EIA and permits archive
- Phase V - Establish complete emission modules and International reporting module as well as the media archive

The flexibility of this approach allows for modules to be moved between the phases and new modules can be added during the development process.

The development of the SAAQIS as suggested is based on the following approach:

- The phases will gradually extend the content and features;
- All phases will contain input data, database and output visualisation, and the extension to the system to be tested with relevant stakeholders;
- It will be ensured that the various stakeholders get value in early stages, first priority being the local and provincial governments and other information providers;
- All features will be documented and user guides developed;
- All phases will be tested and validated for some selected users, before being opened/offered to others.

14 The content of the SAAQIS

The SAAQIS is likely to contain, among others:

- Data sets (hourly and aggregated at different levels), including: monitoring data; and emission data.
- Various types of data sets, including: status; forecasted data; historical data; raw data/information (approved at various levels); aggregated data; air quality indices; statistical results.
- Various Compounds, including: urban air quality priority compounds; urban air quality non priority compounds; greenhouse gases; stratospheric ozone and UV radiation; ozone depleting substances; persistent organic pollutants (POPs); heavy metals; meteorology parameters; pollen.
- Various Reports, including: legislation; permits; state of air reports; air quality management plans; atmospheric impact reports; inventories; guidelines/manuals/procedures; research articles/reports.
- Various Media items, including: newspaper articles; TV stories; radio clips; web-links.
- Various Metadata, including: monitoring stations; instruments; emission sources; compounds; industries/companies; governmental bodies; air quality experts; reports of different kind (see above); geospatial information.
- Various content types, including: text; numbers; pictures; videos; graphs/tables; sound files; files.

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3 THE DEVELOPMENT OF THE SAAQIS

In the light of the AQA requirements, the department's National Air Quality Management Programme 2000 – 2010 details a number of interventions required to meet the monitoring and information requirements of the Act. These interventions – the SAAQIS building blocks – are described below. All of these interventions will be used as the building blocks to inform and test the development of the SAAQIS.

1 The South Durban Multi-Point Plan project

At the local level, the South Durban Multi-Point Plan project has developed a sophisticated local air quality information system that is yielding important information that is being used to develop and implement numerous interventions that are already resulting in positive air quality impacts. This component of the programme is thus regarded as the local SAAQIS pilot project to be used to inform both the SAAQIS framework and other local systems, especially those in identified air pollution 'hot spots'.

2 The DEAT-DACE pilot project

At a national and provincial level, the National Air Quality Management Phase II – Transition Project has the following outputs directly related to air quality information management:

- *Air Quality Information Review* – This output comprises the review of existing air quality information sources and an appraisal of data types and quality with a view to ensuring that existing data sets and monitoring systems can be accommodated within the new information management system. In this regard, this output has been completed and is available on the departmental website;
- *Air Quality Information System Framework* – This output comprises the development and publication of the framework for the required air quality information system as described by the Integrated Pollution and Waste Management Policy (IP&WM, 2000) and implied by AQA. In this regard, this output has been completed and forms the basis for these terms of reference;
- *Pilot Air Quality Information System in operation within DEAT and DACE* – This output comprises: the development of the required air quality information system software; the purchase and installation of required hardware including pilot monitoring systems; the input of initial data sets; the compilation of a system user-manual; the training of staff in the use of the system; and, the necessary support to the department and Gauteng's Department of Agriculture, Conservation and Environment (DACE) during the initial use of the system. In this regard, this pilot has been initiated and will be finalised by July 2007; and
- *Initial 'State Of The Air' Report* – This output comprises the compilation of a public information document on the state of South Africa's air based on available information at the time of compilation. Again, this document is nearing completion and should be ready for publication by February 2007.

With regard to the latter, in preparing the "Atmosphere and Climate" chapter of the National State of the Environment Report (SOER), the consultants produced an extensive and detailed analysis that formed the basis for the final SOER chapter. Unfortunately, much of this analysis could only be summarised in the final SOER chapter and, as a result, much of this extremely useful information was not going to be made available to air quality management practitioners. At the same time, the Transition Project consultants produced the initial draft of a "State of the Air" Report, as mentioned above, described above providing the first national analysis of available air quality data. Although the two documents are fully complementary with little overlap, the department was presented with a unique opportunity to combine these two documents into a single, comprehensive State of the Air Report. Given that such a document would serve as the benchmark against which the impacts of the new Air Quality Act will be measured, a single comprehensive State of the Air Report will be invaluable to air quality managers across the country and will provide the base-line information for the SAAQIS.

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3 The Vaal Triangle Air-shed Priority Area Air Quality Monitoring Project

In response to the identification of the Vaal Triangle Air-shed as a Priority Area in terms of S.18 of the AQA, the department has concluded a tender in respect of the implementation of a project to install a further six air quality monitoring stations in the Vaal Air-shed.

The appointed service provider is required to implement a project that will result in the following:

- The identification and securing of six suitable air quality monitoring sites in the Vaal Air-shed;
- The supply and installation of air quality monitoring equipment for the six sites;
- The design and implementation of a reporting system;
- Provision for the ongoing management of the air quality monitoring facilities; and
- Implementing a capacity building programme for management handover.

4 The Highveld Priority Area Air Quality Monitoring Project

As the Highveld Priority Area is likely to be the 2nd National Priority Area identified in terms of S.18 of the AQA, the department will conclude a tender in respect of the implementation of a project to install a further five air quality monitoring stations in the area. The objectives and outputs of this project will be similar to those of the Vaal Triangle Air-shed Priority Area Air Quality Monitoring Project (see 3.3).

5 The APPA Registration Certificate Review Project

The department has concluded a tender in respect of the implementation of a project that will review and amend prioritised Registration Certificates issued in terms of section 10 of the Atmospheric Pollution Prevention Act (Act No. 45 of 1965) (APPA) and develop initial capacity within government in respect of Atmospheric Emission Licences as contemplated in the National Environment Management: Air Quality Act (Act No. 39 of 2004) (AQA).

Immediate Objective A of this project – the Registration Certificate information objective - requires that current, accurate, relevant and complete information on all Registration Certificates is captured, sorted and stored in such a fashion as to efficiently and effectively facilitate: informed air quality management decision-making; the sharing of information with relevant provinces and local authorities; and the speedy conversion of all Registration Certificate's to Atmospheric Emission Licences.

6 The Greenhouse Gas Information Management Project

The department is in the process of contracting specialist consultants to undertake a project that will generate a current and accurate greenhouse gas (GHG) emission inventory for South Africa and, through this, develop and initiate a GHG information management system within the department as a component of the National Air Quality Information System (SAAQIS).

4 SAWS AND THE SAAQIS

1 The functions of the SAAQIS host or custodian

Notwithstanding the exciting developments and initiatives outlined above, a key element for the SAAQIS' successful implementation is its hosting. In this regard, the SAAQIS host or custodian will be required to, at least –

- House the national SAAQIS server computer that will collect, store, sort, archive, analyse and generate reports on all air quality information;
- Install, maintain, update and review the various SAAQIS applications, e.g. data reports generation tools, data assessment tools, etc.;
- Push or pull data from various sources into the system (e.g. emission data from key industries, meta-data from provinces and priority areas, etc.);

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- Provide technical support to system users and potential users (e.g. support to municipalities wishing to purchase air quality monitoring equipment);
- Maintain the SAAQIS web site; and
- Compile and submit air quality information reports to decision-makers.

2 The ideal SAAQIS host

Given the functions described above, the ideal SAAQIS host would be, among others:

- an organisation that is independent of, but accountable to, the department and the Minister;
- an organisation that is already skilled in the collection, storage, sorting, archiving, analysis and reporting of data;
- an organisation that is already involved in the provision of information aimed at “the common good”;
- an organisation whose current work is complemented by the SAAQIS functions;
- an organisation whose current work would add value to the SAAQIS; and
- an organisation whose existing infrastructure would add value to the SAAQIS;

3 SAWS as the SAAQIS host

Given the above, the South African Weather Service (SAWS) appears to be tailor-made as the SAAQIS host.

The SAWS “best fit” has been recognised by the department for some time and given SAWS’ positioning in respect of climate change impact prediction, such a service could also be provided to the department and, as the greenhouse gas inventory will be component of the SAAQIS (see 3.6), such a service would also be greatly enhanced by SAWS’ hosting of the SAAQIS.

5 ORGANISATIONAL ARRANGEMENTS FOR INFORMATION AND KNOWLEDGE MANAGEMENT WITHIN THE DEPARTMENT

In December 2005, the Director General approved a new establishment for the Chief Directorate: Air Quality Management and Climate Change. Given the importance of information and knowledge management in respect of air and atmospheric quality management, an entire component dealing with this functional area was established, namely, the Directorate: Atmospheric Quality Information.

The purpose or performance objective for the Directorate: Atmospheric Quality Information has been framed as follows:

To ensure that atmospheric quality information is readily available to all, especially decision-makers and decision-shapers to ensure informed decision-making, especially in respect of legislative and other measures developed and implemented with a view to protecting and defending the right of all to air and atmospheric quality that is not harmful to health and well-being.

In order to fulfil its purpose, the directorate must, among others, carry out the following functions, among others:

- *National atmospheric quality monitoring*, including, among others: (i) the identification of information requirements; (ii) the collection of data; (iii) the sorting and storage of data; (iv) the analysis of data; (v) the compilation of reports on problems, priority areas, trends and new data requirements; (vi) input into the “state of the air” chapter of the national State of Environment Report; and (vii) the compilation of South Africa’s Greenhouse Gas Inventory.
- *National ambient air quality modelling*, including, among others: (i) the identification of information requirements; (ii) the collection of data; (iii) the sorting and storage of data; (iv) the modelling of national ambient air quality; (v) the compilation of reports on problems, priority areas, trends and new data requirements; (vi) the provision of information in respect of EIAs; and (vii) the submission of modelling sections of the “state of the air” chapter of the national State of Environment Report.

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- *Monitoring and modelling capacity support*, including, active involvement in the development of implementation manuals, guidelines, software, standard formats, templates and best practise case studies aimed at the efficient and effective implementation of international, national, provincial and local air quality monitoring and modelling systems.
- *Atmospheric quality research*, including, among others: (i) the identification of research requirements; (ii) the design of research programmes; (iii) the outsourcing of research projects; (iv) the analysis of research findings; (v) the compilation of reports on problems, trends and new data requirements; and (v) the publication of research reports.
- *South African Weather Services (SAWS) cooperation and coordination*, including – among others: (i) managing the department’s oversight role; and (ii) providing support and direction in respect of SAWS’ possible role in respect of the national air quality information system (SAAQIS).
- *Formal, informal and non-formal educational activities*, including, among others: (i) identification of education requirements; design of curricula, education programmes and/or informal education campaigns; (ii) collection of source information; (iii) development of educational material; (iv) development of educator guides; (v) educator training; (vi) implementation of education programmes; and (vii) implementation of informal education campaigns.
- *Dissemination of air quality information*, including, among others: (i) the identification of external information requirements (including the various country reports required in terms of MEAs); (ii) design of external information dissemination mechanisms; (iii) collection of information; (iv) development of information material (including the various country reports required in terms of MEAs); (v) distribution of information; (vi) responding to requests for information; and (vii) updating and maintaining information materials.
- *External capacity development*, including, among others: (i) the identification of capacity development requirements; (ii) the design of capacity development programmes; (iii) the collection of source information; (iv) the development of educational material; and (v) the implementation of capacity development programmes.
- *International Negotiations and Commitments*, including, among others: (i) the management of all reporting requirements related to all regional, continental and global bilateral and multi-lateral engagements around air and atmospheric quality related issues; and (ii) the provision of technical support to all negotiating teams involved in regional, continental and global bilateral and multi-lateral engagements around air and atmospheric quality related issues.

Given its purpose and associated functions, the Directorate: Atmospheric Quality Information is staffed as follows –

Table 1: Staffing - Directorate: Atmospheric Quality Information

Post		Purpose
1.	Director: Atmospheric Quality Information	Ensure that the functions described above are carried out efficiently and effectively
2.	Office Administrator	Provide secretarial support to the Director
3.	Deputy-Director: Atmospheric Quality Monitoring & Research	Ensure that the department’s national atmospheric quality monitoring, national ambient air quality modelling, monitoring and modelling capacity support, atmospheric quality research and SAWS cooperation and coordination functions are carried out efficiently and effectively.
4.	Specialist Scientist: AQIS and modelling	Design, develop, maintain and continuously improve the department’s national atmospheric quality monitoring and modelling system and to provide specialist monitoring and modelling capacity support to province and local government.
5.	Assistant-Director: Air Quality Monitoring	Implement the department’s national atmospheric quality monitoring and modelling system

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6.	Principle Environmental Officer: Data Processing	Capture and report data in respect of the department's national atmospheric quality monitoring and modelling system
7.	Assistant-Director: GHG and ODS Monitoring	Implement the department's GHG and ODS monitoring system
8.	Assistant Director: SAWS Liaison & Coordination	Provide the secretariat in respect of the department's SAWS oversight role and coordinate SAWS' role in respect of the national air quality information system (SAAQIS).
9.	Deputy-Director: Atmospheric Quality Outreach	Ensure that the department's formal, informal and non-formal educational activities, dissemination of air quality information, external capacity development and international reporting commitments functions are carried out efficiently and effectively.
10.	Principle Environmental Officer: Publications	Manage the identification, development, design and publication of the department's atmospheric quality management publications

6 PROBLEM ANALYSIS

The major problem the department and SAWS now face is turning the vision described above into a practical reality. Given that this vision has yet to be informed or tested by the various stakeholders, much work is still required to ensure a common vision amongst all stakeholders.

7 STRATEGY ANALYSIS

On the basis of this problem analysis the strategy to take forward the SAAQIS – Phase One Development project will consist of a number of elements, including:

1 Building Relationships to Ensure Stakeholder Buy-In

Building an effective SAAQIS will require co-operation with a range of structures across all three spheres of government. This will be based around the building of strong relationships with key individuals in such structures. Constant interaction, combined with awareness raising, will therefore form a key part of the strategy.

2 International Benchmarking

An international benchmarking study will be conducted as part of the Phase One project to provide input into what the SAAQIS could look like and specifically what role weather services globally have played in this regard.

3 Using Existing Initiatives to Pilot the SAAQIS

In order to ensure that there are meaningful outcomes from the phase one work, the existing initiatives described in 3 will be used to inform, test and pilot the SAAQIS.

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8 OVERALL PROJECT OBJECTIVE

The overall objective of the project is framed as that for the entire SAAQIS:

The SAAQIS provides all stakeholders with easy access to all relevant information about air quality in South Africa and further provides different stakeholders with different useful on-line applications to support effective and efficient management of the air quality

9 IMMEDIATE PROJECT OBJECTIVES

In order to contribute to the overall project objective, the Phase I project has the following immediate objectives -

1 Immediate Objective A – The Description and Plan Objective

By project completion, the SAAQIS, informed by local requirements and needs and international experience, is fully described and detailed and its development articulated in a phased and costed implementation plan.

2 Immediate Objective B – The Phase I Implementation Objective

By project completion, the SAAQIS framework, central database and core functions that are required for reporting ambient air quality monitoring data and status/management reports by all spheres of government are established, tested and fully operationalised for pilot areas.

3 Immediate Objective C – The Capacity Building Objective

By project completion, both the department and SAWS are fully capacitated to manage and operate the Phase I SAAQIS efficiently and effectively.

6. PROJECT OUTPUTS

In order to meet the project objectives, the contracted consultants must generate, but are not limited to the generation of, the following outputs:

1 Outputs in respect of Immediate Objective A – The Description and Plan Objective

The contracted consultants working closely with the SAAQIS Development Task Team will carry out all the work required to generate the following outputs that will result in the SAAQIS, informed by local requirements and needs and international experience, being fully described and detailed and its development articulated in a phased and costed implementation plan.

1 Output A.1: SAAQIS landing page

In order to ensure transparency and the early delivery of tangible information products, the contracted consultants will design and populate an initial “work in progress” web page for the SAAQIS that will be linked to both the department’s and SAWS’ web sites. This initial landing page will provide easy access to all readily available air quality related information including, among others: Legislation, regulations, norms and standards and Government Notices; Air and Atmospheric quality information, publications and research; available air quality management plans; fact-sheets on all government projects related to air quality management. The landing page will also provide updates and progress reports on the project that is the subject of these terms of reference.

Table 2: Output A.1: SAAQIS landing page - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.1: SAAQIS landing page	Up to date web page for the SAAQIS linked to both the department’s and SAWS’ web sites.	Web site hits; positive feedback from users.

2 *Output A.2: Mandate Analysis*

In order to ensure that the SAAQIS meets its primary objective of compliance with the spirit and letter of the AQA, the contracted consultants will carry out and document a detailed analysis of the information management requirements of the AQA, other legislation that has an impact on information provision (e.g. the PAIA, National Archive Act, etc.) and the various air quality related multilateral environmental agreements (MEAs) (including, but not limited to, climate change, ozone-layer protection and persistent organic pollution agreements) that clearly describes the mandatory requirements of the SAAQIS.

Table 3: Output A.2: Mandate Analysis - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.2: Mandate Analysis	The design of the SAAQIS is fully informed by the mandatory requirements of the AQA and other air quality related MEAs.	The SAAQIS adequately meets the mandatory requirements of the AQA and other air quality related MEAs.

3 *Output A.3: Stakeholder Analysis*

In order to ensure inclusivity in the design and development of the SAAQIS, the contracted consultants will carry out and document a detailed analysis of all potential key SAAQIS stakeholders including, among others: potential SAAQIS information users; information holders; information gatherers; service providers; and regulatory authorities.

Table 4: Output A.3: Stakeholder Analysis - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.3: Stakeholder Analysis	The design of the SAAQIS is fully informed by the mandatory requirements of the AQA and other air quality related MEAs.	The SAAQIS adequately meets the mandatory requirements of the AQA and other air quality related MEAs.

4 *Output A.4: Needs Assessment*

In order to ensure a needs-driven approach to the design and development of the SAAQIS, the contracted consultants will carry out and document a detailed assessment of the air quality information needs of the various key stakeholders. In this regard, the consultants will also establish the need, if any, for the establishment of a National Reference Laboratory that could, amongst others: Harmonize and set the standard for the monitoring initiatives in South Africa; Provide procedures and systems for quality assurance and quality control at different levels; Provide standard operating procedures; Provide calibration of local calibration units; Certify standard calibration gases; Link the monitoring data in South Africa to international standards and norms; Assist SANAS with procedures for accreditation; Provide a technical auditing facility for the local networks; Advise on monitoring networks and approve measurement principles used in South Africa; and provide training in the operation of air quality monitoring networks. It is envisaged that workshops and “one and one” interviews will be used to gather information for this output.

Table 5: Output A.4: Needs Assessment - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.4: Needs Assessment	The design of the SAAQIS is fully informed by the air quality information needs of the various stakeholders.	The SAAQIS adequately meets the needs of key stakeholders.

5 *Output A.5: Information source assessment*

In order to inform the design and development of the SAAQIS, especially in respect to the inputs modules, the contracted consultants will carry out and document a detailed air quality information source assessment. This assessment should be divided into current sources and potential future sources as implied by the AQA (e.g. emission monitoring is provided for in Atmospheric Emission Licenses). In this regard, the consultants should make use of, among others, the air quality information review carried out by the CSIR (see 3.2). In essence the consultants will be undertaking an audit of all air quality data sets that are being observed and archived. The consultants should also, on the basis of this assessment, make recommendations of the optimal systems and approaches to integrate the different systems that exist.

Table 6: Output A.5: Information source assessment - Success Indicators

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Description	Verifiable Indicator	Means of verification
Output A.5: Information source assessment	The design of the SAAQIS is fully informed by current, accurate and complete information on the various sources of air quality information inputs into the system.	The SAAQIS adequately meets the needs of key stakeholders.

6 *Output A.6: International Benchmarking of National Air Quality Information Systems*

The contracted consultants will undertake a study that analyses the National Air Quality Information Systems in Australia, the United Kingdom, Denmark and Norway to give a perspective on what a National Air Quality Information System could potentially cover in terms of key issues such as content and products. The lessons learnt from implementing these systems must also be investigated to ensure that the SAAQIS is implemented in the most efficient and effective manner. In order to maximise the value of this output it is envisaged that 5 day study tours to Norway and Australia will be conducted. The study tours will focus on a number of key issues including, but not limited to: the need for branding of such a system; how political support has been maintained; the management of data from a number of different sources; database structure and use; and how public access and outreach has been operationalised and optimised. The team undertaking the study tours would consist of one senior member of the consultancy (who would also be responsible for all arrangements) and four members of the project steering committee to ensure that any learning is shared broadly and the different perspectives of the team members are used to gain additional insights. The results of the study tours would be captured in the form of field reports annexed to the international benchmarking report compiled by the consultant.

In their bids, the consultants must make a provision of R150,000 for the direct costs associated with study tours (see 12.1).

Table 7: Output A.6: International Benchmarking of National Air Quality Information Systems - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.6: International Benchmarking of National Air Quality Information Systems	The design of the SAAQIS is fully informed by international lessons learned.	International best practise is built into the design of the SAAQIS.

7 *Output A.7: Technical assessment*

The lack of a set of technical specifications as regards air quality information management is seen as a crucial barrier to implementing the SAAQIS and includes issues such as: ensuring the existence of data sharing protocols; the potential need for national data standards; what standard operating procedures need to be developed; and ensuring that the data is used in ways that it becomes information that is both accessible, and useful, to its target users in particular decision-makers.

Thus, the consultants will develop a set of detailed technical specifications to support the development and implementation of the SAAQIS. All technical specifications need to be compliant with ISO 9001:2000 and other relevant SANS standards.

Table 8: Output A.7: Technical assessment - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.7: Technical assessment	Technical specifications for the SAAQIS.	The approved technical specifications for the SAAQIS ensure that the system is technically flexible, efficient and effective and is easily adapted to meet the challenges and opportunities of the rapidly evolving information management environment.

8 *Output A.8: The SAAQIS Description and Implementation Plan*

Using the outputs described above, the consultants will critically review, amend and expand the *Air Quality Information System Framework* developed by the National Air Quality Management Programme: Phase II Transition Project into a detailed description of the SAAQIS. Furthermore, the consultants will describe the development of the SAAQIS in the form of a detailed, and phased, implementation plan. The implementation plan must be fully resourced and clearly indicate what human, technical and financial resources will be required to develop and maintain the SAAQIS. To this end, the consultant should you use the logical framework approach (LFA) for the development of the required document. The document

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containing the SAAQIS description and implementation plan must also be summarised in the form of a Microsoft PowerPoint presentation and web page. This output will also clearly define the computer hardware that the SAAQIS project will need to purchase to initially establish the SAAQIS server.

Table 9: Output A.8: The SAAQIS Description and Implementation Plan - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.8: The SAAQIS Description and Implementation Plan	A document that clearly describes the SAAQIS and how the SAAQIS will be developed.	The development of the SAAQIS is fully informed by a detailed implementation plan.

9 *Output A.9: The SAAQIS described in the National Framework*

Using the outputs described above, the consultants will compile the required information management sections of the National Framework in cooperation with the National Framework development consultants.

Table 10: Output A.9: The SAAQIS described in the National Framework - Success Indicators

Description	Verifiable Indicator	Means of verification
Output A.9: The SAAQIS described in the National Framework	The SAAQIS is clearly described in the National Framework.	The development of the SAAQIS is fully mandated through the National Framework.

2 Outputs in respect of Immediate Objective B – The Phase I Implementation Objective

Although the SAAQIS Description and Implementation Plan will fully describe the Phase I components of the SAAQIS to be developed, tested and implemented under this project, the following components are likely to form part of this project and, as such, must be detailed in the project bid.

1 *Output B.1: Framework and central database*

The consultants will purchase and commission the computer hardware needed to initiate the establishment of the SAAQIS server, based on the results of Output A.8.

The consultants will establish, test and implement the SAAQIS framework and central database including: RDBMS database; Data exchange/transfer system and schemas; web service interfaces for push/ pull of certain distributed data (if need is identified); menu system for modules and content; user administration solution; content management framework; GIS solution; search functionality; and basic design and structure of the user interface.

In their bids, the consultants must make a provision of R1 million for the purchase of any necessary hardware and software required to deliver outputs B.1 and B.2. (see 12.1).

Table 11: Output B.1: Framework and central database - Success Indicators

Description	Verifiable Indicator	Means of verification
Output B.1: Framework and central database	SAAQIS framework and central database established and operational.	User feedback.

2 *Output B.2: Phase I module establishment*

Using available information (e.g. Eskom, Vaal Triangle Airshed, Highveld Priority Area, etc.) the consultants will establish, test and operate the following modules: Ambient data reporting module; Ambient data report/view generating module; Ambient monitoring station description; Air quality management planning – reporting and viewing; State of air reports –reporting and viewing; Legislation download and viewing; AQ scientific literature resource library; and support centre/help desk.

Table 12: Output B.2: Phase I module establishment - Success Indicators

Description	Verifiable Indicator	Means of verification
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Output B.2: Phase I module establishment	Ambient air quality information, monitoring station information, air quality management plans, various air quality publications, relevant legislation, etc. accessible through the SAAQIS.	User feedback.
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3 Outputs in respect of Immediate Objective C – The Capacity Building Objective

Working in close cooperation with the SAWS and department, the contracted consultants must generate, but are not limited to the generation of, the following outputs that will result in both the department and SAWS being fully capacitated to manage and operate the Phase I SAAQIS efficiently and effectively.

1 Output C.1: SAWS Establishment for hosting and operating the SAAQIS

Working with the SAWS team coordinating the broader SAWS institutional development process, the consultants will detail the necessary organisational structure within the SAWS to efficiently and effectively host and operate the SAAQIS. This output will be in the form of a submission to the SAWS Board that, among others: clearly describes the proposed organisational establishment; describes the various proposed posts together with detailed job descriptions; summarises the skills profiles for the proposed posts; and provides a clear budget for personnel and operational expenditure.

Table 13: Output C.1: SAWS Establishment for hosting and operating the SAAQIS - Success Indicators

Description	Verifiable Indicator	Means of verification
Output C.1: SAWS Establishment for hosting and operating the SAAQIS	SAWS SAAQIS establishment submission.	Minutes of the SAWS Board meeting.

2 Output C.2: Implementation Manual

Based on the lessons learned from the implementation of the activities in respect of Immediate Objective B – The Phase I Implementation Objective (see 6.2), the contracted consultants will compile a user-friendly implementation manual for SAWS staff that clearly outlines all the steps required to operate the Phase I SAAQIS.

The manual should contain any necessary check-lists, flow charts, templates, standard formats, examples, etc. necessary to ensure that, in using the manual, SAWS staff are able to operate the Phase I SAAQIS efficiently and effectively.

Table 14: Output C.2: Implementation Manual Success Indicators

Description	Verifiable Indicator	Means of verification
Output C.2: Implementation Manual	User friendly implementation manual.	Use of the manual ensures that SAWS staff are able to operate the Phase I SAAQIS efficiently and effectively.

3 Output C.3: Capacity development plan

The contracted consultants will carry out all the work required to successfully host an internal workshop that will be used to discuss and test the draft Implementation Manual (see 6.3.2) and workshop strategies to develop the required implementation capacity within the SAWS and the department. Based on the proceedings of the workshop, the contracted consultants will carry out all the activities required to develop a comprehensive capacity development plan for the SAWS and the department. It is envisaged that the plan will include, among others: (i) the development of written operating policy and a management system providing regular feedback on whether policy is being met; (ii) the development of defined procedures and mechanisms for achieving efficient and effective implementation of the manual; (iii) the identification of appropriate training courses for staff; and (iv) an intensive training course on the use and implementation of the manual, operating policy, procedures and mechanisms.

Table 15: Output C.3: Capacity development plan Success Indicators

Description	Verifiable Indicator	Means of verification
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Output C.3: Capacity development plan	A capacity development plan that clearly identifies short-term capacity development initiatives to be undertaken by the project as well as medium- and long-term initiatives to be implemented following project conclusion.	The implementation of the plan ensures that the SAWS and the department are to operate and use the Phase I SAAQIS efficiently and effectively.
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4 *Output C.4: Operating policy and management system*

In line with the approved “capacity development plan” (see 6.3.3), the contracted consultants will carry out all the work required to compile a written operating policy for the SAAQIS structure described in 6.3.1 and a management system that provides regular feedback on whether policy is being met. Once drafted, the contracted consultants will test the draft by way of an introductory training course with the affected staff. Based on the proceedings and feedback from the staff, the contracted consultants will finalise the required operating policy and management system and amend the Implementation Manual where required.

Table 16: Output C.4: Operating policy and management system Success Indicators

Description	Verifiable Indicator	Means of verification
Output C.4: Operating policy and management system	Written operating policy and management system.	The implementation of the operating policy and management system ensures the efficient and effective management the SAWS’ SAAQIS functions.

5 *Output C.5: In service capacity support*

The SAWS and the department will assign staff to work on this project on a full-time or part-time basis. The consultants are required to engage and involve these personnel in all aspects of the project and provide hands-on training, mentorship and ensure effective skills-transfer.

To this end, the contracted consultants will set aside 200 senior consultant hours and 400 junior consultant hours with a view to providing the required assistance (see 12.1).

Table 17: Output C.5: In service capacity support Success Indicators

Description	Verifiable Indicator	Means of verification
Output C.5: In service capacity support	Active involvement of departmental staff in the implementation of the project.	Staff able to efficiently and effectively manage future SAAQIS responsibilities.

7. **ACTIVITIES**

Specific activities to be carried out by the contracted consultant in generating the above outputs must be detailed in the proposal contained in the bid.

8. **INPUTS AND BUDGET**

In order to generate the above outputs, the department will cover the expenses relating to the work of the contracted consultant to a value not exceeding that agreed in the contracted consultants' contract.

In this regard, bidders must note the prime cost budget items to be included in the project quotation (see 12.1).

9. **PROJECT MANAGEMENT**

1 **Project Director**

The Project Director will be the chair of the joint Task Team set up by DEAT and SAWS to implement the SAAQIS development and implementation process.

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2 The Project Management Team

The Project Management Team will be made up of four members of the DEAT/SAWS task team and the consultant's Project Manager (see 9.3).

3 The Project Manager

The bid in respect of these terms of reference will nominate a senior member as the leader of the team of consultants that will be contracted by the department to carry out the work described by these terms of reference. This person, the Project Manager, will be responsible for managing the implementation of all the activities described in this document and the accepted proposal contained in the bid, and for the delivery of the required outputs of an acceptable quality within the required timeframes. The Project Manager will be the contact person for all departmental-consultant interactions and will report, through the Project Management Team, to the Project Director.

4 Project Steering Committee

The Project Steering Committee for this project will be the DEAT\SAWS SAAQIS task team.

10. PROJECT INFORMATION MANAGEMENT

1 Internal Project Communication

All decisions, suggestions, recommendations, reports, etc. concerning the project must be submitted in writing. In the case of emergencies, verbal decisions, suggestions, recommendations, reports, etc. must be confirmed in writing by the contracted consultant within 48 hours of the verbal communication.

All documents shall be prepared in MS Word and bar charts and spreadsheets in either MS Project or in Microsoft Excel. All required reports will be submitted to the project director in 15 hard copies as well as on an appropriate electronic storage medium (disk or CD).

Unless otherwise instructed or directed, the consultant will compile and submit documents and reports in accordance with the document entitled "Instructions for authors of reports and documents submitted to the Department Of Environmental Affairs And Tourism". To this end, the consultant will be provided with an electronic "report template" being a Microsoft Word document that has been structured in accordance with these instructions and containing the necessary "styles".

2 External Project Communication

All communication external to the project (e.g. response to complaints, press/media queries, etc.) will be carried out by the either the Project Director or the department's communication section. As such, all complaints, press/media queries, etc. must be referred to the Project Director together with a written briefing on a possible response.

11. TIMING AND IMPLEMENTATION

The project will commence following the signing of a contract between the department and the selected consultancy.

The project is expected to have a duration of no longer than 18 months and the following table provides some guidance/expectations in this regard.

Ref.	Output	Expected Delivery Date
6.1.1	Output A.1: SAAQIS Landing Page	2 weeks after project inception.

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6.1.2	Output A.2: Mandate Analysis	4 weeks after project inception.
6.1.3	Output A.3: Stakeholder Analysis	2 months after project inception.
6.1.4	Output A.4: Needs Assessment	3 month after project inception.
6.1.5	Output A.5: Information Source Assessment	2 months after project inception (in parallel with 6.1.3).
6.1.6	Output A.6: International Benchmarking	4 months after project inception.
6.1.7	Output A.7: Technical Assessment	5 months after project inception.
6.1.8	Output A.8: The SAAQIS Description and Implementation Plan	6 months after project inception.
6.1.9	Output A.9: The SAAQIS Described in the National Framework	7 months after project inception.
6.2.1	Output B.1: Framework and Central Database	7 to 8 months after project inception.
6.2.2	Output B.2: Phase 1 Module Establishment	8 to 9 months after project inception.
6.3.1	Output C.1: SAWS Establishment for hosting and operating the SAAQIS	7 to 9 months after project inception.
6.3.2	Output C.2: Implementation Manual	10 months after project implementation.
6.3.3	Output C.3: Capacity Development Plan	11 months after project inception.
6.3.4	Output C.4: Operating Policy and Management Plan	12 months after project inception.
6.3.5	Output C.5: In Service Capacity Support	Ongoing throughout the project.

12. THE BID

All bidders are required to submit a detailed implementation proposal as part of their bid. This proposal must clearly outline how the bidder proposes to carry out the work as described in these terms of reference. Although the bidder may provide the department with any information the bidder considers relevant to the proposal, the proposal should, as a minimum, provide detail on the following:

- **Understanding Of The Brief** – A brief (max 4, A4 page) summary of the bidder's interpretation of the work implied by these terms of reference;
- **Schedule of Activities** – Proposed activities required to generate the required outputs must be scheduled in a form that will allow the department to clearly understand the bidder's logic and the coherence of the proposal;
- **Project Implementation Plan, including output schedule** – The project implementation plan should describe the timing of, and interrelationships between, the proposed activities and clearly provide delivery dates for the project outputs. A Gantt bar chart that graphically illustrates the project implementation plan and critical path should be attached as an annex to the proposal;

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- **Consultancy Team** – A detailed description of all members of the proposed consultancy team should be provided. Reference must be made to: (i) the relevant qualifications, knowledge, skills, expertise and experience of the member; (ii) the activities each member is to be involved in; and (iii) the estimated time the member will be involved in the relevant activities. Detailed CVs of all members must be attached as an annex to the proposal.
- **Method Of Work** – A detailed description of how the bidder proposes to manage the project resources (human, financial and technological) for the successful implementation of the project (e.g. use of home office, internal management structures, etc.);
- **Project Quotation** – Over and above the requirements contained in the standard departmental bid documentation, a detailed project budget must be provided in an annex as follows:
 - a. *Detailed Activity Costing* – Each proposed project activity should be analysed in terms of the required inputs and these inputs should be costed as illustrated in the example below:

Activity	Quantity	Unit	Unit Cost	Value
A.2.2. Organise workshop				?
Project Manager	1	hours	?	?
Junior consultant	10	Hours	?	?
Telecommunications and consumables	1	lump sum	?	?

- b. *Summary Resource Costing* – The activity costing should be summarised into an annexed resource schedule as illustrated in the example below:

Description	Quantity	Unit	Unit Cost	Value
Consultancy Team				?
Project Manager	3	months	?	?
Senior consultant	6	months	?	?
Junior consultant	27	Hours	?	?
Secretary	3	months	?	?

In preparing the bid, the bidders must pay special attention to section 14 [check before publication??] of the Bid Specification and ensure that their bid clearly provides the information required for bid evaluation purposes.

1 Prime Cost Items

Prime cost items refer to elements of the project that may not be easily quantified by prospective bidders. As such, these elements are specifically quantified to ensure fair competition in the bidding process. The items identified in the following table are the prime cost items for this project and bidders must ensure that their bids reflect these items and their costs.

Prime Cost Item	Output Reference	Quantity	Unit	Comment
Provision for direct costs associated with study tours.	6.1.6	R150 000	Lump Sum Provision	This R150 000 (excluding VAT) must amongst others, be reflected in the project quotation with respect to Output A.6: International Benchmarking of National Air Quality Information Systems.

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Provision for hardware needed to establish initial SAAQIS server.	6.2.1	R1 million	Lump Sum Provision	This R1 million (including VAT) must amongst others, be reflected in the project quotation with respect to Output B.1: Framework and central database.
In service capacity support	6.3.5	200	Senior Consultant Hours	These 200 senior consultant hours must, amongst others, be reflected in the project quotation with respect to Output C.5: In service capacity support.
In service capacity support	6.3.5	400	Junior Consultant Hours	These 400 junior consultant hours must, amongst others, be reflected in the project quotation with respect to Output C.5: In service capacity support.

13. REPORTING

The department has developed a standardised quarterly project progress reporting regime that must be adhered to by all private service providers from 1 December 2006.

It is hoped that this reporting system will provide the department with:

- A means of ensuring that projects deliver the required high quality outputs within agreed time-frames and budgets;
- Uniform reports that are easily translated into government's standard internal reporting systems;
- Uniform reports that are easily translated into various donor reporting systems;
- Standardised information to allow for well-informed project management;
- Standardised information for publication on the department's web site;
- Effective financial management and cash-flow control; and
- Facilitated processing of progress payments.

In order to implement the reporting system, service providers are required to compile and submit the following documents throughout the duration of their contracts:

- A Quarterly Project Progress report in the standard format;
- An up to date Project Key Data Sheet in the standard format; and
- A Financial Management Report for Outsourced Projects in the standard format.

The documents must be submitted to the department no later than the following deadlines:

Report	Reporting Period	Submission Deadline
1 st Quarter Report.	April, May and June	15 July
2 nd Quarter Report	July, August and September	15 October
3 rd Quarter Report	October, November and December	15 January
4 th Quarter Report	January, February and March	15 April

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Furthermore, in order to assist the department in developing its budget for the forthcoming year, the 3rd Quarter Report must also contain a detailed cash-flow forecast for the forthcoming financial year. The cash-flow section of the standard format for the Financial Management Report should be used for this purpose.

14. CONTACT PERSON

Mr. Tsietsi Mahema, Director: Atmospheric Information Management, DEAT

Tel: (012) 310 3912

E-mail: tmahema@deat.gov.za