

1. EXECUTIVE SUMMARY

The requirement for incinerators to be authorised under the EIA regulation came into effect in September 1997. During 1998, the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (DACEL), undertook a preliminary information gathering study to get a better understanding of the status of the incinerators being used in Gauteng for the thermal treatment of Health Care Risk Waste (HCRW). The study revealed that there are about 50 incinerators operating in Gauteng at present, of which very few showed potential to be upgraded to such an extent that it would meet the required environmental standards. In addition to this, there was a marked reduction in ability for the existing incinerators in Gauteng to meet the increasing HCRW treatment demands.

During February 2000, DACEL appointed consultants to undertake a Status Quo Study for Gauteng, not only on the sources of Health Care Waste (HCW) and the availability of treatment facilities, but also to consider the feasibility of providing more cost effective and environmentally sound treatment services through regionalisation of the HCRW treatment facilities in Gauteng. The Status Quo Study, together with related information that are locally and internationally available, will serve as the founding blocks for implementation of the DANCED supported project, aimed at providing a Sustainable HCW Management System for Gauteng.

The DANCED supported project, as described in this Project Document, is designed to address the full HCW stream, from “cradle-to-grave”. The long-term goal is to establish sustainable HCW Management in Gauteng within the frames and principles of the National Waste Management Strategy (NWMS). The Immediate Objectives are as follows:

- Integrated Health Care Waste Management strategy and action plan for Gauteng developed.
- Gauteng Health Care Waste Management guidelines, technical specifications and tender material prepared.
- Institutional arrangements for provision of sustainable Health Care Waste management in Gauteng defined and in operation.

Various Outputs are defined that will be achieved in order to meet the Immediate Objectives and ultimately the Development Objective stated above. To achieve the Immediate Objective, a number of Activities will have to be undertaken and Outputs produced over the 24-month project period.

The project will be undertaken jointly between Danish and South African consultants, with DEAT being the Executing Agency and DACEL being the Implementing Agency for the project. DACEL nominated a senior staff member to act as the project manager. The Danish Chief Technical Advisor (CTA), appointed for the full project period, will assist the DACEL project manager. The full time staff contingent will further include secretarial staff that will be employed to support the consultants and the Project Management Group (PMG) in the daily project activities. Specialist consultants from Denmark and South Africa will further be employed to undertake various tasks within the overall scope of work for the project. The PMG, who will consist of representatives from the Implementing Agency, the Gauteng Departments of Health as well as Transport and Public Works, together with the CTA, will be responsible for the overall management of the project, including planning, supervision and monitoring of project activities. The PMG will in turn report to the Project Steering Committee (PSC), which includes a broad spectrum of governmental and non-governmental institutions and organisations. As the Funding Agency, DANCED will also be represented on the PSC.

One of the major challenges of the project will be to develop and implement sound institutional cooperation mechanisms to ensure open lines of communication not only during the project, but also thereafter, thus ensuring the long term sustainability of the HCW Management Strategy and Action Plans for Gauteng. The wide spectrum of stakeholders, from both the public and private sector, makes

it vitally important that mechanisms be put in place that will ultimately result in all stakeholders taking ownership of the project.

The technical matters to be addressed will to quite a big extent be done by making use of information from the Status Quo Study, to serve as the basis from which further development will be done. Throughout the project, one of the main objectives will be to ensure compatibility of the project not only with the Integrated Pollution and Waste Management (IP & WM) policy, but also with that of the National Waste Management Strategy (NWMS). Scattered pieces of standards and legislation related to HCW Management will be consolidated into workable and user-friendly documents. Capacity building, awareness creation and training will all be addressed through the existing initiatives being taken by the Department of Environment and Tourism's Capacity Building programmes.

An international conference on HCW, although not directly part of this project, will be convened to be held during the latter part of this project in order to not only extend the Awareness and Capacity Building initiatives beyond the borders of Gauteng, but also beyond the borders of South Africa. By inviting international speakers to the conference, the opportunity will also be used to create awareness amongst the general public by making extensive use of the media during that time, through detailed reporting on the conference proceedings.

With regards to the development of various documents on strategies, guidelines, standards, specifications and HCW Information Systems (HCWIS), the draft material will be put to test by means of pilot studies that will be undertaken in some appropriate hospitals/clinics. The information gained from these pilot studies, mainly related to HCW Management at source, will be used to update and improve on the material already developed.

In order to decide on the most appropriate alternative system for containerisation, collection, transport, storage, treatment and disposal of HCRW, the Feasibility Study will serve as the primary decision making tool. Since all of the technologies available for the various components of HCW Management will be considered, a clear understanding will have to be obtained on the appropriateness for implementation of the various alternatives in the Gauteng context.

By the end of the project a HCWM Strategy and Action Plans will have been developed in a participatory manner. This ensures a basis for structured decision-making and provides for a planned and prioritised way forward towards sustainable HCW Management. Guidelines and Training Materials will have been developed and tested for application. Technical Specifications and Tender Materials covering the full waste stream will have been prepared and will be ready for tendering. Furthermore, Capacity Building and Awareness programmes will have been outlined and last but not least, an operational interdepartmental structure defining functions and responsibilities appropriately and in line with the IP&WM policy principles will have been established and put in operation.

All this serves as the tools for DACEL and is an important precondition for implementation of a sustainable HCW Management system in Gauteng.

2. Context

2.1 BACKGROUND

2.1.1 Present Health Care Waste situation in Gauteng.

Increased environmental awareness in South Africa during the last decade created awareness amongst authorities on the potential impact that waste, and in particular Health Care Risk Waste (HCRW), can have on human health as well as the environment. Even though the recently developed National Waste Management Strategy makes provision for special treatment of HCRW, the backlog in the provision of suitable Health Care Waste (HCW) facilities and sustainable HCW Management systems, is still to be addressed. This is resulting in Gauteng's HCW needs being both short-term and medium-term.

Due to a lack of awareness and capacity within health care institutions, the proper management of HCW is neglected. This is not only resulting in Health Care General Waste (HCGW) being disposed off with HCRW, thus unnecessarily increasing the waste stream that requires treatment, but it is also resulting in HCRW being disposed of with the general domestic waste. Ignorance and irresponsible actions by some health care facility owners also result in deliberate disposal of HCRW in the domestic waste stream, thus avoiding the costs associated with the required treatment of HCRW. Such untreated HCRW as well as poorly incinerated HCRW ash, is often disposed of on uncontrolled waste disposal sites where informal reclamation of recyclable materials are often undertaken, thus exposing workers and pickers to the increased health and safety risks.

A number of shortcomings further exist as far as containerisation of HCRW is concerned. Without uniform application of standards, HCRW is often stored in containers that is not resistant to damage or that expose workers to injuries and infection. Storage of containerised HCRW at source as well as at treatment facilities, are often uncontrolled and not to prescribed standards. By being exposed to the elements, containers are often damaged, thus resulting in HCRW becoming exposed.

Transport of HCRW is often done in vehicles not suitable designed and equipped for the transport thereof and the lack of an effective manifest system sometimes result in HCRW from Gauteng finding its way to neighbouring provinces, where even less control on general waste disposal sites makes it easier for scrupulous transport contractors to dispose of untreated HCRW. Small quantities of HCRW being generated by small scale generators like private practitioners as well as by remote rural clinics is making it difficult for the collection thereof to be done cost effectively, which is often resulting in the waste being disposed of as part of the general waste stream.

Limited treatment facilities, mainly situated in the urban areas and often not meeting the environmental standards in terms of combustion and emission, is resulting in HCRW backlogs being created whenever there is a breakdown in any of the facilities. In such instances, poor management practices at treatment facilities is also resulting in HCRW not being treated on a "first in first out" rotation basis. With a shortage of treatment capacity, this results in HCRW remaining untreated for relatively long periods of time without being stored under controlled temperatures. Since the combustion requirements are often not met and due to manual overloading of the available treatment facilities, the HCRW is not always completely treated by the time that it leaves the incinerators and instead of being disposed of at hazardous waste disposal sites, the ash from the incinerators is often disposed of at general waste disposal sites. Available treatment facilities at public hospitals are also not being used optimally, as labour unions are preventing it from being used in excess of 8 hours per day.

Attempts by the responsible authorities to address the most urgent issues related to HCRW Management includes the undertaking of a survey as part of a Status Quo Study on both generation and treatment/disposal of HCRW in Gauteng. This is not only aimed at quantifying the present

HCRW stream being generated, but also the condition and available capacity of treatment facilities. Such information will for instance be used to determine the possibility of increasing the capacity of public treatment facilities by running it over longer periods, say 20 hours per day, instead of the present 8 hours. Only once the potentially increased capacity was quantified, will negotiations with the affected unions be entered into. The possibility of upgrading incinerators that were previously shut down, for not meeting environmental requirements, is also investigated in order to address the immediate needs. Throughout all of this, the authority's policy is however not to invest any money on upgrading of facilities that will not be sustainable and that will not be in line with the ultimate objective of creating sustainable HCW Management in Gauteng.

Although the above problems are not applicable in all instances, it is encountered quite frequently and subsequently results in poor HCRW management practices that are not only creating a risk to the environment, but also to the health of HCW workers as well as members of the public.

2.1.2 Existing tools for addressing Health Care Waste problems.

In this regard, Chapter 2 of the Constitution of South Africa sets out the right of every South African to an environment, which is not harmful to their health or well being. Every South African has the right to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that prevent pollution, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The Environmental Impact Assessment (EIA) Regulations that were promulgated under Sections 21, 22 & 26 of the Environmental Conservation Act (Act 73 of 1989) is one of the legislative mechanisms that has been employed to ensure that government can give effect to these environmental rights and fulfil the assigned functions. Provincial Members of the Executive Council (MEC's) for Environment have been delegated authorisation powers. In the Gauteng Province this function is the responsibility of the MEC for Agriculture, Conservation, Environment & Land Affairs (DACEL), Ms. Mary Metcalfe.

The most common method of treating and disposing of Health Care Risk Waste (HCRW) in Gauteng are by incineration. Incineration is a process, which is controlled under Schedule 2 of the Atmospheric Pollution Prevention Act (Act No. 45 of 1965), and as such is identified in GN R1182 as a process, which requires authorisation from DACEL in terms of the EIA regulations.

The requirement for thermal processors to be authorised under the EIA regulation is fairly recent with the legislation coming into effect in September 1997. In order to gain an understanding of the situation with respect to the thermal treatment of HCRW in the Gauteng province, DACEL undertook a preliminary information gathering study in 1998. This study revealed that there are approximately 50 operating HCRW incinerators in Gauteng.

Although Gauteng is home to many incinerators, there are limited regulations and requirements that apply to the installation and monitoring of incineration units. In 1994 the Department of Environmental Affairs & Tourism (DEAT) produced emission guidelines which prescribed the allowable stack emissions for various scheduled processes, set minimum operating temperatures, minimum residence times of flue gases as well as requiring all units to have secondary combustion chambers. In order to ensure compliance, a period of 8 years was granted for incinerator operators to comply with these requirements. Full compliance is therefore expected in the year 2002.

The majority of HCRW incinerators are owned and operated by provincial hospitals, which have, due to other priorities, not applied sufficient financial resources to upgrade or replace all provincial hospital incinerators to meet the 2002 compliance requirement. The slow adherence to the 2002 compliance deadline on the part of the public sector has resulted in a similar approach being adopted by the private sector, and it is therefore unlikely that the target date for compliance will be reached if

a firm commitment is not made by the public sector. This slow compliance program also impacts negatively on future installations, as environmental standards cannot be improved in the private sector if the same standards are not being applied in the public sector.

DACEL is of the opinion that the current policy to construct and operate incinerator units at individual hospitals is uneconomical. This policy results in poor operation and performance of incinerators, high maintenance costs, increased costs when environmental standards are increased, increased number of point sources of pollution, increased inspection and reporting requirements, and high costs for compliance with EIA legislation.

In an attempt to address the problems around Health Care Waste (HCW) Management in the province, DACEL embarked on a process to develop a HCW management strategy for Gauteng. The first step was to initiate a "Status Quo Study" with regards to the generation and treatment/disposal of HCW in Gauteng, also considering the feasibility of regionalising HCW treatment/disposal facilities, in particular for provincial hospitals. Results from this study will *inter alia* provide the rates, types and geographical location of the existing HCW generators as well as treatment/disposal facilities in the province. The study will be finalised towards the end of 2000 and the expected outcome in terms of reports is described in Section 2.4.

In addition to the above, DANCED was requested to support the development of the Gauteng HCW Management strategy beyond the Status Quo Study. During the 1999 Annual Consultations between Denmark and South Africa, the existing problems related to HCW in Gauteng as well as the proposed project outline were discussed. DANCED agreed that the proposed HCW project would be a good example of the National Waste Management Strategy (NWMS) being used as the departure point for the implementation of "on-the-ground" waste management, dealing with priority waste streams. It was agreed that DANCED would fund a project entitled "Sustainable Health Care Waste Management for Gauteng"

2.2 PROJECT CONCEPT

The project building blocks consist of the following:

- Status Quo Study undertaken by DACEL before commencement of the DANCED project. This study is intended to serve as a starting point in order to determine the extent of the present HCW generation, as compared to the availability of treatment/disposal facilities that has potential for upgrading, in order to meet the applicable environmental legislation;
- Establishing mechanism for future allocation of HCWM functions and responsibilities, horizontally and laterally between government departments and HCW institutions, in accordance with the constitutional requirement of co-governance. Close co-operation and joint planning between both the affected governmental departments as well as the public and private sector, is required for implementation of sustainable HCW management strategies. The mechanism for co-operation and task allocations will be agreed upon and formalised for inclusion in the HCWM guidelines;
- Framework HCWM Strategy and Action Plans for Gauteng, that will be fast-tracked to enable work to proceed in line with the directions outlined in the Framework. The HCW problems presently experienced in Gauteng calls for swift and speedy action and Action Plans addressing both short-term (1-2 years) and medium-term (3-5 years) needs will be prepared. In order to assist in executing the short-term Action Plans, funds for initiating urgent activities that will alleviate the present situation, has been allocated and will be released upon approval of a specific Project Document.
- Feasibility studies required for development of a final strategy that will include management scenarios as well as assessments of various legal and economical options. Various alternative

systems and technologies are available for environmentally sound treatment/disposal of HCW and it is therefore important that the alternatives be evaluated in order to identify the systems that will be best suited for the South African conditions;

- Guidelines for HCWM. Fragmented guidelines and legislation on various aspects related to HCW management, results in the need for consolidated guidelines that will deal with “cradle-to-grave” handling and treatment of HCW. The guidelines will include a chapter dealing with the mechanisms for future administration and co-governance;
- 3-month Pilot Studies at selected Health Care institutions for testing of HCW Management models, developed tools and documentation, as well as the effect of test-implementation of the HCWM Guidelines. The ultimate measure for determining the level of success achieved in development of the various components related to the HCW strategy is by testing it in practice wherever possible. Experience gained from the Pilot Studies will be used to improve on the material already developed;
- Final HCWM Strategy based on Status Quo, Framework Strategy, Feasibility Studies, Guidelines and Pilot Study results. The various aspects that formed part of the previous study as well as those that lead up to the development of a Strategic Plan, were all required for the ultimate development of a viable and sustainable HCW Strategic Plan for Gauteng;
- Technical specifications and tender documentation for potential out-sourcing of services within HCW collection, transport, treatment and disposal. There will be a need for the compilation of specifications and tender documentation specifically dealing with the needs and requirements of the selected HCW Management Strategy;
- A programme for the required HCWM Capacity Building and awareness raising will be drafted. Being a national task, it is expected that DEAT will take this responsibility over with assistance from the Gauteng HCWM project. For this project, only developed training materials will be implemented in the pilot institutions.

The current situation with regards to the treatment of the HCW stream in Gauteng has necessitated the project to be designed in such a way that it will enable early implementation of certain phases of the project. The project has therefore been designed to provide enough information for the development of a Framework within which further work will be undertaken, without necessarily having the complete model. Information obtained from further phases of the project will support refinement of the initial Framework to gradually provide all the building blocks required to complete the development of the Strategy.

The Strategy and Guideline development is intended to be developed “by the user, for the user”, which will ensure practical solutions to problem solving and a high level of “buy in” from all stakeholders. The challenge of the project will be to find creative solutions to the complex issues and tight time frames, which have already been identified.

2.3 GOVERNMENT POLICIES, PROGRAMMES AND PROJECTS

Since the new dispensation came into effect in 1994 the government has followed a path of policy development that reflects the progress towards achieving sustainable development. This policy development approach has also applied to the environmental sector. Initiation of the “Consultative National Environmental Policy Process” (CONNEP) was the first step in a series of environmental policy initiatives undertaken by DEAT. This process, which began in 1995 and was complete in 1997, was the first fully participatory environmental policy forming process in South Africa and was supported by DANCED. The CONNEP process developed into two legislative legs; the first being the National Environmental Management Act (Act 107 of 1998) (NEMA) and the second being the Integrated Pollution and Waste Management Policy (IP&WM) which was recently gazetted and

launched. NEMA represents the vehicle for the development of environmental policy and IP&WM represents the vehicle for the development of waste policy.

The IP&WM policy process, which was also supported by DANCED, was further developed into the National Waste Management Strategy (NWMS), which was an initiative jointly undertaken by DEAT and DWAF and was completed in October 1999. This process was also fully participative and was once again supported by DANCED. The development process comprised of two parts; the first part being the strategy development and the second part being the development of various action plans related to different aspects of a holistic approach to managing the waste stream.

The NWMS identified and addressed several key issues that will affect HCW Management. The relevant issues are listed as follows:

- To bring about a paradigm shift from end-of-pipe control to waste prevention and minimization;
- To ensure that public health and occupational health issues receive due consideration in all waste management practices;
- To initiate a system of integrated waste management through the implementation of institutional arrangements and funding mechanisms;
- To ensure integration of waste management initiatives with other government initiatives, programs and administrative systems;
- To integrate waste management with the overarching process of environmental planning, management and protection.

The NWMS strategy proposed the following tasks and time frames with respect to HCW Management for both the national and provincial level of government:

- DEAT is to develop guidelines for the safe management of HCW by 2001;
- DEAT is to review and revise existing air emission standards on thermal treatment facilities to ensure the protection of public health and the environment;
- The initial objective is that by 2002 all thermal treatment facilities will have been upgraded to comply with these standards, or will alternatively have been decommissioned;
- The planning of well-functioning HCRW treatment plants will be complete by the year 2002
- HCRW treatment facilities in rural areas will be in place by 2006;
- Each province is to assess its needs for HCRW treatment in both urban and rural areas;
- Each province is to draw up plans for the development of appropriate facilities in identified areas.

The NWMS process was recently followed by the development of a program for the implementation thereof, with five starter documents being produced during March 2000. These documents prepare the framework for the development of implementation plans. One starter document was specifically addressing HCW Management issues and is entitled "Program for the implementation of the NWMS Phase One: Management of Health Care Waste". The aim of the document was to undertake a brief study into the current status of Health Care Waste Management, approaches followed internationally and the particular needs of South Africa.

The abovementioned document made various recommendations, some of which are listed below:

- Integrated guidelines that cover the full spectrum of Health Care Waste should be developed;
- Provincial governments need to undertake surveys to determine the quantities, types and locations of all types of Health Care Waste generated within their areas of jurisdiction as well as the status and capacity of the available treatment and disposal facilities;
- Training and awareness raising programs, based on the aforesaid guidelines, must be developed, and implemented within all Health Care facilities;
- Sufficient funding must be made available in order to undertake the required studies and implement the training and awareness programs.

These national government policy processors have set the foundations on which provinces can build in order to achieve the goal of protecting the environmental rights of all South Africans through the implementation of appropriate waste management systems.

2.4 PRIOR, ONGOING AND PLANNED ASSISTANCE

Not only has work related to HCW Management been undertaken at national government, but provincial government has also been active in this field. During 1998 DACEL, supported by DANCED, commissioned a "Background Study on Medical Waste Management". This study was undertaken by INFOTOX and was aimed at collating information related to HCW Management and incineration, into a reference document, which provided a framework for the design of a step-by-step manual to assist with the review of EIA application for incineration processes.

The findings of this study were expanded on during the information collecting exercise undertaken by DACEL from June to November 1998, which resulted in recommendations with respect to HCW Management being made to DEAT. The purpose of this initial study was as follows:

- To obtain an initial overview of the status of medical waste management in Gauteng;
- To compile a document that will include as much as possible of the information available on HCW Management in the Gauteng province;
- To determine the extent of medical waste generation, as well as the treatment/disposal capacity in the province;
- To highlight information gaps that may exist;
- To prepare recommendations on HCW Management for presentation to DEAT.

The document provided the relevant background information and proposed some recommendations with respect to HCW Management, which were presented to DEAT during March 1999.

As a first step towards substantiated decision-making with regards to Health Care Waste Management in Gauteng, DACEL initiated a Status Quo Study on the present state of HCW Management in the province. The study is undertaken by a group of South African consultants under the leadership of DACEL and is scheduled for completion by the latter part of 2000. The report on the Status Quo Study is expected to create a firm and substantiated basis for development of a sustainable HCW Management system in Gauteng and will be the starting point for the DANCED project. The output is hence not a part of the DANCED project and is assumed to be available at project commencement. The Status Quo Study Report comprise of:

- Sources of HCW in Gauteng;
- HCW treatment /disposal facilities in Gauteng;
- DACEL EIMS and required future HCW updating;
- Strategic operations of HCW treatment/disposal facilities in Gauteng;
- Feasibility of regionalisation of HCRW treatment/disposal facilities in Gauteng;
- Siting scenarios (on a regional level) for location of HCRW treatment/disposal facilities within Gauteng.

Regarding the "Feasibility of Regionalising HCRW Treatment for Waste Generated in Provincial Government Hospitals in Gauteng", it is aimed at exploring and reaching an informed conclusion regarding the feasibility of regionalisation versus individual facilities for the treatment of HCRW generated at provincial hospitals in Gauteng.

It is intended for the abovementioned Status Quo Study Reports (Output 1.1) together with the abovementioned background document to provide baseline information for the development of a "Sustainable HCRW Management Strategy for Gauteng".

2.5 PROCESS

During the Status Quo Study, a Project Steering Committee (PSC) was established on which the following national and provincial governments departments were represented: Gauteng Dept. of Health (GDOH), National Dept. of Health (NDOH), Gauteng Dept. of Transport and Public Works (GDTPW), National Dept. of Transport and Public Works, Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (DACEL), National and Regional Department of Water Affairs and Forestry (DWAf), and National Department of Environment and Tourism (DEAT). The Steering Committee is expected to be taken over by the DANCED supported project and be extended with members from industry and civil society.

DACEL, together with Danish and South African consultants, drafted this Project Document. At an early stage of the project design various problems, needs and key issues to be addressed in the project was agreed upon during a multi-stakeholder workshop. At a later stage the project outlines and components was presented to the Status Quo Study Project Steering Committee, for initial comments. The draft project document was then consulted with key stakeholders and the Status Quo Study Project Steering Committee before being finalised. Reference is made to the Process Report. (Annexure 7)

2.6 INSTITUTIONAL SETUP

The following Section was prepared by representatives from DACEL and reflects its view on institutional arrangements. The information could be subject to further discussions.

The institutional set up with regards to HCW Management is perceived to be unduly complicated.

The Constitution states that all tiers of government have the responsibility to give effect to the right of all South Africans to a clean and healthy environment, which is protected for present and future generations. Environment and pollution control are described as functional areas of concurrent national and provincial competence, while provincial planning is an exclusive provincial legislative function. Cleansing, refuse removal and solid waste disposal are described as a local government competence, while the provincial government has a role to monitor and support local government in the province and promote the development of local government capacity to enable local governments to perform their functions.

In broad terms therefore, it appears constitutionally that medical waste management is the function of local government as far as implementation is concerned, while planning for sustainable HCW Management is the role of the province. It appears that the role of national government with respect to HCW Management is to ensure that a sustainable management system is in place that will give effect to the Constitution.

At both the national and provincial level there however seem to be uncertainty as to which department is in fact responsible for the management of the HCW stream; Department of Environment or Department of Health. Although the NWMS clearly states that DEAT has a responsibility with regards to waste management, hospitals have traditionally managed their own HCW waste stream that introduces the Department of Health as a role-player or regulator. In order to deliver a better service, many health care institutions are focusing its efforts on its core business, whilst outsourcing the management of the HCW stream.

This management system would then identify a role for the Department of Health with respect to HCW Management as being internal to the health care institution, and DEAT as being external to the health care institutions. The joint responsibility for a single waste stream does not encourage an integrated approach, which is based on the hierarchy of waste as envisaged by both the IP&WM and the NWMS.

At a provincial level, the Department of Health is a generator of HCW and as such has a “duty of care”, which is defined in Chapter 7 of NEMA. The provincial Department of Health therefore has a duty to ensure that all health care institutions under its care are disposing of their HCW in a manner that is not harmful to health or the environment. The provincial environmental departments, through sound planning, must ensure that all waste streams (including HCW) can and will be managed in an environmentally sound manner.

At the level of local government, it is to be ensured that facilities exist for the safe collection (treatment where applicable) and disposal of this waste stream, be it waste from public or privately owned facilities.

With regards to air pollution, Part B of Schedule 4 defines this as a local government function. Both the national and provincial levels of government have a concurrent legislative competency with respect to monitoring, supporting and building the capacity of local government to ensure their ability to perform their function with respect to air pollution.

All tiers of government have the responsibility to ensure co-operative governance. In order to ensure that there is accountability, optimum use of resources, waste reduction and minimisation of the duplication of procedures and functions within all tiers of government, one of the major challenges of this project will be to clarify the roles and responsibilities of the various stakeholders with regards to the management of the HCW stream.

3. ANALYSIS OF PROJECT SCENARIOS

3.1 PROBLEM ANALYSIS

An analysis of the current problems related to HCW Management was done at a stakeholder workshop held on 15 May 2000 (reported in Annexure 7). The analysis is graphically represented in the Problem Tree, Figure 1. The core problems identified *inter alia* centred around the unsustainable, unsound and inefficient management of HCW. Six major problem areas in the hierarchy of HCW Management were identified. Those were:

- Health Care Waste Generation

Although information relating to HCW generation by the private sector exists, it is not readily accessible to DACEL. This information is regarded as confidential as it is perceived to be of value to competitors in the HCW industry. There is presently no legislation promulgated that requires reporting on generation or disposal tonnages of HCW in Gauteng and there are also no guidelines on the type of information to be collected. The information available is often limited and not readily verifiable, even in this sector. Poor segregation practices were observed in some institutions visited, which are resulting in unnecessary large volumes of waste being incinerated. Although the segregation of waste is guided by a Code of Practice, SABS 0248:1993 “Handling and disposal of waste materials within health care facilities”, this code is not universally implemented in health care institutions and does not cover the full spectrum of HCW management activities.

A preliminary study to determine the state of HCW treatment/disposal undertaken by DACEL during 1998, revealed that storage facilities and waste handling at generation points were inefficient and unacceptable as a result of the increased risk to health and the environment. Double handling of HCW in the health care facilities and poor stacking of boxes were also noted as contributing to spillages.

- Collection and Transportation

During the collection and transportation of HCW from “cradle-to-grave”, no tracking system exists. HCW in transit is not accounted for and should it not reach its final destination, it is difficult to trace. The shortage of dedicated containers required to minimize double handling, increases the risk of exposure to the dangers associated with HCW.

- Treatment and disposal

In order to determine the available HCW treatment and disposal capacity within the province, some preliminary estimates on generation rates were made and the incineration capacity of operating incinerators identified were determined. The findings of that investigation revealed that the available capacity for incineration of HCRW generated in the province is limited and would be stretched to its limits if incinerators were not operating due to maintenance requirements or breakdowns. In addition to this, most incinerators are only operated during the normal 8 hours working day and not in shifts stretching over the full 24 hours. This has a negative impact on Gauteng’s treatment capacity, which could be improved significantly by increasing the incinerator operating hours. This has a further negative impact on the combustion efficiency between start-up and such time that the required operating temperatures have been reached. Appropriate backup storage facilities to cope with backlogs of HCW are often not provided at treatment facilities. At the majority of treatment facilities visited it was evident that the incineration facilities cannot achieve the operating standards laid down by DEAT in 1994. The ability of the technology used at most facilities to measure compliance to these conditions was also limited.

It seems that due to limited incineration capacity, lack of awareness and the perceived high costs of treating HCW, a substantial amount of HCW is illegally disposed of as part of the general waste stream at general waste disposal sites. The authorities frequently find dumped HCW at landfills.

- **Capacity Building and Awareness Raising**
There is general need for training and capacity building. The levels of awareness amongst HCW managers and the capacity amongst handlers and disposers to understand the dangers associated with the waste, is very low. This is as a result of inadequate and inefficient use of resources allocated for HCW Management. Due to a lack of proper training on HCW segregation and sound operation of incinerator facilities, the operational costs are increased dramatically. The general public is also not actively involved in using the existing community structures such as awareness campaigns and pressure groups.
- **Waste Information System**
The National Waste Management Strategy documents specify initiatives, responsibilities, and a framework for the future Waste Information System (WIS), including HCW, to be introduced by the provinces. Hence, the DACEL initiative needs to be co-ordinated with the NWMS WIS. DACEL has already developed an Environmental Information Management System, which is to be extended by an incineration/treatment module. The system will be used as a reporting mechanism between the Local, Provincial and National governmental departments. The envisaged WIS must have clear indicators that can be utilized for informed decision-making regarding the management of HCW.
- **Institutional co-governance.**
The co-operation between the different tiers of government is at present weak and very fragmented and a holistic approach covering all aspects of the HCW management stream is nonexistent. There is a need for defining and agreeing on a future model and mechanism for co-governance as required by the Constitution and the IP & WM White Paper. In addition to this, the relationships between authorities, non-statutory structures and other stakeholders need to be strengthened for the benefit of all parties.

Other aspects such as law enforcement, institutional and organisational weaknesses, definitions, technology and policy were commonly discussed and identified as cross cutting issues.

Figure 1

3.2 ANALYSIS OF OBJECTIVES

The problem analysis shows a number of problems that are either independent or interlinked in various ways. The major problems have been grouped and interlinked and based on this, objectives required to address the main problems were formulated. The objectives are also outlined in the Objective Tree that is presented as Figure 2. The objective analysis has resulted in the formation of 3 immediate objectives that will be addressed and met during the course of the project. Fulfilling these immediate objectives will result in a major step forward in achieving the overall objective: A sustainable health care waste management in Gauteng.

- **Immediate Objective 1: Integrated Health Care Waste Management Strategy and Action Plans for Gauteng developed.**

A strategy is required to fully integrate HCWM into the broader National Waste Management Strategy. To achieve this, HCW should be managed as part of the national process. The capacity and awareness to manage HCW in a sustainable manner should be strengthened and information required for sound decision-making should be readily accessible. It is vitally important for the strategy and action plans to be developed in a way that it will address both the short-term (1-2 years) as well as the medium-term (3-5 years) HCW Management needs of Gauteng. It should however be realistic and appropriate for implementation and sustainable operation within the South African context. Involvement by all stakeholders during development of the strategy and the staged action plan is important, since acceptance and ownership thereof by all stakeholders is vitally important for it to succeed during implementation.

- **Immediate Objective 2: Gauteng HCW guidelines, technical specifications and tender material prepared.**

Existing guidelines, standards and specifications are to be reviewed, and appropriate provincial guidelines, specifications and tender documentation for sustainable medical waste management are to be developed and implemented. The said documentation is to be developed in such a way that it will cover the full spectrum of activities related to HCW in a manner that it will be clear and understandable, without having various cross references to other sources of information.

- **Immediate Objective 3: Institutional arrangements for sustainable Health Care Waste Management in Gauteng defined and in operation.**

The principles of co-governance as defined by the National Environmental Management Act (NEMA) have to apply to ensure project linkages, interdepartmental co-operation and clear roles, responsibilities and functions. Proper lines of communication are not only to be established between the various departments on different levels of government, but also between the public and private sector to ensure ongoing communication between all parties affected by HCW Management.

Figure 2

3.3 SELECTION BETWEEN PROJECT ALTERNATIVES

Waste management in general has been identified as a strategic priority by DACEL as Gauteng is the heartland of the country's industry that also produces waste proportionately.

HCW Management has been identified by the NWMS as a short-term priority. In order to ensure that the policies and action plans developed by national government are implemented in a manner that it will protect the environment, a need for development of a strategy for sustainable HCW Management in Gauteng was identified. In accordance with further short-term priority requirements set by the NWMS, DACEL has prioritised complementary projects in domestic and hazardous waste management, which are planned to be implemented within the current financial year.

In order to decide which of the projects were to receive first priority, the alternatives were considered in terms of its importance to both human health and the environment as a whole. Poor HCW Management practices are presently not only affecting the health and safety of the people directly involved in HCW Management, but also that of the community at large. Such poor HCW Management practices not only stems from limited HCRW treatment and disposal facilities within Gauteng, but also from limited awareness and carelessness amongst the generators and transporters of HCRW.

When considering the various risks associated with HCRW presently being handled inappropriately and disposed of illegally on various uncontrolled general waste disposal sites in Gauteng, it became evident that the development and implementation of a sustainable HCW Management Strategy is of the utmost importance and was therefore prioritised as the most important aspect to be addressed. The HCW Management problems in Gauteng are not only centred around the provision of proper treatment and disposal facilities, but will have to ensure that the HCW is handled in a responsible manner "from-cradle-grave", with education and awareness forming some of the cornerstones of the project. The HCW Management strategy development will be undertaken in a participatory way that will ensure that the views from all stakeholders will be heard and that all the alternatives available in terms of technologies and systems are taken into consideration.

3.4 STAKEHOLDER IDENTIFICATION AND ANALYSIS

The planning, preparation and implementation of the HCW Management project will be by the three tiers of government institutions i.e. national, provincial and local, together with input from non-governmental organizations and other stakeholders.

An analysis of the more prominent stakeholders and other affected institutions and groups is presented below. In the Process Report (Annexure 7) a full list of stakeholders, together with a stakeholder-ranking matrix, is presented

3.4.1 National Government.

The HCRW Strategy for Gauteng affects the following National Departments:

- *The Department of Environmental Affairs and Tourism (DEAT):*
Being responsible for the implementation of the Atmospheric Pollution Prevention Act and Environment Conservation Act that constitute a legislative basis for the proposed project, one of DEAT's tasks is to evaluate the sustainability of development projects in accordance with the EIA requirements. In terms of HCW Management, DEAT is responsible for environmental protection and ensuring that environmental considerations are taken into account in development activities by providing specialist input with regards to environmental matters. Another of DEAT's functions is to facilitate the implementation of the Action Plans for waste treatment and disposal as required in terms of the National Waste Management Strategy (NWMS). The concurrent functions shared

between DEAT and DACEL calls for these Departments from different tiers of government to be partners in this project, with DEAT being the Executing Agency and DACEL being the Implementing Agency. The main area of interest to DEAT will be related to air emissions and compliance with required guidelines and standards. In addition to this, the DACEL project is to be seen as implementation of a facet of the National Waste Management Strategy that has been developed by DEAT. The NWMS includes various Strategies and Action Plans, including some related to HCW, for implementation. Hence, particularly strong links are to be established between DEAT on national level and DACEL on provincial level. To summarise, the following legislation is a DEAT responsibility:

- Provincial planning in terms of the constitution;
 - EIA authorisation;
 - Air Pollution Act;
 - Environmental Conservation Act, Sections 21, 22, 26;
 - NEMA;
 - IP&WM policy;
 - Hazardous Substances Act.
- *The Department of Health (DOH):*
The DOH is responsible for the implementation of The Health Act and the Human Tissue Act (Act No. 65 of 1983). The latter includes sections on disposal of HCRW. On national level, this requires proper HCW management systems within health care institutions, giving effect to the Constitution. To achieve a sustainable way of managing HCW waste, and in particular HCRW, the Department of Health is a key stakeholder in the process. The concerns and interest of this Department would be to ensure safe and healthy systems for HCW segregation, handling, storage, collection, transport, treatment and disposal. Strategies and systems developed for Gauteng can, where appropriate, be extended to the other provinces of South Africa. The National Department of Health will not only be in a position to convey such knowledge and expertise gained from this project beyond the Gauteng borders, but it will also be able to enforce certain measures as may be considered necessary. With its hands-on experience on HCW Management related matters, this Department can make a valuable contribution to the project from the design phase, all the way through to final implementation.
 - *The Department of Transport and Public Works (DTPW):*
This department is *inter alia* responsible for the implementation of the Roads and Transport Act. The collection and transportation of HCRW waste (classified as hazardous waste) is therefore of interest and concern to this Department, with special consideration of the risks associated with and emergency responses required in the event of an emergency situation during the transport of HCRW. To effectively reduce risks associated with the transport of HCW, this Department has a key role to play in the project by contributing towards a comprehensive HCRW transportation study. Issues around the waste manifest will also be of importance to this Department.
 - *The Department of Water Affairs and Forestry (DWAF):*
DWAF is responsible for water resource management and for the implementation of the new water related Acts i.e. the National Water Act, the Water Services Act and especially the Environmental Conservation Act, Section 20, which deals with permitting of waste disposal facilities. This department has a constitutional obligation to ensure that water resources are protected, equitably allocated and used in an optimal way for the benefit of all South Africans. The project requires from DWAF to play a distinctive and pioneering role in promoting and facilitating the safe disposal of treated HCRW in Hazardous landfill sites, thus preventing the pollution of water resources. This Department has a vital role to play in developing the Strategies and Action Plans.

3.4.2 Provincial/Regional Government.

At provincial/regional government level, the affected provincial departments are:

- *Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (DACEL):*
DACEL has a legislative responsibility to implement the Environmental Impact Assessment (EIA) regulations in terms of the Environment Conservation Act of 1989. This Department processes EIA applications for existing and new listed activities. Incineration as treatment of HCRW is a scheduled process (in terms of the Atmospheric Pollution Prevention Act) and therefore requires an EIA study. In an attempt to introduce a sustainable HCW Management system for Gauteng, DACEL is investigating the feasibility of providing environmentally sound HCRW Management services that are financially more affordable through possible regionalisation of HCRW treatment/disposal facilities. DACEL also have obligations in terms of the IP&WM policy paper that includes issues relating to the National Waste Management Strategy.
- *Gauteng Department of Health (GDOH):*
At provincial level, the Department of Health is responsible for on the ground implementation and management of the Health Act and the Human Tissues Act. The GDOH is a generator of HCW and as such has a “duty of care”, which is defined in Chapter 7 of NEMA. The provincial Department of Health is therefore responsible to ensure that all health care institutions under its jurisdiction are disposing of their HCW in a manner that is not harmful to health or the environment.

The facilities responsible for generating the largest portion of the overall HCW stream for Gauteng, i.e. public hospitals and clinics, is under the control of the GDOH with many of them responsible for the operation of HCRW incinerators on hospital premises. Being the single largest generator of HCRW and therefore the single largest user of HCRW treatment and disposal facilities in Gauteng, it is of paramount importance that this Department forms part of the project. Not only will their practical experience on HCW related issues be important to ensure achievable and sustainable Strategies and Action Plans, but it will also ensure immediate access to- and ongoing cooperation by staff from health care facilities selected for implementation of the proposed pilot studies. Final implementation of the HCW Strategies and Action Plans for Gauteng will have a direct impact on the HCW Management operations of the GDOH’s health care facilities, making it even more important for them to be part of the process.

- *Gauteng Department of Transport and Public Works (GDTPW):*
By being responsible for the provision, maintenance and upgrading of HCRW incinerators in most government hospitals, this Department is faced with escalating costs involved in the upgrading and maintenance of medical waste treatment facilities. With stricter environmental requirements being legislated, the costs for provision of such facilities are likely to escalate significantly, thus making it in the interest of this department to be an active partner in the quest to achieve sustainability HCW Management services at an affordable cost.
- *Department of Water Affairs (Regional offices):*
DWAF is represented in two Regional Offices in Gauteng, responsible for water pollution prevention and control in two catchment areas of Gauteng. Illegal dumping of HCRW on general waste disposal sites are not only creating health and safety risks for the landfill operators as well as informal reclaimers that may be present on the facilities, but it also creates a risk of polluting both surface and ground water. Another area of concern is the present disposal of HCRW incinerator ash on general waste disposal sites, once again creating a health and safety risk for humans and animals having access to the facility, whilst creating a threat of pollution to the environment.

3.4.3 Local Authority Level.

- Gauteng Association of Local Authorities (GALA):*
Local governments are constitutionally responsible for ensuring the provision of municipal services to communities in a sustainable manner whilst promoting a healthy and safe environment. Their specific functional areas of competence *inter alia* include a number of activities that are central to catchment management, including municipal planning, waste management, water conservation, sanitation and storm water management. Local authorities have a constitutional obligation to play a developmental role and to strive to meet the developmental objectives. Their roles include the mobilization of capacity for effective service delivery during maximization of growth and social development. Being the umbrella organisation of South African local governments, SALGA would be a relevant partner in terms of communication and spreading of the project results. Experience did however indicate that SALGA's downward lines of communication to the individual local governments are not always efficient and effective.
- Municipalities and Local Authorities:*
Municipalities and Local Authorities are the direct service delivery structures that are locally based. These formal structures have a statutory responsibility to provide services to their constituencies. One such responsibility is to ensure the safe collection and treatment/disposal of HCRW in its areas of jurisdiction. Ensuring reduced risks of poor environmental and public safety and health are the main areas of concern and interest for Municipalities. With the support they have from their constituencies, they are better positioned as relevant stakeholders for implementation of HCW Management Strategies. Being one of the main parties actively involved on ground level in terms of managing HCW issues it is crucial that local governments should be involved throughout the process.

3.4.4 Other Stakeholders and Affected Parties.

Many Non-Governmental Organisations (NGO's), Community Based Organizations (CBO's), Labour movements and Employee representative organizations have missions that relate to environmental management and are investing in relevant capacity building programmes among their members, client communities and common interest groups. Although some of the affected organisations and unions are listed below, other relevant stakeholders that may not yet be included will be identified during the inception phase of the project. Reference is also made to the stakeholder list included in the Process Report (Annexure 7).

- Labour Organisations:*
Chemical and Industrial Workers Union:
The union serves as a democratic, independent organisation where elected leaders of the labour community formulate policy on different levels. The union represents a strong united front where the workers' general, co-operative interests are co-ordinated within the organisation. It is continuously negotiating at a national level for the economic, sociological and security needs of their members. The negotiating environment includes many aspects like better working conditions, the working environment, wage negotiations, legislation that affects workers and socio-economic aspects. The Union is an important mechanism for liaison with the government as well as other sectors and groupings in the national economy. The Union may have an interest in partaking in the process to represent the worker's views in terms of the HCRW handling, transportation and treatment/disposal. The Union should hence have the option of becoming involved on the project.

Democratic Nursing Organization of South Africa (DENOSA):

DENOSA serves a specific constituency of the labour force, i.e. the nursing profession. Nurses are in this instance the focus group, as through its active participation and support for this project, a sustainable impact can be made on HCW Management practices. The nursing profession at both

private and public health care institutions is a strategic starting point to reach workers at the point of HCW generation. Valuable information regarding HCW generation, segregation, handling and storage can be obtained from this sector. The union would further be included in the proposed capacity building program that will assist in providing safer and environmentally more acceptable HCRW management practices.

- *Community Based Organization's (CBO's):*
South African National Civic Organisation (SANCO):
SANCO's view on delivery policy is that the approach of an integrated developmental strategy must be followed that takes into account conservation and environmental concerns. SANCO believes that these considerations will make the delivery of services more sustainable in the long term. The organisation is in support of integrated planning with joint accountability and responsibility between different services and stakeholders. In terms of service delivery, SANCO's policy is that service delivery must be driven by public sector in a sustainable manner. The organisation is calling for ongoing education and awareness, with an integrated approach that will involve all role-players in policy formulation. Previously disadvantaged communities are often the target area for unsafe and unhealthy disposal of untreated HCRW where informal reclaimers are often directly affected. This is where SANCO will have a strong input to make.
- *Affected Industries/Industrial Associations:*
A number of industries (or industrial associations) that consider itself to be directly or indirectly affected by HCW have shown interest in the project.

Industrial and Business Environmental Education (IBEE):

The IBEE is a non-profit association of leading businesses that strives to be proactive in the environmental field by committing itself to sound environmental management and by treating environmental issues as a corporate priority. The IBEE raises awareness within the business community on environmental issues and works with businesses in developing sound environmental management practices. It uses leading businesses as a catalyst to bring about change within the business community. IBEE interacts regularly with a wide spectrum of stakeholders' i.e. other business organizations, governmental institutions, NGO's and CBO's. It seeks to work in partnership where possible and build relationships with government departments. IBEE should be involved to provide the industrial perspective on the project.

Corporations, Waste generators, Transport and Treatment Contractors and Individual Businesses:

This sector will include individuals who are owners and operators of HCW plant and facilities related to HCW collection, transport, treatment and disposal. Involvement in HCW Management by this part of the private sector is business orientated. Their interests are central to increased business- and fair access to HCW Management opportunities. There is a potential for conflict of interest between parties that are in favour of localised facilities and those in favour of a regional approach towards the provision of sustainable HCW treatment/disposal services. Sanumed, EnviroServ, Phambili Waste etc. are but a few interest groups constituting this sector that will have to be involved. Reference is also made to Annexure 7 for a detailed list of stakeholders.

- *Non-Governmental Organisations:*
South African Council for Non Governmental Organisations (SACNGO's):
The umbrella body of NGO's, SACNGO, has shown interest in the HCW Project and considers itself to be directly or indirectly affected by the project.
The organisation's vision is to strengthen its effectiveness as an independent, non-governmental organisation, working towards achieving a South African environment that is wisely managed to ensure long-term environmental sustainability. Their mission is to promote public participation in caring for the environment. The organisation aims to promote sound environmental values and sustainable lifestyles, integrating conservation and development, securing the protection and responsible use of natural resources and finally to serve as an environmental watchdog.

SACNGO subscribes to the principles of environmental justice. It seeks to mobilize people's environmental concerns and facilitate their articulation within regional, provincial, national and international processes. It strives to provide an efficient communication, co-ordination and networking system whereby civil society can contribute by enabling participatory decision-making and democratic environmental governance. At the same time it supports workers and marginalized groupings in their efforts to reverse local environmental injustices.

The Council subscribes to sustainable development and environmental justice through policy, advocacy, research, networking and capacity building. It strives for equitable and ecologically sustainable development for South Africa in the interest of present as well as future generations. Specific NGO's that can be invited to participate in the project are the Environmental Justice Networking Forum (EJNF), Earth Life, etc.

The NGO sector has previously been closely engaged in matters related to waste management and may in future be specifically involved in treatment of HCRW. During development of the National Waste Management Strategy they stood firm ground and presented strong views. Hence the SACNGO should be invited to participate throughout the process.

4. DEFINITION OF THE PROJECT INTERVENTION

4.1 OVERALL OBJECTIVE AND CORRESPONDING INDICATORS

Sustainable Health Care Waste Management in Gauteng, established within the frames and principles of the National Waste Management Strategy, covering the full health care waste stream from “cradle-to-grave”.

Indicator: HCW Strategy and Action Plans implemented.

4.2 IMMEDIATE OBJECTIVES AND CORRESPONDING INDICATORS

Objective 1:

Integrated Health Care Waste Management Strategy and Action Plan developed for Gauteng

Indicator: Gauteng Health Care Waste Management Strategy and Action Plan presented.

Objective 2:

Gauteng Health Care Waste management guidelines, technical specifications, and tender material prepared

Indicator: Guidelines, technical specifications, tender material presented.

Objective 3:

Institutional arrangements for provision of sustainable Health Care Waste (HCW) management in Gauteng defined and in operation.

Indicator: Institutional and administrative co-governance arrangements for allocation and sharing of HCWM functions and responsibilities signed, distributed and operating. Project organisations put in operation.

4.3 OUTPUTS AND CORRESPONDING INDICATORS

The outputs are given in relation to the immediate objective to which it would eventually lead. These outputs relate to Gauteng Health Care Waste Management Strategy & Action Plans, to provision of guidelines, technical specifications and tender materials and to Project Organisation & Institutional Arrangements.

Note: For more detailed information, Section 4.3 on Outputs and Corresponding Indicators can be read in conjunction with the corresponding Main Activities described in Section 4.4.

Objective 1: Integrated Health Care Waste Management Strategy and Action Plan developed for Gauteng

Output 1.1: Status Quo Study report prepared.

As a first step towards substantiated decision-making with regards to Health Care Waste Management in Gauteng, DACEL has initiated a Status Quo Study on the present state of HCW Management in the province. The study is being prepared for DACEL by a group of South African consultants and is scheduled for reporting in the last quarter of 2000. The Status Quo Study report is assumed to provide a firm and substantiated basis for development of a sustainable HCRW Management system in Gauteng and will hence be the starting point for the DANCED project. The output from the Status Quo Study is hence not a part of the DANCED project and is assumed available at project commencement. The Status Quo Study Report comprise:

- Sources of HCRW in Gauteng;
- HCRW treatment /disposal facilities in Gauteng;
- DACE EIMS and required future HCRW updating of data;
- Strategic operations of HCRW treatment/disposal facilities in Gauteng;
- Feasibility of regionalisation of HCRW treatment/disposal facilities in Gauteng;
- Siting scenarios (on a regional level) for location of HCRW treatment/disposal facilities within Gauteng.

Indicator: Status Quo report approved and available.

Output 1.2: Framework HCW Strategy and Action Plan for Gauteng, based on the Status Quo Study report and the National Waste Management Strategies and Action Plans and other relevant information.

It is of major importance for Gauteng to establish a working platform for both the present project and for the province's most imminent administrative initiatives with regards to HCRW Management. To support this a Framework Strategy and Action Plan will be prepared on the basis of the IP & WM white paper, the priority issues in the National Waste Management Strategies and Action Plans, the Status Quo Study report and other relevant sources of information. The fast tracked Framework document will be prepared, consulted and modified accordingly within the inception period of the project. At a later stage of the project (Output 1.5) the Framework document will be revised, updated and extended into a final integrated HCW Management Strategy and Action Plan for Gauteng. As part of the Framework Strategy the short term Action Plans will define the immediate actions to be taken. The selected actions can be implemented after consultation and approval.

Indicator: Framework HCW Management Strategy and Action Plan available as part of the Inception Report for the project.

Output 1.3: Gauteng Health Care Waste Information System in line with the national Waste Information System.

Proper planning of future HCW initiatives relies on establishment of a Health Care Waste Information System (HCWIS). It is important to select a proper set of design criteria that will maximise the impact of the resources spent on the HCWIS. These criteria should involve:

- Data collection must be as simple and as cheap as possible;
- Starting the system with only basic data and then gradually expanding;
- Accurate enough to ensure well-informed decisions;
- Comprehensive enough to support the activities in this project;
- Co-ordination with the NWMS WIS;
- Regularly updating of information;
- Co-ordination with the NWMS System Development Guidelines;
- Co-ordination with the Southern Metropolitan Local Council (SMLC) project on Waste Information Registration.

A HCWIS has already been developed for the Gauteng Province by the CSIR. The current WIS design was however based on quite different design criteria. It is therefore necessary to review and amend the current system in light of the design criteria provided, based on the order of importance listed above. Before the review is undertaken, it is important to adjust the list as required in a consultative manner, in order to gain consensus among the stakeholders.

In March 2000 the Department of Environmental Affairs and Tourism (DEAT) published the 'Programme for the Implementation of the National Waste Management Strategy – Waste Information System'. This publication describes a full-blown Pollution Release and Transfer Register (PRTR) that contains considerable more information than the WIS originally envisaged as part of the NWMS. Introducing that level of detail into the HCWIS would require an enormous amount of

resources and training for the whole HCW Management sector, which on short and medium term is unrealistic and unlikely to be achieved.

To ease the burden of implementing the HCWIS it is recommended to use a phased approach with only the most critical and urgently needed information included in the initial phase.

Currently the Southern Metropolitan Local Council (SMLC) is establishing a Waste Database to support development of a first generation waste management plan for the area. As that general waste management project has a number of items in common with DACEL's HCW Management project, the activities should be closely linked as required by Activity 3.1.3

Testing of the revised HCWIS will be included in the pilot project described as Output 2.2.

Indicator: Revised HCWIS operational and tested.

Output 1.4: Feasibility study for HCRW management in Gauteng for various scenarios covering the waste stream undertaken.

Feasibility study undertaken for HCRW management in Gauteng for various scenarios covering the waste stream from "cradle-to-grave". The Strategy and Action Plan should be drafted on as broad and substantiated basis as possible, and all relevant issues should have been properly dealt with. A Feasibility Study will therefore be conducted to provide information on proven and relevant HCW management technologies and systems, especially with regards to HCRW treatment and disposal. A range of scenarios will furthermore be established and assessed with the legal and financial implications regarding operation and ownership for the alternative scenarios detailed. The Feasibility Study will be presented in a report that reflects the most feasible HCW management solutions for Gauteng under the present as well as predicted future conditions. The feasibility studies will include:

- Establishment of a number of HCRW Management scenarios for Gauteng, with centralized and decentralized treatment / disposal options, including assessment of the feasibility of these scenarios;
- Determination of site requirement principles for HCRW treatment / disposal facility locations, including preliminary environmental requirements;
- Assessment of various ownership and service delivery scenarios for services and facilities under the HCRW management scheme including legal, financial, contractual and practical implications;
- Status Quo assessment of legislation and regulations applicable to HCWM institutions and authorities covering the full HCW stream. This will include analysis of gaps and overlaps as well as assessment of legal implications in implementing the scenarios; cf. activity 1.4.2;
- Determination of financial implications in implementing the scenarios, cf. activity 1.4.2;
- Presentation of an outline of necessary permit application and EIA procedures for potential localities for HCRW treatment facilities;
- Investigation of various alternative forms of treatment / disposal facilities suitable for South African conditions;
- Compilation of information obtained from activities 1.4.1 - 1.4.7 into a draft Feasibility Study Report.

Indicator: Feasibility Study report finalised and approved.

Output 1.5: Final integrated HCW management Strategy and Action Plans drafted, consulted and approved.

Outputs 1.1 - 1.4 will form the basis for preparation of a final integrated Strategy and Action Plan that will be consulted with all relevant stakeholders before being finalised and issued as the Gauteng HCW Management Strategy and Action Plan. The final Strategy and Action Plan will also form the basis for the Outputs and Activities related to Objective 2 of the project.

Indicator: Final integrated HCW Management Strategy and Action Plan drafted, consulted and approved.

Objective 2: Gauteng Health Care Waste management guidelines, technical specifications, and tender material prepared.

Output 2.1: Gauteng guidelines for HCW Management based of ongoing activities, documents and international standards prepared.

Gauteng Guidelines will be prepared, based on existing activities and documents as well as international standards. The Guidelines will address administrative, institutional, legal and organisational issues as well as operational and general technical issues. An outline of the proposed Table of Contents is given under Activity 2.1.2. The Table of Contents will have to be defined and detailed at the project commencement stage and the drafting will take place in consultation with the institutions selected for implementation of the pilot study.

Indicator: Guidelines available.

Output 2.2: Pilot studies for HCRW Management at selected health care institutions designed, executed and reported.

Pilot Studies for HCW management at 2 selected health care institutions, recommended to be executed at a small sized public hospital (100 beds) and a private clinic (20-30 beds), are to be designed. However, the actual selection of the appropriate pilot institutions, including determination of the size and range of activities undertaken, is still open and will be done in consultation with the PSC at the project inception stage. The selection would be based on a set of selection criteria. The pilot project period, assumed to extend over a 4-month period, will also have to be finalised at the project inception stage. A lump sum has been allocated for supporting the pilot study activities. The purpose of the pilot study is to test various strategies and guidelines within the hospital environment, to introduce and demonstrate new HCW management systems and to record differences in HCW management before and after the pilot project period. The issues to be addressed in the pilot study are:

- Implementation/testing of draft Guidelines including institutional/administrative aspects to determine potential shortcomings (Output 2.1 and Output 3.2);
- Implementation and testing of training material/capacity building programme as outlined in Output 3.5;
- Introduce and test the HCRW Information System which will be the future system for collection of numerical HCRW data from the Health Care sector (Output 1.3);
- Categorizing, quantifying and record the status of HCW at the 2 pilot institutions before, during and after the pilot period (Activity 2.2.5).

The findings on the Pilot Study will be reported in a feedback document and the information on various aspects of the Pilot Study will be used to modify the relevant documents.

The pilot study should be carefully designed, agreed and executed in full co-operation with the institutional staff at all levels.

Indicator: Pilot project feedback report.

Output 2.3: Technical specifications, standard tender material and specific tender material for selected contract areas for Gauteng HCRW segregation, containerisation and storage at source prepared.

Clearly defined technical specifications, standard tender material and specific tender material for Gauteng HCW segregation, containerisation and storage at source, will be developed not only to ensure uniform standards throughout Gauteng, but also to level the playing field for Tenderers.

Standard tender documentation developed for Gauteng will be adopted for implementation of segregation and containerisation in specific health care facilities.

Indicator: Specifications and tender documents available.

Output 2.4: Technical specifications, standard tender material and specific tender material for selected contract areas for Gauteng HCRW collection and transport prepared.

Clearly defined technical specifications, standard tender material and specific tender material for Gauteng HCRW collection and transport will be developed not only to ensure uniform standards throughout Gauteng, but also to level the playing field for Tenderers. Standard tender documentation developed for Gauteng will be adopted for implementation in specific collection and transport areas.

Indicator: Specifications and tender documents available.

Output 2.5: Technical specifications, standard tender material and specific tender material for selected facilities for Gauteng HCRW treatment and disposal prepared.

Clearly defined technical specifications, standard tender material and specific tender material for Gauteng HCRW treatment and disposal will be developed not only to set uniform standards throughout Gauteng, but also to level the playing field for Tenderers. Standard tender documentation developed for Gauteng will be adopted for implementation on specific treatment and disposal facilities.

Indicator: Specifications and tender documents available.

Objective 3: Institutional arrangements for provision of sustainable Health Care Waste (HCW) management in Gauteng defined and in operation.

Output 3.1: Project organisation and linkages established.

Project organisation and linkages will be formalised and established. The Project Management Group and the Project Steering Committee will be established and the Terms of Reference agreed. Project related institutional linking and communication channels will be established. Organisational set up and linkages will be reported in the Procedures Manual and Inception Report as required by the DANCED Project Implementation Manual.

Indicator: Organisation and linkages in place and reports produced as required by DANCED.

Output 3.2: Institutional HCW management roles, responsibilities and functions at all levels of government described and future HCW management roles and mechanisms for co-operation defined, agreed and put in operation.

As a precondition for both the project implementation and future sustainable HCW management in Gauteng, it is necessary to establish a clear definition, understanding and agreement of the existing and future roles, responsibilities and functions. The established mechanism for future co-governance will be formalised and put into operation during the course of the project. The mechanism should be achieved through consultation with and participation by the stakeholders and tested in the pilot institutions.

Indicator: Institutional, administrative and organisational co-governance arrangements for allocation/sharing of HCWM functions and responsibilities signed, distributed and put in operation.

Output 3.3: Project consultation process defined, agreed and implemented.

A clear procedure to be developed for the identification of stakeholders and a structure and time schedule for the project consultation process is to be compiled that will ensure full and timeously participation from stakeholders and limit deviations from the scope during the consultation process.

Indicator: Consultation process scheduled, agreed, reported (Inception Report) and implemented

Output 3.4: HCW awareness plan outlined.

The HCW awareness plan is to make provision for HCRW awareness raising on various levels and focusing on aspects related to HCW within the industry as well as amongst members of society. The target groups and the tools for awareness raising should be specified and justified and a funding mechanism further outlined. Cognisance is to be taken of the complexity of the South African society during the development. It is the intention that DEAT will outline the plan and the DEAT Capacity Building Unit has been requested informally to consider the task. DACEL will follow the matter up by formally requesting assistance for the development of the awareness program, by referring to the White Paper's policy principles. However, limited funds for compiling a plan has been allocated on this project, should DEAT for some reason fail to deliver.

Indicator: DEAT HCW awareness plan presented.

Output 3.5: HCW Capacity Building programme developed and implemented.

The programme will address all aspects related to HCW management within both public and private sector. Part of the programme will be a further specification and development of the needed training material for implementation in the pilot study. It is the intention that DEAT will develop the programme and the DEAT Capacity Building Unit has been requested informally to undertake the task. DACEL will follow up by formally requesting assistance for the development of the Capacity Building programme, by referring to the White Paper's policy principles. However, limited funds for developing a Capacity Building programme and training materials has been allocated on this project, Should DEAT for some reason fail to deliver.

Indicator: DEAT capacity building programme and training materials available timeously.

Output 3.6: A national/international HCW Management conference set up and run in close co-operation with DEAT and DOH.

This conference will not only be aimed at building capacity by the parties attending the conference, but also by the general public through detailed publicising of the event and possible declaration of S.A. National Health Care Waste Week. The opportunity will therefore not only be used to extend the capacity building beyond the borders of Gauteng, but also beyond the borders of S.A.

Indicator: Lists of participants.

4.4 MAIN ACTIVITIES

Re output 1.1: Status Quo Study Report prepared.

Activity 1.1.1: Pre-project activities, whose output will serve as basis for the present project, planned to be finished by the end of 2000 in a Status Quo Study report.

The pre-project Status Quo Study activities will be finalised and reported on before project start-up and the information will hence be available for the project team.

Re output 1.2: Framework HCW Strategy and Action Plan for Gauteng, based on the Status Quo Study Report and the National Waste Management Strategies and Action Plans and other relevant information.

Activity 1.2.1: To evaluate information from the Status Quo Study report, the National Waste Management Strategies and Action Plans, and other relevant sources of information on HCW Management.

The first step towards drafting of a Gauteng HCW Management Framework Strategy and Action Plan is to review relevant information and documents intended to form the basis for this Framework

document. The available documents inter alia includes the Constitution, the IP&WM Policy Paper, the National Waste Management Strategies and Action Plans, the DACEL Status Quo Study report, the DEAT prepared Starter Documents, strategies compiled by other departments as well as plans and documents regarding HCW Management issues. The outcome of the review will be an evaluation memo highlighting the most important issues for inclusion into the Framework Document.

Activity 1.2.2: To draft a framework HCW Strategy and Action Plan for Gauteng based on the information evaluated.

The Evaluation Memo referred to in Activity 1.2.1 will provide the basis for DACEL as well as the Danish and South African consultants to draft the Gauteng HCW Management Framework Strategy and Action Plan. The Framework document will be a preliminary strategy and will highlight issues and actions to be dealt with in the short-term, (1-2 year time frame) as well as indicating the HCWM direction and way forward in the medium-term (3-5 year time frame).

In terms of the short-term issues, the draft framework document will present an Action Plan addressing the short-term (1-2 year) HCW problems and needs in Gauteng. The immediate actions may entail any of the following:

- A reduction in the waste stream through the implementation of training and awareness programmes in hospitals and clinics. This could include a study tour to Danish HCW hospitals for key personnel at Gauteng hospitals and authorities;
- Increased treatment capacity by extending the operating hours of existing incinerators;
- Upgrading to the required standards and recommissioning of incinerators that was previously shut down for not meeting environmental standards;
- Additional pilot or demonstration projects;
- Any other actions that will assist in addressing the immediate HCW needs in Gauteng.

The short-term action plan will result in and include the preparation of a DANCED project document that define, detail and motivate selected outputs and activities that will address the immediate needs in accordance with objective of providing sustainable HCW Management for Gauteng.

A lump sum of 4 million DKK has been allocated in the budget to be used for immediate measures and actions that could be funded within the frames of the sustainable HCWM project. Such funds will however only become available on DANCED approval of the project document.

The medium term Action Plan will deal with the issues described in this document.

Activity 1.2.3: To consult and agree on the HCW Framework Strategy and Action Plans.

The draft Framework document will be consulted following an agreed process and modified into a final Gauteng HCW Management Framework Strategy and Action Plans. This document will be the working platform for the project and especially regarding the activities related to the immediate problems and solutions as well as to the preparation of Guidelines, Technical Specifications and Tender Documents.

Re Output 1.3: Gauteng Health Care Waste Information System in line with the national Waste Information System.

Activity 1.3.1: Description of the overall Framework of the envisaged HCWIS with segregation of waste, detail level, system actors, etc.

For the technicians to be able to develop a HCWIS that will be adjusted to meet DACEL's exact needs, it is important that a holistic description be given of the system, which is not the actual piece of software, but rather items like:

- What the levels of segregation is that will eventually be required, thus providing the background for a proper classification system;

- What the level of detail and precision is that will be required, thus providing the background to select the proper data collection points – the places where the requested data is available at the fewest locations;
- What the standard of quality assurance is going to be that will be applied at DACEL;
- Who the HCW actors are, which will once again have an impact on the design of the system.

The set of information to be included in the HCWIS must be critically assessed. Only information urgently and strategically needed to support the activities in the present project should be included in the initial set-up of the system. A phased plan of how and when to extend the initial set-up will however be included. Compatibility with the WIS in the National Waste Management Strategies and Action Plans will be emphasised, with due cognisance being taken of the existing DACEL WIS.

Activity 1.3.2: Assessment and decision on the amount of economic and human resources that will be available to operate the HCWIS.

Parallel to activity 1.3.1 and being an integrated part in selecting the future HCWIS, is the assessment and decisions on the detail level and comprehensiveness of the HCWIS in terms of the economic and human resources to be allocated to the future task within authorities and organisations involved in data reporting. It is important that the design of the HCWIS be based on a clear understanding of the resources that will be available at DACEL and other affected parties for implementation and maintenance of the WIS.

Activity 1.3.3: Technical HCWIS principles drafted, consulted, agreed and finalised.

Based on the resource assessment and the holistic description the technical principles that will enable the system to work, HCWIS principles must be selected, whilst keeping in mind that the simpler the technical solution, the better the chance of successful implementation. If, for example, people will be required only to report information on the WIS once a year, it may not be necessary to set up a highly sophisticated system for Internet online updating of data, as electronic reporting by means of a diskette or even a hard copy may prove to be just as effective.

Activity 1.3.4: Adjustment of the DACEL HCWIS to the agreed resources, framework, and technical principles. Developed prototype tested during pilot project (activity 2.2.4), modified and distributed.

Adjustment of the DACEL HCWIS software is a rather straightforward process once the abovementioned activities have been accomplished. The principle is for any information not specifically called for in the initial implementation of the HCWIS, to be removed or concealed. The reason for this is that the training process for any piece of software expands considerably with the amount of information and number of screens. The initial implementation motto to be applied is to “keep it as simple as possible”.

The activity includes development of a data entry prototype for testing at the pilot institutions, the subsequent modifications and ultimate finalisation. Guidelines will be developed and the software distributed. The initial distribution list will as a starting point include the main HCW institutions and organisations, but the number will have to be agreed upon by the PSC at a later stage.

Re Output 1.4: Feasibility Study for HCRW management in Gauteng for various scenarios covering the waste stream undertaken.

Activity 1.4.1: To prepare a summary of relevant HCRW technologies covering the waste flow from “cradle-to-grave”, its advantages and disadvantages for various HCRW categories, its costs and to assess their applicability in the Gauteng context.

It can be considered a foregone conclusion that HCW will have to be segregated into HCGW and HCRW in order to allow for a technically, environmentally and economically feasible management solution. However, a firm basis with certain ground rules for choosing between various alternative management technologies within HCRW segregation, containerisation, internal transport and storage,

external transport and storage, as well as treatment and disposal has to be established. A summary will therefore be made of appropriate technologies for implementation in the Gauteng context. Alternative technologies will be identified and described for the various HCRW categories with its cost and appropriateness for Gauteng being assessed. This activity will result in a technology assessment report/memo.

Activity 1.4.2: To establish a number of HCRW Management scenarios for Gauteng, with centralised and decentralised treatment / disposal options, and to assess the feasibility of these scenarios.

The proposed technologies within the various steps of HCRW management may be interrelated, i.e. certain treatment/disposal technologies will need certain segregation and collection schemes and vice versa. Therefore, a number of scenarios for HCRW management in Gauteng will be established. The scenarios will have its point of departure by considering various degrees of centralisation/decentralisation of treatment facilities and the implication thereof in relation to the preceding steps and subsequent disposal. A number (around 4 to 5) of scenarios with some variants should be considered that is reasonably expected to cover the full spectrum of options. It should be noted that the Provincial Governments are required to undertake this activity in terms of the IP & WM policy.

Activity 1.4.3: To establish site requirement principles for HCRW treatment / disposal facility locations, including preliminary environmental requirements.

Different options for HCRW treatment/disposal facilities may have different site requirements, depending on the technology applied. It is therefore intended for this activity to present an outline of these requirements, based on existing South African standards and regulations such as the Minimum Requirements from DWAF and the Air Emission Standards from DEAT. The presentation should result in some general principles for localisation of treatment and disposal facilities and the potential requirements related thereto.

Activity 1.4.4: To assess various ownership and service delivery scenarios for services and facilities under the HCRW management scheme and legal, financial, contractual and practical implications.

Ownership of treatment/disposal facilities and the possible outsourcing of HCRW management services may have far reaching implications of a practical, legal and financial nature. The purpose is to illustrate a range of options for facility- and service ownership and its implications, also pointing out some of the contractual requirements where outsourcing of certain components of HCRW Management is considered. Special attention will have to be paid to the “duty-of-care” principle, i.e. the waste generator’s responsibility and liability for the destiny of the waste after it has been handed over to a contractor.

Activity 1.4.5: To identify legal implications in implementing the scenarios, cf. activity 1.4.2.

A Status Quo assessment of legislation and regulations is to be done for relevant HCW Management institutions and authorities covering the full HCW stream, which will include analysis of gaps and overlaps. Where shortcomings are identified, the required draft legislation is to be prepared as part of the motivation to Central Government to have the necessary amendments made to the existing acts.

Besides the direct legal implications identified under Activity 1.4.4, there may be other implications resulting from this, depending on the various HCRW Management scenarios, cf. Activity 1.4.2. Legal implications may be such issues as imposing the HCRW generator to: (1) use a specific waste treatment facility to ensure reasonable distribution of the waste generated throughout the province, (2) ensure the required treatment of the waste and (3) oblige the waste treatment and disposal facilities to receive waste from any generator within a certain area, thus not excluding other waste collection contractors from making use of an existing treatment facilities. Legal initiatives and measures may have to be taken in the form of legislation in order to ensure that the intentions of the Strategy and Action Plan can be fulfilled and the report should make appropriate recommendations in this respect. In addition to this, the Gauteng Tender Board regulations and requirements on tendering, for example with regards to empowerment requirements, are also to be addressed.

Activity 1.4.6: To identify financial implications in implementing the scenarios, cf. activity 1.4.2.

Besides the direct financial implications identified under Activity 1.4.4, there may be other implications resulting from this, depending on the various HCRW management scenarios, cf. Activity 1.4.2. This may relate both to financing of the investments and activities necessary to implement the Action Plan as well as to payment schemes and the principle of fair and even treatment. Financial/legal initiatives may be necessary to ensure for example that all users of a particular treatment/disposal facility pay the same fees for treatment/disposal of HCRW, irrespective of relations between the user and the owner of that facility. Transparency in determination of treatment/disposal fees and company accounts should thus be carefully considered.

Activity 1.4.7: To present outline of necessary permit application and EIA procedures for potential localities for HCRW treatment / disposal.

The extend of information required to process applications as well as the required timeframe for processing of environmental and other permit applications, including EIA procedures, may be crucial in making a decision on the feasibility of various alternative HCRW Management options. This activity, which is of particular importance when selecting a treatment/disposal option, will outline the requirements in terms of content and time schedules and will be included in the Feasibility Study. Part of the activity will include updating of the Gauteng Medical Waste Incineration Manual (Nov. 1998).

Activity 1.4.8: To compile information obtained from activities 1.4.1 – 1.4.7 into a draft Feasibility Study Report.

Based on the information outlined and compiled under activities 1.4.1 - 1.4.7, a comprehensive draft Feasibility Study Report will be prepared. The draft report will present all of the main findings of the previous activities and will also make recommendations as to the most feasible HCRW management solutions in the Gauteng context. The recommendations will be substantiated and the expected consequences illustrated.

Activity 1.4.9: To circulate, consult and finalise Feasibility Study Report.

The draft Feasibility Study Report will be circulated to key stakeholders and consulted. Based on the consultation process, a final Feasibility Study Report will be prepared and issued.

Re. Output 1.5: Final integrated HCW management Strategy and Action Plans drafted, consulted and approved.**Activity 1.5.1: To reassess and reformulate the Framework HCWM Strategy and Action Plans (activity 1.2.2) into a draft integrated Gauteng Strategy and Action Plans.**

The Framework Strategy and Action Plan developed as Activity 1.2.2 and 1.2.3 should be revised and transformed into a final version. This will be done on the basis of the preceding outputs, especially the Feasibility Study, Output 1.4. It is assumed - and a precondition for the progress of the project - that these outputs will be consulted and finalised at the outset of this set of activities. The final draft Strategy and Action Plan is intended to direct further development and launching of new initiatives in Gauteng HCW Management for the next 3-5 years.

Activity 1.5.2: To circulate and consult the draft integrated Gauteng HCW Management Strategy and Action Plans.

The final draft Gauteng HCW Strategy and Action Plan will be circulated to- and consulted with all stakeholders. It is assumed that the consultation will be undertaken without delays, as the final Strategy and Action Plan document is a precondition for progress on follow-up activities, especially the activities related to the outputs under Objective 2.

Activity 1.5.3: To issue the integrated Gauteng HCW management Strategy and Action Plans.

Following the consultation process, the final draft Strategy and Action Plan will be modified and issued as the final HCW Strategy and Action Plan for Gauteng.

Re output 2.1: Gauteng guidelines for HCW Management based on ongoing activities, documents and international standards prepared.

Activity 2.1.1: To review international guidelines and national initiatives for HCRW Management.

A literature study is to be undertaken, with the objective to *inter alia* scrutinise existing national as well as international guidelines on HCRW. Cognisance is also to be taken of local initiatives for HCRW in order to evaluate the strengths and weaknesses thereof in the South African context.

Activity 2.1.2: To prepare first draft of Gauteng HCRW guidelines, covering the waste from “cradle-to-grave”.

To prepare first draft of Gauteng HCRW guidelines that will be based on the information obtained from cf. Activity 2.1.1. It will serve as the point of departure for the consultation process, whilst also being used as an interim guideline for Gauteng until the final guidelines are issued. The aspects to be addressed will include, but not be limited to, the following:

- Objective of guideline and target groups;
- Principles of HCRW management;
- Definition of HCW and HCRW;
- Legislations and regulations;
- Co-ordination and the roles of central, provincial, regional and local government;
- Risk of infection;
- Collection of numerical data/Waste Information System (HCWIS);
- Segregation, containerisation and initial storage;
- Internal transport, handling;
- Collection, loading and external transport;
- Central storage;
- Incineration and other treatment options;
- Final disposal;
- Management and administration;
- Recycling and waste minimisation aspects;
- Training and awareness;
- Check lists;
- Sources of further information.

Activity 2.1.3: To consult and finalise the first draft Gauteng HCRW guidelines.

To consult with staff from the pilot study facilities and amend the draft Gauteng HCRW Guidelines. The consultation process will use the draft HCRW Guidelines as a point of departure. Input made by staff from the facilities identified for the pilot studies will assist in amending the draft Guidelines on aspects related to HCW generation, not only to meet the needs of the pilot study facilities, but rather that of Gauteng in general.

Activity 2.1.4: To modify Gauteng HCRW guidelines after testing, cf. activity 2.2.2

To modify Gauteng HCRW Guidelines after testing the section on aspects related to waste generation during the pilot studies, cf. Activity 2.2.4. Having amended the draft Guidelines section related to HCW generation in consultation with the staff from the facilities where the pilot studies are to be undertaken, it is to be tested by means of pilot studies to evaluate its effectiveness and soundness in terms of environmental and health considerations, whilst ensuring its suitability for implementation. On completion of the pilot studies, certain modifications on aspects tested may be required to ensure that the Guidelines will ultimately be implemented effectively.

Activity 2.1.5: To consult, finalise and issue Gauteng HCRW guidelines.

To consult, finalise and issue Gauteng HCRW Guidelines addressing the HCRW stream “from cradle-to-grave”. The draft Guidelines, as amended on completion of the pilot study, will be used as a point

of departure for broader consultation with all stakeholders. Workshop participation as well as written comments will be used as input during the consultative process. On completion of the consultation process, the final HCRW Guidelines for Gauteng will be issued.

Re output 2.2: Pilot studies for HCRW Management at 2 selected health care institutions designed, executed and reported.

Activity 2.2.1: To design, prepare and agree a structured plan for implementation and reporting of the pilot studies.

To design the pilot studies and prepare a structured plan for implementation thereof in two selected health care institutions. The draft Guidelines (Activity 2.1.2.) on the waste generation, the Training Material developed (Activity 3.5.4) and the WIS developed (Activity 1.3.4), are to be implemented in the pilot study institutions. Ongoing coordination for smooth implementation and monitoring of the process will be required in order to verify the success thereof. The implementation plan will specify reporting requirements (Activity 2.2.6)

Activity 2.2.2: To test draft guidelines including the administrative and institutional aspects (re. Output 2.1 and 3.2)

To test the draft Guidelines on HCW generation and management within the pilot institutions. The pilot studies will not only indicate the effectiveness and appropriateness of the draft Guidelines on HCW generation and management but it will also provide information on possible weaknesses that may exist as well as improvements that will be required.

Activity 2.2.3: To test prepared training material for pilot study area staff, cf. 3.5.5.

To test prepared Training Material through staff at the facility selected for the pilot study. (Activity 3.5.5) The Training Material for hospital and clinic staff will be tested and modifications incorporated as required.

Activity 2.2.4: To introduce and test the HCWIS principles and techniques in pilot institutions.

To introduce and test the principles and technical solutions of the HCWIS at the pilot study institutions. This will include testing of the selected classification system, the applicability of the reporting requirements, usefulness of the information in the HCW handling system as well as the functionality of the HCWIS at DACEL. Findings obtained from the testing will go forward as recommendations for the next edition of the HCWIS. The Pilot Studies will include waste tracking from the pilot institutions to the treatment facilities.

Activity 2.2.5: To categorise and quantify HCW at selected health care institutions before and after pilot study period.

To categorise and quantify HCW at selected pilot study health care institutions before and after execution of the pilot study. In order to be able to measure the effectiveness of the Guidelines on HCW generation, the Training Material for health care workers as well as the WIS, the status quo with regards to the HCW is to be quantified at the pilot study institutions before and after implementation.

Activity 2.2.6: To prepare feed-back report on pilot studies for activities 2.2.1 – 2.2.5

To prepare feedback report on pilot study for Activities 1.3.4, 2.1.4 and 3.5.6.

The results obtained from the pilot study are to be recorded in a pilot study report for future use. Recommendations on any changes that may be proposed with regards to the draft Guidelines on HCW generation, draft Training Material for health care workers as well as the draft WIS, is to be recorded in the pilot study feedback report. The report will resent the status quo at pilot study commencement, the methods and tools applied, the results and the recommended modifications needed. The overall effect of the pilot study should be documented. The Activity 2.2.1 details the reporting requirements.

Re Output 2.3: Technical specifications, standard tender material and specific tender material for selected contract areas for Gauteng HCRW segregation, containerisation and storage at source prepared.

Activity 2.3.1: To review existing regulations and other material on HCRW segregation, containerisation and on-site storage.

To review and evaluate the appropriateness of international and local specifications and other standards that may be in existence regarding HCRW segregation, containerisation and onsite storage, a literature study is to be done. Specifications that may exist locally on segregation, containerisation and onsite storage of HCRW are to be compared with international specifications in order to identify potential shortcomings.

Activity 2.3.2: To develop appropriate technical specifications for HCRW segregation, containerisation and on-site storage.

To develop technical specifications for HCRW segregation, containerisation and onsite storage that will be appropriate for Gauteng. The technical specifications to be developed should be prescriptive enough to ensure sound HCRW segregation, containerisation and onsite storage systems from both a health and environmental point of view, whilst allowing scope for new technologies to be introduced. Possible interfacing between waste containerisation systems and transport systems needs to be recognised.

Activity 2.3.3: To develop standard tender material for HCRW segregation, containerisation and on-site storage.

Standard tender material, based on the final Specifications developed cf. Activity 2.3.2 for HCRW segregation, containerisation and onsite storage should be such that it can, with some modifications, be implemented at any level of potential HCRW generators identified during the Status Quo Study. Allowance is also to be made in the standard tender material for empowerment of previously disadvantaged contractors without compromising on standards. Regulations from the Gauteng Provincial Tender Board are to be incorporated in the tender documentation.

Activity 2.3.4: To develop specific tender material for HCRW segregation, containerisation and on-site storage.

The standard tender material developed in cf. Activity 2.3.3, will be amended to suit the area identified for initial implementation of the segregation, containerisation and onsite storage contract. This will be similar to the future procedures required for modifications to the standard tender documentation. Cognisance is also to be taken of potential interfacing with existing HCRW management contracts entered into by provincial hospitals in Gauteng.

Re Output 2.4: Technical specifications, standard tender material and specific tender material for selected contract areas for Gauteng HCRW collection and transport prepared.

Activity 2.4.1: To review existing regulations and other material on HCRW collection and transport.

To review and evaluate the appropriateness of international and local specifications and other standards that may be in existence regarding HCRW collection and transport, a literature study is to be done. Specifications that may exist locally on collection and transport of HCRW are to be compared with international specifications in order to identify potential shortcomings.

Activity 2.4.2: To develop appropriate technical specifications for HCRW collection and transport.

To develop technical specifications for HCRW collection and transport that will be appropriate for Gauteng. The technical specifications to be developed should be prescriptive enough to ensure sound HCRW collection and transport from both a health and environmental point of view, whilst allowing scope for new technologies to be introduced. Possible interfacing between waste containerisation- and transport systems as well as transport- and treatment systems needs to be recognised.

Activity 2.4.3: To develop standard tender material for HCRW collection and transport.

Standard tender material, based on the final Specifications developed cf. Activity 2.4.2 for HCRW collection and transport should be such that it can, with some modifications, be implemented at any level of potential HCRW generators identified during the Status Quo Study. Allowance is also to be made in the standard tender material for empowerment of previously disadvantaged contractors without compromising on standards. Regulations from the Gauteng Provincial Tender Board are to be incorporated in the tender documentation.

Activity 2.4.4: To develop specific tender material for HCRW collection and transport for selected contract area.

The standard tender material developed in cf. Activity 2.4.3, will be amended to suit the area identified for initial implementation of the collection and transport contract. This will be similar to the future procedures required for modifications to the standard tender documentation. Cognisance is also to be taken of potential interfacing with existing HCRW management contracts entered into by provincial hospitals in Gauteng.

Re. Output 2.5: Technical specifications, standard tender material and specific tender material for selected facilities for Gauteng HCRW treatment and disposal prepared.**Activity 2.5.1: To review existing regulations and other material on HCRW treatment and disposal.**

To review and evaluate the appropriateness of international and local specifications and other standards that may be in existence regarding HCRW treatment and disposal, a detailed literature study is to be done. Specifications that may exist locally on treatment and disposal of HCRW are to be compared with international specifications in order to identify potential shortcomings.

Activity 2.5.2: To develop appropriate technical specifications for HCRW treatment and disposal.

To develop technical specifications for HCRW treatment and disposal that will be appropriate for Gauteng. The technical specifications to be developed should be prescriptive enough to ensure sound HCRW treatment and disposal systems from both a health and environmental point of view, whilst allowing scope for new technologies to be introduced. Possible interfacing between waste transport- and treatment systems needs to be recognised.

Activity 2.5.3 To develop standard tender material for HCRW treatment and disposal.

Standard tender material, based on the final Specifications developed cf. Activity 2.5.2 for HCRW treatment and disposal should be such that it can, with some modifications, be implemented at any level of potential HCRW treatment facility identified during the Status Quo Study. Allowance is also to be made in the standard tender material for empowerment of previously disadvantaged contractors without compromising on standards. Regulations from the Gauteng Provincial Tender Board are to be incorporated in the tender documentation.

Activity 2.5.4: To develop specific tender material for HCRW treatment and disposal for selected treatment and disposal facilities.

The standard tender material developed in cf. Activity 2.5.3, will be amended to suit the area identified for initial implementation of the treatment and disposal contract. This will be similar to the future procedures required for modifications to the standard tender documentation. Cognisance is also to be taken of potential interfacing with existing waste HCRW management contracts entered into by provincial hospitals in Gauteng.

Re output 3.1: Project organisation and linkages established.**Activity 3.1.1: To compose and establish Project Management Group and Project Steering Committee.**

Constitute a Project Management Group (PMG). The composition of the PMG is described in Section 6.2: Organisation and Administration. The PMG will be the main mechanism for synthesising the components into an integrated Project with the full coordination and cooperation between the interacting project components.

Constitute a Project Steering Committee (PSC). The composition of the PSC is given in Section 6.2: Organisation and Administration. The Project Steering Committee from the DACEL Status Quo Study is expected to be taken over by the DANCED project and extended to ensure a multi-stakeholder committee with broad representation by various stakeholders involved in HCW Management

Activity 3.1.2: To establish mechanisms for interdepartmental co-operation.

To establish mechanisms for interdepartmental project related co-operation. Interdepartmental co-operation and communication channels will be extended beyond the Project Management Group and Project Steering Committee level. Heads of Departments as well as the relevant politicians should also be involved in order to create the opportunity for dispute resolution by referring any matter where a deadlock may be reached to the next higher level of management. A Memorandum Of Understanding between the affected departments should be prepared and signed before project commencement.

Activity 3.1.3: To establish mechanisms for co-ordination with related programmes and projects.

Similar HCRW programmes that may be in progress or that are planned for initiation in the near future, irrespective of where the ownership lies, are to be identified. Interaction is to be established through the programme owners and experiences gained from previous or existing programmes are to be incorporated into this project as background information. All strategies on provincial level have to comply with the requirements of the NWMS. Specific attention must be given to the DANCED SMLC project and Capacity Building Unit project described in Section 5.1. The latter, driven by DEAT, is expected to provide the Capacity Building and Awareness component (Output 3.4 and 3.5). DEAT is seen as the key generator of these Outputs and Activities as the components are of general interest and benefit to all provinces. This input from DEAT will further be in line with the IP&WM Policy Paper intentions and short term priority requirements for national level. The required agreement with DEAT is however not in place yet and is to be followed up by DACEL.

Re. Output 3.2: Institutional HCW management roles and functions at all levels of government described and future HCW management roles and mechanisms for co-operation defined, agreed and put in operation.

Activity 3.2.1: To describe existing roles, functions and regulatory responsibilities of involved HCW Management authorities, institutions and stakeholders.

To describe existing roles, functions and regulatory responsibilities of personnel involved in HCW Management authorities and institutions as well as that of other stakeholders. The relationship between DACEL, local authorities, regional authorities, other provincial departments and national departments will be defined. Overlapping of functions is possible between the involved institutions and clarity has therefore to be established at an early stage in the process. The relationships between authorities and non-statutory structures like the Institute for Waste Management, the Infection Control Institute as well as other key stakeholders will also be defined. Considered in both the short- and medium-term, such structures are particularly relevant as part of a public participation process and the establishment of an information sharing and co-ordinating Forum between authorities, non-statutory structures and stakeholders should be considered.

The relationship between authorities, research institutions (e.g. CSIR, SABS) educational institutions and relevant parastatal organisations will finally be defined. These can play a significant role in capacitating stakeholders in HCW Management.

Activity 3.2.2: To define, detail and agree on a future HCW management model for roles, relationships and co-operation between institutions (DACEL, DEAT, national and provincial

DTPW, local Governments and other relevant institutions), private HCW Management structures and other stakeholders.

Cooperative governance has been enshrined in the Constitution and focuses on the interaction between the three levels of government established in South Africa, i.e. national, provincial and local. All levels of government are required to adhere to a number of principles of cooperative government as well as intergovernmental relations. These concepts have to be translated into practice in the context of integrated HCW Management.

The Activity will detail and agree on a future HCW Management model for roles, relationships and cooperation between institutions (DACEL, DEAT, national and provincial DoH, national and provincial DTPW, local governments and other relevant institutions), private HCW management structures and other key actors. With base in Activity 3.2.1, the future roles and relationships between the various stakeholders will be defined and workable models outlined and agreed through a consultation process by the affected parties. Responsibilities and functions are to be defined in accordance with existing legislation together with the IP&WM principles and the NWMS requirements. Lines of communication between the various stakeholders within the public sector, as well as between the public- and private sectors are to be established to ensure ongoing interaction. The future HCW Management models should be formalised in the form of for instance a comprehensive Memorandum Of Understanding.

The Activity will hence result in the development and formalisation of a Code of Governance for the interactions between HCW Management institutions and will be included in the Guidelines established as Output 2.1.

Re output 3.3: Project consultation process defined, agreed and implemented.

Activity 3.3.1: To prepare and agree schedule for multi-stakeholder involvement.

Stakeholders that may have a prominent role to play, even though not directly involved in the management of HCW (like educational institutions, the SABS etc.) will also be requested to partake in the process to ensure ongoing involvement and commitment. Once the multi-stakeholders have been identified, agreement is to be reached on forms of communication and interaction with such parties. The plan will ensure that stakeholders are involved at regular intervals, normally in relation to project milestones and major project outputs.

Activity 3.3.2: To implement plan for stakeholder involvement.

The Plan for stakeholder involvement is to be agreed upon through a consultation process, after which implementation is to be facilitated. The consultation process will be monitored and corrective actions taken if required.

Re. Output 3.4: HCRW awareness plan outlined.

Activity 3.4.1: To assess needs for HCW awareness raising, propose mechanisms and tools for awareness raising and outline a plan for future implementation.

The level of awareness will be assessed and the future needs determined. Possible constraints in effectively raising awareness to address existing shortcomings are to be identified. Further mechanisms and tools for effective, yet financially viable and sustainable ways to address the awareness needs, will be described. Cognisance is to be taken of the various aspects that will have an impact on the effectiveness with which the awareness programmes will be implemented, for example language differences, cultural differences, age differences, educational differences and socio-economic differences.

It is expected that DEAT will undertake this activity and source the information into the Gauteng HCWM project.

Re. Output 3.5: HCW capacity building programme developed and implemented.

Activity 3.5.1: To analyse existing HCW capacity building programmes.

The needs assessment for capacity building programmes is to be undertaken over a broad spectrum of stakeholders. The analysis should not only consider the public institutions, but also the private institutions and should be considering the need for capacity building on different levels of employment. Relevant material that may be available both locally as well as internationally, will be considered in order to obtain a clear understanding of what the existing HCW situation in Gauteng is in relation to existing local as well as international capacity building programmes. It is expected that DEAT will undertake the Activity and source the information into the Gauteng HCWM project.

Activity 3.5.2: To define target groups, undertake needs assessment and develop and consult integrated HCW management and capacity building programme.

To define target groups in accordance with the needs assessment that will be undertaken. Having analysed the HCW situation cf. Activity 3.5.1, an integrated HCW Management and capacity building programme will be developed in order for it to be implemented over a period of time. It is further to be recognised that the Capacity Building programme should be sufficiently flexible in order for it to be adjusted in accordance with changing conditions and needs. It is expected that DEAT will undertake the Activity and source the information into the Gauteng HCWM project.

Activity 3.5.3: To develop training material for health care institution staff.

Training material should be developed that will be specific and easy to understand, irrespective of the literacy level. The material should be developed such that it will cover the full waste cycle (from “cradle-to-grave”) as may be considered necessary. The contents of the training programme are further to allow for both the environmental requirements as well as the health requirements that need to be addressed. The draft training material is to be developed in consultation with the staff from the health care institutions selected for the implementation of the pilot studies.

Activity 3.5.4: To test training material on pilot study staff.

To test training material on staff at pilot study institution. The training material will be implemented as part of the pilot studies. The test will also be undertaken to determine the effectiveness of segregation and containerisation aspects of the draft HCW Management Strategy as well as the technical Specifications related to segregation and containerisation of HCW.

Activity 3.5.5: To revise training material after feedback report, cf. activity 2.2.3.

Based on the outcome of the pilot study, the training material will be revised and adjusted to address the needs and shortcomings that were identified during the pilot study. Once this revision was successfully undertaken and the shortcomings addressed, it will be possible to present the material to other stakeholders for consultation.

Activity 3.5.6: To define staff qualification and capacity building programme requirements for tendering of services, cf. 2.3.3, 2.4.3 and 2.5.3.

The need for capacity building regarding HCW segregation and containerisation, HCRW collection and transport as well as HCRW treatment and disposal, is to be defined and quantified for inclusion in the specifications and tender documents that are developed.

Re Output 3.6: A national / international HCWM conference set up and run in close co-operation with DEAT and DOH.

Activity 3.6.1: As part of capacity building, to facilitate an international HCWM conference for around 250 participants.

As part of the capacity building programme an international HCWM conference for around 250 participants will be facilitated. Nationally, it is expected that provincial and local authorities from both the environmental and health side will participate as well as the private sector industries involved. International environmental and health staff from other Southern African and African

countries is expected to attend. It is further proposed to invite (and fund) a limited number of international experts/authorities from for example the USA, Denmark, and Holland, who have previously addressed and resolved similar HCW problems. The timing and content of the conference should be further specified at a later stage. The project will fund a professional secretariat to arrange and run the conference, the invited international speakers and a limited numbers of participants from other African countries. A lump sum for this has been allocated in the budget. The conference fee is expected to cover the venue, accommodation etc. for all other participants, who will also have to fund their own transportation. The preparations must be undertaken and co-ordinated in close co-operation with the national DEAT and DOH.

4.5 INPUTS

DACEL INPUT

Inputs to the Project from the South African Government will comprise personnel, operating funds and facilities. Annexure 4 gives a breakdown of the staff contribution. Personnel resources will be provided by the implementing agency, DACEL and is intended to be supplemented by staff members from the co-operating agencies and organisations (Gauteng DoH, Gauteng DTPW, hospitals etc.), which have to be formally confirmed. The staff required from co-operating agencies and organisations will be specified in greater detail during the Inception Phase. The DACEL inputs comprises of:

- 1 Staff member acting as project manager plus 1 staff member supporting the project manager, jointly spending 50% of one person's time (approx. 25% time each). The input hence amounts to 12 person months workload during the 24 month project period;
- Time input from DACEL Senior Management is estimated at MEC 1%, HOD 1% and Director 5% of operational time.
- Office facilities (3 double-offices) for Danish long-term and short-term staff as well as the project secretary (approx. 6 persons in total), including furniture, 2 computers, 1 printer, telephones, telefax- and Internet connections, water, electricity etc.
- Transportation, per diems and hotel accommodation for DACEL staff if needed;
- All costs associated with the consultation process (e.g. workshop venues, catering, facilitation, proceedings, provision/printing of specific documents or translation of documents to other languages. Approx. 10 workshops are envisaged, but this is subject to agreements with the stakeholders).

DANCED INPUT

The input from Danced comprises:

- A full time Chief Technical Adviser (CTA), 21 person-months (24 months project period);
- Short term expatriate specialists and advisers, 26,5 person-months;
- South African consultants, 37 person-months;
- One full time secretary for the CTA project use;
- One full time secretary for the PMG/PSC assistance, working only with project relevant issues;
- Computer and software for running the HCW Information System, fax and photocopier rental;
- Expatriate related costs such as accommodation, per diem, transportation, insurance etc.
- A lump sum for additional pilot study activities.

BUDGET SUMMARY

The distribution of the inputs in terms of financing is given in the budget summary below:

DACEL input: Estimated value (DKK)		DANCED: Budgeted input (DKK)	
Project Manager/Assistant to Manager (12 months x 20.000 DKK)	240.000	Expatriate Staff	5.006.000
Senior Management	40.000	South African Consultants	2.912.500
Office Facilities and Operation.	80.000	Reimbursable	1.216.000
Workshops (10 x 30 000)	300.000	Other Activities	
		• Conference	400.000
		• Additional pilot/feasibility activities.	400.000
		• Short Term Action Plan Initiatives	4.000.000
Sub-Total	660.000	Sub-Total	13.934.500
Contingency (10%)	66000	Contingency (10%)	1393.450
Total	726.000	Total	15.327.950

The distribution of the work in terms of person-months is as follows:

Staff Resources	Person-Months	% Distribution
Danish Consultants	37,5	43%
South African Consultants	37	43%
DACEL Project Staff/ Management	12,5	14%
Other Departments and Institutions	To be agreed	To be agreed
Total	87	100 %

4.6 ASSUMPTIONS, RISKS, AND PRECONDITIONS

The assumptions, risks and preconditions for successful and timeously implementation of the project are:

- That DACEL invites and adjudicates tenders for South African consultants before project commencement and agrees (with DANCED), awards and finalises tenders for South African consultants as soon as the expatriate consultants were appointed, in order to fast track project implementation;
- That DACEL initiates negotiations with affected government departments and institutions at all levels to establish a mechanism for sustainable future HCW Management co-governance (Output3.2) and that departments, institutions and other stakeholders co-operate constructively in defining their respective roles;
- That DACEL, before commencement of the project, establishes contact with the DANCED funded Southern Metropolitan Local Council (SMLC) project and likewise establishes contact with DEAT in terms of funding/support for the HCW Awareness and Capacity Building Programme.
- That DEAT develops a NWMS HCW-programme for capacity building/awareness timeously for incorporation into the Gauteng Strategy and Action Plan. DACEL should aim to reach agreement with the DEAT Capacity Building Unit as soon as possible for the latter party to undertake the drafting process (Output 3.4 and 3.5);
- That political and institutional commitment at all levels be secured for application and implementation of the Gauteng integrated HCW Management Strategy and Action Plan;

- That sufficient staff at DACEL be allocated to drive the process and that motivated staff be present and available at all levels within the targeted and supporting institutions;
- That suitable and appropriate Pilot hospitals/clinics can be identified and that an agreement can be reached on constructive cooperation between the project, the department, the hospital/clinic management and ground staff. That sufficient and motivated staff are allocated for training;
- That the Status Quo Study report be available at project commencement;
- That key stakeholders show interest and participate constructively and timeously in the HCWM project and that agreements regarding the HCW principles and the way forward can be reached.

5. PROJECT ANALYSES AND PROCESS CONTROL

5.1 COMPATIBILITY WITH DANCED POLICY & COUNTRY PROGRAMME AND NATIONAL POLICIES & PROGRAMMES

Holistic Waste and Pollution Management is one of the four themes described for DANCED support contained in the South Africa-Danish Country Programme for Environmental Assistance (DANCED, 1998). The present project document is covered by the cluster: Integrated Pollution and Prevention Control.

Under this theme DANCED has initiated the following projects that are relevant for this project document:

"The Development of a New Environmental Policy - Consultative National Environmental Policy Process (CONNEPP)" implemented by the Department of Environmental Affairs and Tourism (DEAT). It entailed support to the process of compiling South Africa's first national policy on environment and natural resource management, which in turn led to South Africa's National Environmental Management Act (NEMA). The umbrella policy generated through the CONNEPP process allowed DANCED to focus on more detailed policy matters around the waste- and pollution theme. To this end, DANCED rendered support to the "National Consultative Process for the development of an Integrated Pollution Control and Waste Management Policy (IPC & WM)" project that was implemented by the Department of Environmental Affairs and Tourism. This project represents a national process of broad-based public consultation for the development of an integrated pollution control and waste management strategy for South Africa.

As a direct follow-up to the CONNEPP and IP&WM projects, DANCED supported the "National Waste Management Strategies and Action Plans for South Africa" project, implemented by the Department of Environment and Tourism (DEAT) and the Department of Water Affairs and Forestry (DWAF). National Strategies for Integrated Waste Management in South Africa were developed in close consultation with major stakeholders and priority plans were drawn up for the implementation of the strategies. The project provided capacity building in the South African DEAT and DWAF to enable them to jointly establish an overall national regulatory system for Integrated Waste Management, involving agencies in the central, provincial and local government spheres.

Remaining with the concept of empowering government to implement the new environmental policies, DANCED rendered support to both the "Support to the Directorate of Environment in the Province of Gauteng" project implemented by the Directorate of Environment, Gauteng and the "Capacity Building in the Department of Environmental Affairs in the Province of Mpumalanga" project implemented by the Department of Environmental Affairs, Mpumalanga. These projects provided capacity building support to the new provincial structures responsible for the environment, through the development of environmental systems and procedures as well as by training staff members in the provincial government.

To replicate the outputs from the above capacity building projects, DANCED also supported the "Environmental Capacity Building Unit" within DEAT, which involves support to the newly established unit set up to coordinate and facilitate capacity building in Environmental Management at national, provincial and local government levels.

In keeping with the progression to implementation, DANCED is also supporting the "Support to the SMLC/Copenhagen Twinning on Environmental Management" project implemented by the Southern Metropolitan Local Council which involves rendering of support on the environmental aspects of a SMLC/Copenhagen twinning agreement

The present project, “Sustainable Health Care Waste Management in Gauteng Province”, which will be implemented by Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (DACEL) is hence fully in line with the DANCED policy and country Programme and can be seen as a direct follow up on previous DANCED projects within the holistic framework of integrated Waste Management.

Considered from the South African perspective, the project is also fully compatible with the national policies, strategies and action plans which are detailed in Section 2.3. The project will serve as a valuable example and demonstration of the NWMS being used for the implementation of "on-the-ground" waste management, dealing with a high priority waste stream. The project is furthermore strongly supported by the relevant politicians in the Gauteng Government.

5.2 INSTITUTIONAL CAPACITY

The fragmentation between different tiers of government as well as between various departments within government (that has to date characterised the South African environmental and waste management legislation and administration) is likely to persist despite comprehensive legal reforms. In the interests of providing a sustainable Health Care Waste Management System for Gauteng, that is ultimately to be extended to the whole of South Africa, this fragmentation needs to be consciously countered. Institutional linkages between Health Care Waste Management institutions and all relevant organs of government, together with the principles of co-operative governance, are to be used in an attempt to address this problem. From a statutory perspective, the initiation, establishment and sustenance of a focussed and efficient HCW Management system requires collaboration from a range of statutory institutions on official as well as political level, in addition to appropriate linkages that are to be established between them.

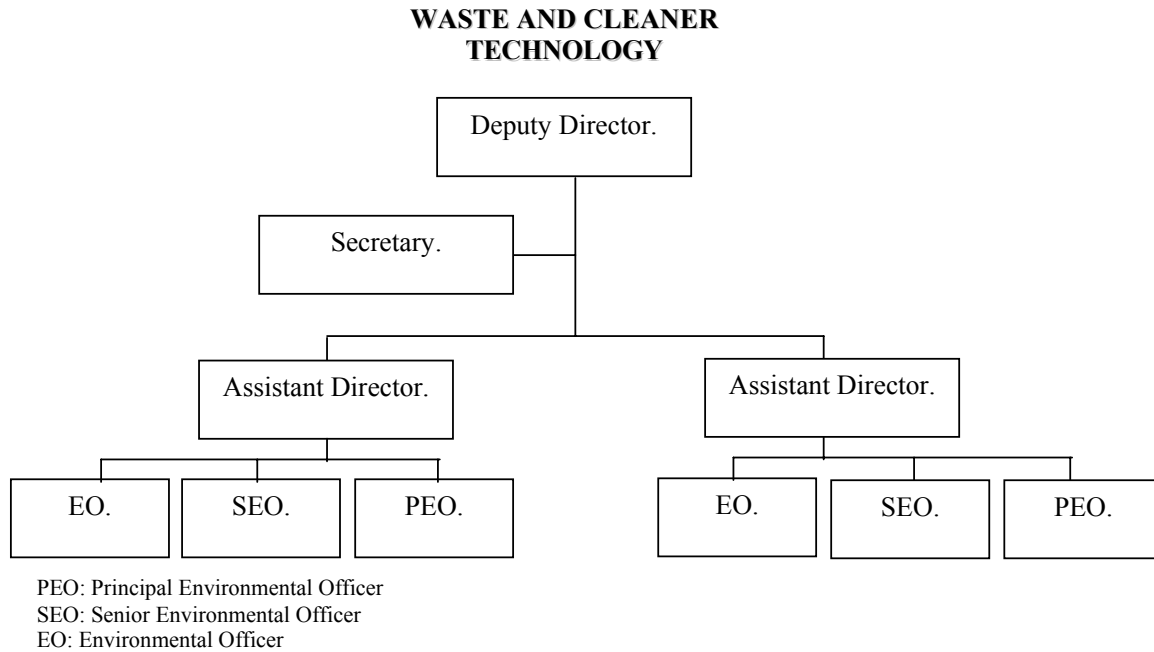
The White Paper on Integrated Pollution and Waste Management spells out the principles for allocation of environmental and waste management functions and powers for national, provincial and local governments. It sets the objective “to create, develop, implement, maintain and continuously improve on an effective, adequately resourced and harmonised institutional framework and integrated legislative system and to build capacity”. Although the White Paper is in theory clear on the roles and functions for each level of government as well as the various departments within any particular level of government, it is not clear on the practical implementation thereof. It therefore leaves considerable latitude to distribute the functions in an optimal manner.

With the roles and functions of the various governmental institutions being defined by the White Paper, it is the responsibility of the various stakeholders to ensure that a workable and sustainable strategy be developed for interdepartmental co-operation. In terms of the HCWM project, implementation of the White Paper principles will therefore have to be addressed and agreed upon at an early stage, if not before commencement of the project, thus ensuring open lines of communication throughout the project. Integrated HCWM is dependent on committed inputs by a number of organisations and a lack thereof may create a serious obstacle to the successful development, implementation and maintenance of an integrated HCW Management system for Gauteng. In order to formalise commitments and to turn it into reality, the project should undertake to facilitate the drafting of realistic agreements between the co-operating agencies, which could be in the form of Memorandums Of Understanding. Such agreements should not only be aimed at allocating authoritarian powers, but also responsibilities that are to be honoured in order to create a sustainable HCW Management system for Gauteng.

Considering the above, it is proposed that institutional capacity and agreements be addressed even before commencement of the project, as this will avoid unnecessary delays during implementation of the project.

Agreements reached during the DACEL HCW Status Quo Study, should be extended and any shortcomings that may still exist, are to be addressed as a matter of urgency.

5.2.1. Department of Agriculture, Conservation, Environment and Land Affairs (DACEL)



With regards to project staffing, DACEL is like most other government departments severely understaffed, with various vacant positions not being filled. Despite this, the DACEL staff is committed to address the huge environmental problems facing Gauteng, which includes various HCW management problems. Staff from the Directorate of Waste and Cleaner Technology of DACEL, who will be responsible for implementation of the HCW project, are constructively working towards fulfilling both the existing as well as the new requirements and functions allocated in terms of the new national environmental legislation, policy and strategy. It can therefore be expected that the DACEL staff will not only take full ownership of the project during its development phase, but also during- as well as after implementation.

Even though the Directorate is affected by staff shortages, the professional capacity of DACEL is considered high compared to other provinces within South African. This is partly due to it being located in Johannesburg, which is the economic hub of South Africa and which attracts well-educated staff, as well as due to the intensive undertaking of a DANCED capacity building project within DACEL. Staff turnover is however relatively high and expertise on the design and implementation of a workable integrated HCW management system is limited.

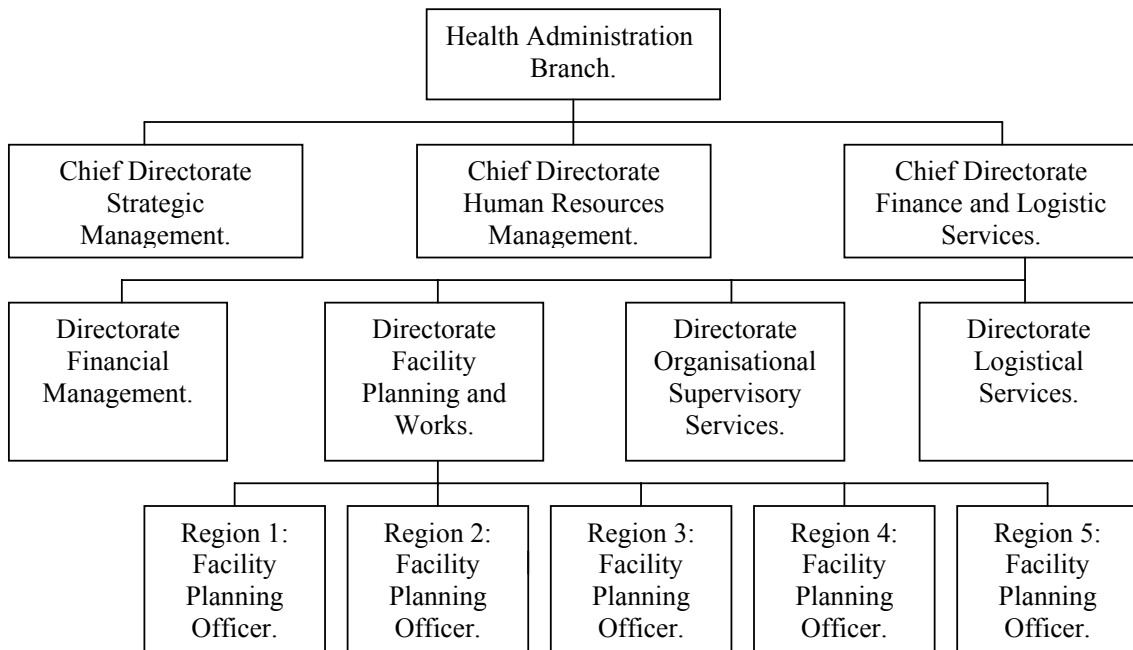
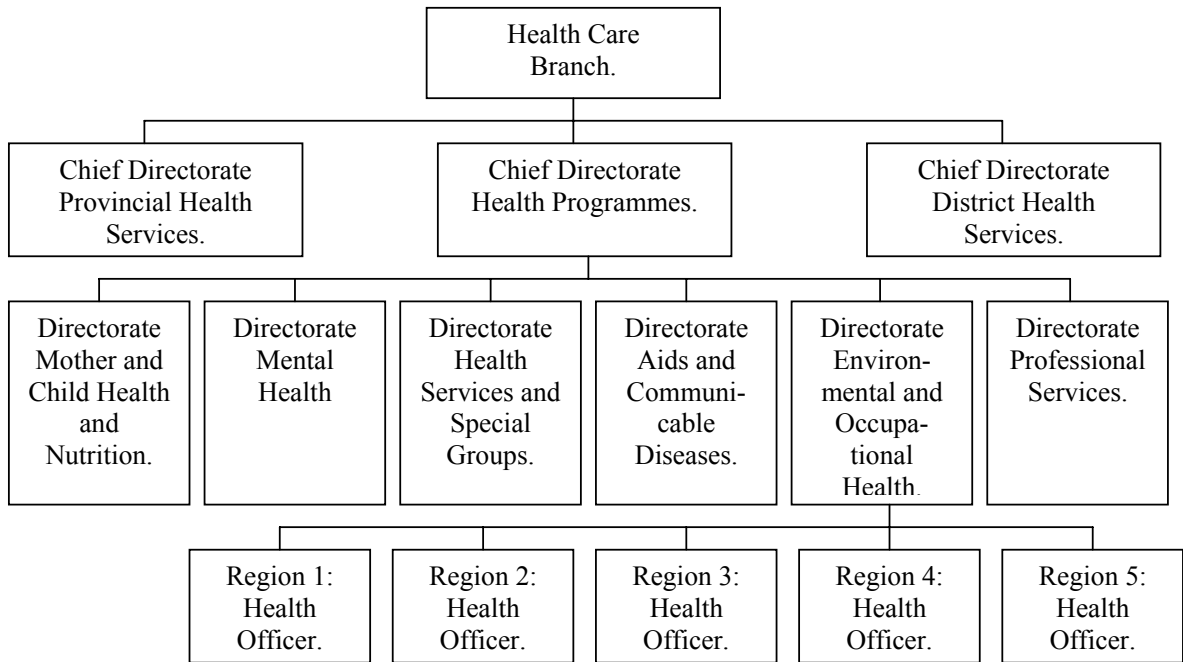
Although DACEL is responsible for the monitoring and enforcement of waste management issues that includes HCWM, the fragmented and uncoordinated legislation and institutional approaches with regards to dealing with HCW management makes the administrative boundaries and the practical management unclear, especially in relation to the HCWM functions of the Department of Health.

In order to demonstrate DACEL's commitment towards the project, the Project Manager appointed is a senior staff member of the Directorate who will, throughout the implementation period, be assisted by a further staff member from the Directorate. The total input from the Directorate is expected to amount to the equivalent of 50% of a full time staff member during the implementation period, divided between the two staff members tasked to participate in the project.

In terms of the new policy on Integrated Pollution and Waste Management (May 2000), DACEL is responsible for the following HCWM related functions:

- Review and generation of integrated waste plans for municipalities and ensure compliance with the provincial environmental implementation plan;
- Development of provincial guidelines and standards;
- Development and enforcement of provincial regulations;
- Enforcement of the act on environmental hazards;
- Ensuring that all industries have access to appropriate waste disposal facilities;
- Quality Assurance etc. regarding the Waste Information System;
- Registration and certification of hazardous waste transporters, the waste manifest system and the control of hazardous waste collection facilities;
- Supporting the National DEAT in planning for a system of medical waste treatment facilities, and investigating the feasibility of centralised (regional) waste treatment plants;
- Establishment of formal working agreements through structured consultations and negotiations to ensure that waste management functions are exercised efficiently without duplication and in the spirit of co-operative governance;
- Investigating the administrative, legal and contractual arrangements necessary to give effect to allocation and sharing of the waste management function and to building capacity within the appropriate authorities;
- Initiating the process of integrating waste management related functions within all spheres of government;
- Launching of pilot projects for the practical implementation of waste management.

5.2.2 Gauteng Department of Health



Province divided into 5 Regions, each with 1 Health Officer and 1 Facility Planning Officer supervising Public and Private hospitals and clinics.

In terms of management levels and functions, the Provincial Department of Health is overall responsible for safe management of health care waste in public and private hospitals and clinics. The relevant directorates in the department are the Directorate of Environment & Occupational Health and the Directorate of Facility Planning. The Department has 5 Regional Offices, each inter alia staffed with one Health Officer and one Facility-Planning Officer. They are responsible for co-ordination of especially public hospitals (foods/medicine) and are in principle also responsible for overall supervision/coordination of HC waste management.

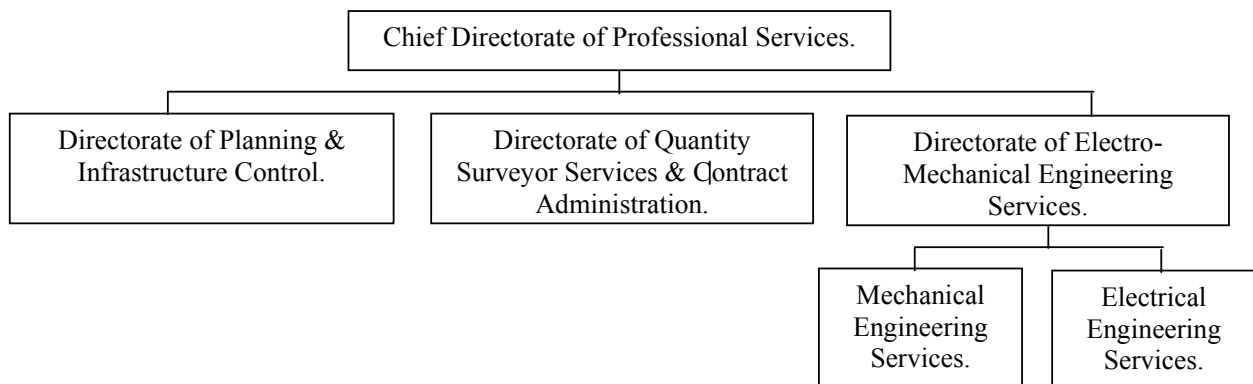
Furthermore each hospital has, by statutory order, its own Infection Control Officer employed to ensure implementation of measures aimed at minimising the infection risk; HCW being one of the expected risks. This Infection Control Officer is in charge of HCW segregation, containerisation, on-site storage, treatment on site (where applicable), as well as collection, transport, treatment off site and disposal of HCW from the institution, all in accordance with the “Duty-of-Care” principle.

Capacity in terms of staffing is insufficient at all levels and considering the other high priority tasks and functions to be undertaken, it is to be expected that insufficient attention is given to many aspects related to sound and responsible management of HCW. Although the implications of inappropriate or poor HCW management practices can be catastrophic, this is not always considered to be a priority when compared to other activities that are to be fulfilled. Not only can poor segregation practices lead to spreading of infections or injuries to workers, but it can also lead to increased costs for treatment of waste that could more cost-effectively have been disposed of as general waste. With most public hospitals experiencing financial difficulties, it is of the utmost importance that all savings that can be achieved in the management of the hospitals be explored and implemented.

In addition to the limited resources that are available, there is also a need for increased awareness and training. The training needs of staff members that come in contact with the HCW at various points along the path of the HCW stream will differ and this aspect is to be acknowledged. Various different practices are also applied in different HC facilities and the lack of standardisation is adding to the confusion.

Despite the abovementioned constraints, officials from the Gauteng Department of Health is positive with regards to the project and has indicated interest and willingness to actively participate in the Project Management Group. They also agreed to partake directly in the implementation of the project and although permission is to be granted by the Management of the Region in which a possible Pilot Study is to be implemented, the officials gave principle approval and support for such Pilot Studies. The agreements reached will however have to be followed up formally by DACEL.

5.2.3 Gauteng Department of Transport and Public Works



The historic requirement for public hospitals each to have its own incinerator for treatment of HCW waste generated on its premises, resulted in a number of smaller facilities being established within the boundaries of various hospitals throughout Gauteng. The Gauteng Department of Transport and

Public Works, who are responsible for the development and maintenance of infrastructure at public hospitals, which includes HCW incinerators, was tasked to upgrade the incinerators in order to meet the environmental legislation. Since very few, if any, of the incinerators that are still in operation at public hospitals in Gauteng meets the environmental requirements regarding combustion temperatures and emission standards, a programme was compiled according to which the incinerators will be upgraded. Budget constraints are however hampering the process and even though two incinerators were recently upgraded, the time frame set by DEAT for incinerators to meet the environmental legislation will not be met.

Although there are a number of hospitals that opted for outsourcing of its HCW treatment activities, various strategies are followed in this regard. Some hospitals opted to outsource the treatment of all of its HCW, whilst others opted only to outsource part of the function, thus still incinerating body tissue or other parts of the HCW stream as determined by the policy adopted by the individual hospital. Other hospitals opted to keep on incinerating all of its HCW, whilst the last group opted to incinerate not only the HCW generated on its own premises, but also HCW that was generated at nearby HC facilities.

In order to investigate the possibility of achieving the required environmental standards at an affordable cost, DACEL is at present undertaking a Status Quo Study that will investigate the possibility of developing regional treatment facilities that will ensure environmentally sound treatment of HCW at an affordable cost. This strategy is in accordance with the requirements of the NWMS for treatment of HCW.

Realising the need for cost-effective solutions to the present problems associated with HCW treatment, the Department of Transport and Public Works indicated their support not only to the Status Quo Study, but also to this DANCED project. It is expected that this project will, through extensive investigations, be able to propose cost effective, yet environmentally sound, HCW treatment and disposal facilities for Gauteng.

5.2.4 Local Governments

As indicated in Section 2.6, the local governments of Gauteng are responsible for the day-to-day prevention and management of pollution and waste. The functions are primarily relating to the issues around general waste management and planning. Municipalities are in charge of providing general waste collection services as well as the management of waste disposal sites within its areas of jurisdiction. They are hence responsible to ensure that no HCRW is disposed of with general waste at source (smaller clinics) or dumped illegally at general waste disposal sites, which appears to be a major problem in Gauteng. Local authorities will in future also be responsible for data collection for the Waste Information System as well as the implementation of waste related capacity building programmes and public awareness programmes.

As a result of non-payment for service delivery in certain areas by parts of the community, some local governments do not have the resources to monitor general waste sites for illegal HCWM dumping and this is considered to be a serious problem, particularly in Gauteng. The municipal cleansing departments often have a health officer employed to assist in monitoring of waste related aspects. The staff turnover is however also affecting municipalities significantly, as this is having a direct impact on the level of skills and experience within the municipalities.

5.3 SUSTAINABILITY CONSIDERATIONS:

When this DANCED supported project ends, the HCWM Strategy and Action Plans will have been developed in a participatory approach. This ensures a basis for structured decision-making and provides for a planned and prioritised way forward towards sustainable HCW Management. Guidelines and Training Materials will have been developed and tested and can be applied within public and private hospitals and clinics. Technical Specifications and Tender Materials covering the

full waste stream have been prepared and will be ready for tendering. Furthermore, Capacity Building and Awareness programmes will have been outlined and last but not least, an operational interdepartmental structure dividing functions and responsibilities appropriately in line with the IP&WM policy principles will be established and put in operation.

By termination of the DANCED supported project, the Project Output and hence the immediate objectives would have been achieved. However, in terms of fulfilling the future overall objective for “Sustainable HCW Management in Gauteng”, a number of potential bottlenecks should be observed and timeously addressed.

Political sustainability

The state of HCRW Management in Gauteng is presently close to reaching crises proportions and a broad political will to address the problems are present. This political commitment must remain also in terms of funding and allocation of resources if the prepared Strategies and Action Plans are to be fulfilled timeously. If political priorities for some reason shifts, thus not providing the required resources for sustainable continuation of the HCW programme, it will be difficult for any institution to implement a costly Strategy and Action Plan.

Institutional and organisational sustainability.

The requirements for the establishment and successful implementation of a sustainable HCW Management system, is a combination of institutional co-operation mechanisms/partners, together with the development of the strategy, technical tools and guidelines. Sustaining constructive institutional co-operation and the development of improved management tools on the other hand requires commitment from all stakeholders and the creation of a learning environment through which continuous improvement will be possible. The interests and motivations of the various stakeholders also have a strong influence on the organisational learning environment. Sustainability will be greatly increased if the implementation of the proposed new integrated HCW Management Strategy is in practice also closely aligned with the interests of local governments, health care institutions, treatment/disposal facilities and other key stakeholders in both the public and private sector. During implementation, this alignment will take place through training, capacity building, awareness creation and provision of examples of successful cooperation that was aimed at reaching a common objective, thus demonstrating that the benefits of collective actions exceeds the costs. Such softer interventions and partnership based approaches work well when supported by clear policy directives, effective regulatory measures and economic instruments.

5.4 STAKEHOLDER PARTICIPATION AND OWNERSHIP.

Executing Agency:

DEAT will be the Executing Agency for the project. It will be natural if DEAT takes the executing role and hence will ensure Capacity Building and transfer of skills and information are spread throughout the whole of South Africa.

Implementing Agency:

The owner of the project and implementing agency will be the DACEL. Co-implementers are expected to be Gauteng Department of Health and Gauteng Department of Transport and Public Works.

DACEL has taken ownership of the project by allocating time and resources to the design and development of this project. Two staff members from the sub-directorate Waste Management and Cleaner Technology have been assigned to the design phase of the project for respectively approximately 25% of their time. Additional time from Senior Management has been allocated for meetings and attending of specific activities identified as being necessary for the development of the project.

Financial as well as time resources were made available by DACEL to present the May 2000 problem identification stakeholder workshop. The department also focused attention on identifying potentially relevant stakeholders, which was well rewarded as the workshop was well attended and the inputs made by participants proved to be valuable for the design of the project.

A schedule of meetings was set up between the core consultant and the Senior Management of DACEL during the core consultants visits to S.A. Even the MEC has allocated time for attendance and participation at these meetings.

Between the completion of the Project Design Document and the implementation phase of the project various high level meetings will be convened with important government stakeholders to ensure that the implementation process will be smooth and that the project receives widespread support at all levels.

Work related to this study, intended to establish the status quo on HCW in Gauteng and also to determine the feasibility of a regional approach towards the treatment and disposal of HCRW generated at primarily provincial hospitals in Gauteng, is ongoing.

Stakeholders:

The White Paper on Integrated Pollution and Waste Management lays down the principles for defining the roles of all stakeholder sectors, in accordance with which the HCW Strategies, Action Plans, Tools, Guidelines etc. will be developed. This will be done through a comprehensive participatory process. In order to achieve this objective, the project is firstly in the process of establishing a multi-stakeholder Project Steering Committee and secondly the project will up front prepare and agree on a consultation plan that will at important project milestones ensure stakeholder input to facilitate full participation and transparency throughout the implementation phase.

6. IMPLEMENTATION

6.1 PROJECT IMPLEMENTATION PLAN

The HCW situation in Gauteng is close to having reached crisis proportions and medial actions are urgently needed. This present situation is reflected in the Project Implementation Plan, where a fast tracked approach to provide a structured way forward has been scheduled.

The Project Implementation Plan is detailed in Annexure 2. The project is scheduled to have a 24-month duration.

The DANCED supported project is assumed to commence by February 1st 2001 with the arrival of the Danish long-term CTA. Two important activities should however be initiated and finalised before commencement of the project. The first aspect to be addressed is initiation of the tendering letting process and appointment of South African consultants once the project document was approved by DANCED and DACEL in order for the consultants to be in place at the project commencement. This will save valuable time during the inception period. The standard DACEL tender and adjudication procedures should be used for the appointment of the South African consultants.

The second aspect to be addressed upfront is the establishment of an interdepartmental mechanism for communication as well as for appropriate and workable allocations of functions and responsibilities covering the full HCW stream from “cradle-to-grave”. Establishment of such a mechanism is considered crucial both during implementation of the project as well as thereafter to ensure sustainable long-term HCW Management in Gauteng. This would further also link up to the IP&WM principles of co-governance.

The 3 months inception phase enables mobilization of the Danish staff, enables DACEL appointment of South African consultants in consultation with the Danish CTA, enables establishment of the Project Management Group and the Project Steering Committee and revision/modification of the Project Document where necessary. However, during the inception period there are a number of other activities that will also have to be initiated. Work around the framework Strategy will start, the issues around institutional arrangements by establishing workable co-operation and linkages between key institutions and actors will also be fast tracked.

Later in the process, the pilot studies will commence and work around guidelines/technical specifications) will be initiated. The project will close by the issuing of these documents. At this point DACEL could initiate tendering for the supply, installation and operation of various pieces of HCRW plant and equipment and at the time of award of the tender, an EIA process will have to be initiated. However, these activities fall outside of the scope of the present DANCED project as a result of the time required for completion thereof.

6.2 ORGANISATION AND ADMINISTRATION.

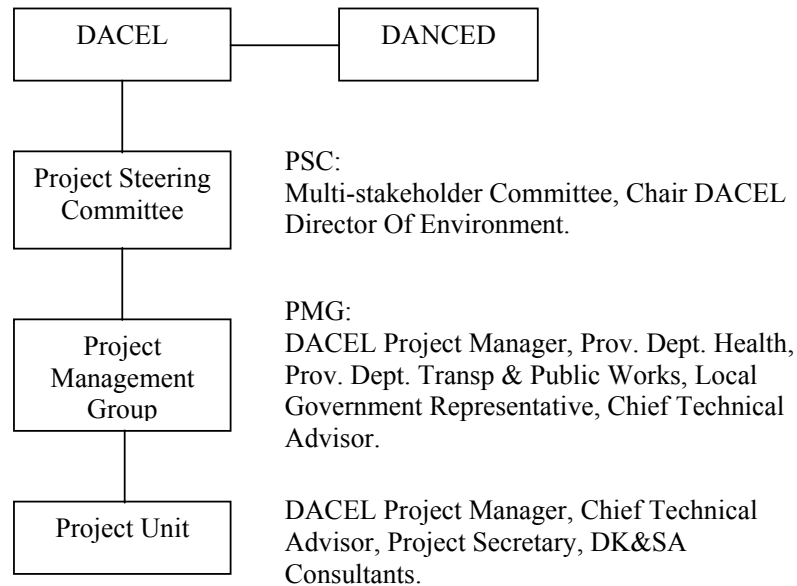
The project Objectives span across a number of private and public HCW related organisations, all tiers of government and across different departments on the respective tiers of government. Setting up and managing the structure required for successful implementation of the project is quite challenging from an organisational point of view. It is however at the same time also central to the aims of providing a sustainable and integrated HCW Management system in the province. There will be a strong need for co-operation between the different stakeholders as well as for the establishment of clear communication channels that should function before implementation of the project, during the project process as well as thereafter.

Being the responsible agency, DACEL will implement the project and will have the direct responsibility for carrying out and completing the project in accordance with the Government

Agreement and Project Document. DACEL will have the overall responsibility for the management of the project and will therefore assign a Project Manager who will take the responsibility for the project and guide the initiation of the project activities, including ongoing project reporting. The DACEL Project Manager will be selected from the senior staff of the Directorate of Environment. A team of Danish and South African consultants will assist the DACEL Project Manager throughout the project period.

To ensure sound management of the project from the consultant's side, the Danish consultant will appoint a Chief Technical Adviser/Team leader to provide advisory services to DACEL and to head the team of Danish and South African consultants. The Chief Technical Adviser (CTA) will support the DACEL. The Project Manager and the CTA will be responsible for the day-to-day management of the project; they will operate as a unit and make recommendations and consensus-based decisions. They will also form part of the Project Management Group (PMG) that will be responsible for the overall management of the project including planning, supervision and monitoring of project activities. PMG meetings will be held at regular intervals, i.e. weekly or bi-weekly. The PMG should be of an operational size (4-6 persons) and should include representatives from Gauteng Department of Health and Gauteng Department of Transport and Public Works.

The PMG will report to a Project Steering Committee (PSC). The Project Steering Committee established during April 2000 for the DACEL Status Quo Study are expected to be carried over to this project, hence providing valuable continuity. The PSC comprise of the National and Provincial Departments of Health, National Department of Waste Affairs and Forestry, National Department of Environmental Affairs and Tourism, Gauteng Department of Transport and Public Works, DACEL and the consultants responsible for the Status Quo Study. Before commencement of the DANCED supported project, PSC is expected to be extended with the following stakeholders: Gauteng Association of Local Authorities, South African Non Governmental Organisation (NGO) Council, South African National Civics Organisation (SANCO), SA Business, National Department of Transport and Public Works and Regional Department of Water Affairs and Forestry. The PSC will be responsible for monitoring of the project implementation and for providing guidance to the PMG on major issues. The DACEL Director of Environment, who chairs the PSC for the Status Quo Study, is expected to continue chairing the DANCED PSC. A representative of the DANCED office in Pretoria will also be a member of the PSC. The PSC will have the power to approve adjustments in project activities and Outputs within the overall budgets. Members of the PMG will attend the PSC meetings. The PSC will meet at important project milestones when for instance technical reports or management reports are issued, but not less than at bi-monthly intervals.



Project Organisation

In order to fast track commencement of the project, the PSC will, as part of the pre-project activities, initiate and finalise the relevant institutional, staffing and consultant agreements and decisions listed under section 6.3: inception report.

The project will also have to be managed at the pilot study level, although this aspect will be developed further during the Inception Phase.

As the PSC will deal with major issues with long intervals between meetings, it is proposed that the PSC Chair will support the PMG as Project Director. The PMG can therefore refer to the Project Director on matters that need urgent attention and that cannot wait for a full PSC decision.

6.3 REPORTING, MONITORING AND REVIEW

The reporting requirements include a number of management reports and technical reports. The management reports, which will be prepared according to the DANCED Project Management Manual (1997), include:

Inception Report to be prepared within 3 months after signature of the DANCED contract with the Danish consultants, assuming a one-month mobilisation period. The report will include:

- A detailed implementation plan;
- A staffing plan;
- Staff responsibilities;
- Review of the Logical Framework with emphasis on monitoring procedures and Indicators for Outputs and Immediate Objectives;
- Agreements between participating organisations and institutions on principles and mechanism for a workable allocation of roles, functions and responsibilities;
- Agreements between participating organisations and institutions on commitments in terms of staff time and project participation;
- An agreed planning and resource commitment system such as a monthly meeting between the main contributing organisations to commit resources and review past commitments;

- An agreed document specifying selection criteria applied for appointing South African consultants.

A *Procedures Manual* to be prepared within 3 months after project commencement, setting out the daily management and administrative procedures for project staff, including the Quality Assurance procedures.

Progress Reports will be compiled every 6 months, reporting on the progress within and monitoring of the project Activities, Outputs and Immediate Objectives to ensure project control and to facilitate corrective action. The PSC will review progress reports. The CTA will report on the expenditure of DANCED funds, based on monthly accounts.

A *Completion Report* with a summary of overall project achievements will be required by the end of the project. The technical reports will cover the Guidelines, Strategies, Technical Specifications etc. in various phases of development, as well as report on experience gained in the Pilot Study as specified in the Project Document and the Implementation Plan.

External and internal project review

An independent midterm review mission will be fielded by DANCED to evaluate and monitor the project implementation. The Danish contracted company will further undertake an internal project quality review in South Africa as part of their Quality Assurance programme.

6.4 BUDGET

The estimated total budget for the DANCED contribution and the budget details are given in Annexure 4.

A total financial contribution required from DACEL and DANCED is 15,33 million DKK. Of this amount, 95,5% will be funded by DANCED. The remaining 4,5% is allocated by DACEL, who will make personnel and facilities available for the duration of the project.

Personnel input by the DACEL has been estimated to be 14% of the total project time. South African consultants, whose input is equivalent of 43% of the project time, will support DACEL. Input by the expatriate advisors is calculated to be 43%. DANCED funding will meet the costs for the expatriate advisors and South African consultants. Included in the DANCED budget is provision for full time involvement of the CTA and a full time secretary for the CTA project use. A further secretary, allocated to members of the PMG, will also be made available to assist the PMG in various activities related to the project. An estimated cost for presenting a 3 day conference, attended by approximately 250 delegates, will be in the order of 400 000 DKK and is likely to be met by DANCED.

DACEL will make provision for all costs incurred by their staff members participating in the project, as well as office facilities for the project team (3 double offices), utensils, local telecommunication, unrestricted photocopying etc.

6.5 ACCOUNTING AND AUDITING

The Chief Technical Adviser (CTA) will have the overall responsibility for accounting and auditing. Quarterly invoices will be prepared for submission to DANCED. At the end of each calendar year, an audited annual financial statement will be submitted to DANCED by not later than June 30 of the following year, and a final audited statement for the project will be submitted by not later than six months after the project completion date. Funds will be advanced by DANCED on a quarterly basis. The accounting and auditing procedures must correspond with:

- DANCED's Manual on Contracting;
- The General Guidelines for Accounting, Documentation, Auditing, Reporting, etc. For Recipients of Danish Environmental Assistance, the Ministry of Environment and Energy, 16. Nov. 1995 (enclosed as Annexure 4);

- Standard government procedures shall apply to consultants for reimbursement of costs that will be covered by the Government.