SANITATION PROJECT-BASED HEALTH AND HYGIENE USER EDUCATION

WATER IS LIFE - SANITATION IS DIGNITY





Department: Water and Sanitation **REPUBLIC OF SOUTH AFRICA**



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Foreword by Minister of Water and Sanitation

The National Environmental Health Policy developed by the South African Government attributes the vast diseases South Africa faces, to environmental factors such as contaminated water, poor hygiene, inadequate sanitation, poor water resource management, pollution and poor infrastructure among other factors. This is further exacerbated by the worrying perception that, it is not necessary to wash hands after using a toilet or changing a baby's nappy. The climate change challenges (such as floods and drought) require of us to come up with new creative ideas of providing services in a manner that promotes healthy lives and does not degrade the environment. A business unusual approach to this challenge has to be adopted to ensure that a total sanitation solution is provided whereby user and health &and hygiene education are provided with the provision of each sanitation facility. This can only be achieved through involving communities, particularly beneficiaries of sanitation services, in all key decisions affecting their livelihoods and well-being.

Solutions to the sanitation challenge facing the country should be in line with the following Sustainable Development Goals (SDGs):

- SDG 3: Ensure healthy lives and promote well-being for all at all ages. Target 3.9. of this SDG requires that by 2030, the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination should be substantially reduced. Progress in achieving this target will be measured by how we reduce the mortality rate that is attributed to unsafe water, unsafe sanitation and lack of hygiene services. SDG 3 can only be achieved if there is sustainable provision of both water and sanitation to communities.
- SDG 6: Ensure availability and sustainable management of water and sanitation for all. The key SDG 6 targets that would ensure the promotion of health and well-being of communities are as follows:
 - Achieve universal and equitable access to safe and affordable drinking water for all
 - Achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
 - Improve water quality by reducing pollution, eliminating dumping and minimiszing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
 - Support and strengthen the participation of local communities in improving water and sanitation management.

Ms Nomvula Mokonyane Minister of Water and Sanitation

Date:

Foreword by Director General of Water and Sanitation

Basic sanitation services as defined in the 2016 Sanitation Policy entails: The provision of basic sanitation facility which is environmentally sustainable, easily accessible to a household or a consumer; the sustainable operation and maintenance of the facility, including the safe removal of human waste, grey-water and wastewater from the premises where this is appropriate and necessary; and lastly, the communication and local monitoring of good sanitation, hygiene and related practices.

Provision of sanitation was previously considered primarily as installation of hardware, without taking into consideration other soft issues that are crucial to sustainability such as: community participation, technology choice, operation and maintenance as well as health and hygiene education. To ensure the inclusion of health and hygiene user education in the provision of sanitation, the Department started a process to develop Sanitation Project-based Planning and Implementation Guidelines for Health and Hygiene User Education as well as the Social and Institutional Guidelines for Implementation of Health and Hygiene User Education, all targeted at sector stakeholders, municipal councillors and officials (including Environmental Health Practitioners).

Sanitation Policy Position 14: Hygiene Education in the 2016 National Sanitation Policy emphasiszes the need for an ongoing hygiene education within the provision of sanitation services (pre-construction, during construction and post-construction) that promotes good hygiene behaviour.

The Health and Hygiene Planning and Implementation Guide provides municipalities that are responsible for ensuring access to water and sanitation services, with a comprehensive approach to the delivery of sustainable and effective sanitation project-based health, hygiene and user-education, in terms of water and sanitation related health and hygiene practices, particularly at the domestic level.

On the other hand, the Social and Institutional Guideline provides a framework for coordination, alignment and integration of health and hygiene user education with other relevant programmes within the delivery of sanitation projects and schemes in communities and institutions. The Guide is also developed to support sector planners and implementers with mechanisms to ensure that all relevant and key social, environmental and institutional issues relating to the provision of sanitation and health and hygiene education are incorporated into health and hygiene education plans at various levels of government, community and civil society.

Director General of Water and Sanitation

Date:

SOME RELEVANT TERMS AND AREA OF APPLICATION

The section below outlines some general terms, concepts and definitions related to the provision of basic sanitation. In instances where terms have already been defined in existing legislation or policies, these documents are referenced in the table below.

TERM	REFERENCE SOURCE	APPLICATIONS						
"Water Services Authority" (WSA)	Strategic Framework for Water Services (SFWS) of 2003	Any municipality that has the executive authority to provi water services within its area of jurisdiction in terms of the Municipal Structures Act 118 of 1998 or the Minister authorisations made in terms of this Act. There can o be one WSA in any specific area and therefore, WSA ar boundaries cannot overlap. WSAs may be metropolite municipalities, district municipalities or authorised lo municipalities.						
"Water Services Provider" (WSP)	SFWS (2003)	A Water Services Provider (WSP) is any person/entity that has a contract with a WSA or another WSP to sell water to, and / or accept wastewater for the purposes of treatment from, that authority or provider. It could also be any person who has a contract with a WSA to assume operational responsibility for providing water services to consumers or end users within a specific geographic area. It could also be a WSA that provides either or both of the above services itself.						
"Water Services Intermediary" (WSI)	SFWS (2003)	 Any entity that is obliged to provide water services to another in terms of a contract. The following elements are required for an entity to be defined as a Water Services Intermediary: There must be an obligation to provide services. The obligation must exist in terms of a contract, whether specifically agreed or implied; and The obligation to provide water services is not the main reason a contract exists between the parties. An intermediary must have a written (explicit) or verbal (implicit) contract with residents, which needs to be about something other than water service provision (e.g. residence or employment etc.). In the case of farmers, they are required to have contracts with their employees. It can therefore be argued that they have a prima facie role as Water Services Intermediaries. To be an intermediary, the entity does not necessarily have to own the property receiving service. The person or institution that is actively using or managing the land may be considered the intermediary, just as the institution that gave permission to the residents to live on the land may also be considered an intermediary 						
"Basic Water"	SFWS (2003)	The supply of 25 litres of potable water (compliant with SABS 241-1984 standards) per person per day supplied within 200 meters of a household and with a minimum flow of 10 litres per minute (in the case of communal water points) or 6 000 litres of potable water supplied per formal connection per month (in case of yard or house connections). A basic water supply service is the provision of a basic water supply facility, the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident) and the communication of good water-use, hygiene and related practices.						

TERM	REFERENCE SOURCE	APPLICATIONS			
		The above standard for basic water supply is prescribed in regulation 3(b) of the Regulations relating to compulsory National Standards and Measures to Conserve Water published as Notice No 509 in Regulation Gazette 7079, Government Gazette 22355 dated 8 June 2001.			
"Basic Sanitation"	SFWS (2003)	The infrastructure necessary to provide a sanitation service; which is safe, reliable, private, protected from the weather, ventilated, keeps smells to the minimum, is easy to keep clean, minimizes the risk of the spread of sanitation-related diseases. It should enable safe and appropriate treatment and / or removal of human waste and wastewater in an environmentally sound manner.			
		The basic sanitation service provides a facility which is easily accessible to a household, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary. It should be accompanied by communication and messages of good sanitation, hygiene and related practices.			
"Free Basic Sanitation's three service components"	ic Free Basic Sanitation Implementation Strategy (2009) Capital cost of sanitation from the poor consumers get sanitation from the contributions in cash or in kind. I certain 'on site' components where includes rehabilitation of the infra exclude capital costs above a cei municipality, in which case the how the additional amount required (whe kind).				
		Operation and maintenance costs: providing support to poor and indigent households for the maintenance of the on-site component of their sanitation facility where required, and not billing the households for the management of the off-site components of the sanitation system.			
		The different sanitation technologies:			
		 VIP type toilets – supporting households to empty pits when they are full or to move the top structure over a new pit, 			
		 Ecological sanitation toilets – monitoring and providing training and support for households to empty the dry contents of the chambers from time to time, 			
		 Aqua privies and septic tanks – providing a service (suction tanker) to de-sludge the digesters every 3 to 5 years, 			
		• Flush toilets – providing up to 3kl per month additional free water. Note that this amount will be more in the case of people who are at advance stages of AIDS.			
"Health and Hygiene Promotion"		Providing health and hygiene awareness and education aimed at increasing the demand for good sanitation and improved hygiene behaviour preceding sanitation improvement programmes. The ongoing sanitation services provision, in line with the National Health and Hygiene Education Strategy Related to Water Supply Sanitation Services developed by the Department of Health in consultation with DWS.			
		Water Supply and Sanitation Services developed by the Department of Health in consultation with DWS.			

TERM	REFERENCE SOURCE	APPLICATIONS				
"Indigent"	The National Framework for a Municipal Indigent Policy;	Refers to "lacking the necessities of life". The Constitution of the Republic of South Africa Act No.108 of 1996 provides a guide as to what the necessities of life are: Housing; Health care; Basic energy; Sufficient water; Basic sanitation; Food and clothing; Environmental health; and Refuse removal (in dense settlements). An indigent would be considered as any individual who does not have access to these goods and services. It is important to understand that the definition of an indigent can also not be considered too narrowly as this may exclude certain individuals or poor households who				
	Guidelines for the Implementation of the National Indigent Policy on water, sanitation, electricity/ energy and waste removal by Municipalities (2006)	really do require poverty alleviation, and equally the definition cannot be too loose as this could result in inequitably including individuals and households who are able to afford to contribute towards payment for basic services. Household circumstances and communities' profile var within municipalities; - it is difficult to formulate a single national definition of an indigent, which can be evaluated Municipalities should apply their right to apply the National Indigent Framework Implementation Guidelines according to their own local situations				
"Beneficiary"	DWA SFWS	 An entity with whom the municipality is deemed to have concluded, an agreement for the provision of a municipal service. A domestic beneficiary means a beneficiary who, primarily for residential purposes, occupies a dwelling, structure or premises. Domestic beneficiaries include: Households living on a stand that is primarily used for residential purposes All properties that are rented out for residential purposes Households renting accommodation on a stand already occupied by another household, and who qualify for 'RDP' housing (they are on the waiting list) Households living in informal settlements who qualify for 'RDP' housing (they are on the waiting list) Households who have been given 'RDP' housing but are renting it out and have moved to an informal settlement or a backyard dwelling elsewhere. Households living on premises that are primarily used for commercial or industrial purposes (these are dealt with under the provision of services to commercial and industrial sites). 				
"Bulk Services: Treatment works (controlled operations)" Examples: activated sludge, bio-filter, rotatingbiological disc)	DWA WSDP Guideline	 Bulk services in treatment works are represented by the following: Capacity and processes of removing harmful contaminants from sewage. (physical, chemical and biological). Capacity to treat biological contaminants - to produce a waste stream (or treated effluent) of solid waste or sludge, both of which are safe and suitable for reuse or discharge back into the environment. 				

TERM	REFERENCE SOURCE	APPLICATIONS
"Bulk Services: Treatment Works (<i>uncontrolled</i> <i>operations</i>) Examples: Anaerobic, Oxidation, Maturation ponds, reed beds	DWA WSDP Guideline	Capacity of uncontrolled treatment processes (e.g. oxidation ponds) used during the primary, secondary and/ or tertiary treatment of sewage that are designed to treat sewage to meet the effluent quality standards, particularly in terms of organic and biological quality.
"Bulk Services: Pump stations"	DWA WSDP Guideline	Capacity of: Pump stations (designed to hold pumps and equipment for pumping sewage effluent to the treatment facility). Existing pump stations that are functional.
"Bulk Services: Bulk sewers" <i>Example:</i> Bulk sewer manholes	DWA WSDP Guideline	Capacity of: Bulk sewer pipelines and/or manholes (designed to transfer sewage from the collector sewers and/or pump stations to the treatment works. Existing bulk sewers and/or manholes that are functional (througmaintenance and repair, avoid multiple frequent leaks).
"Connector Services: Pump stations"	DWA WSDP Guideline	Capacity of: Pump stations (designed to hold pumps and equipment for pumping sewage effluent to the treatment works or a bulk pump station). Existing pump stations that are functional
"Collector Services: Reticulation sewers" <i>Examples:</i> Reticulation sewer manholes	DWA WSDP Guideline	Capacity of: Collector sewer pipelines and/or manholes (designed to transfer sewage from the households to the bulk sewers) Existing collector sewers and/or manholes that are functional (e.g. to be repaired to prevent multiple frequent leaks)
"Bulk Services: Treatment Works (uncontrolled operations) Examples: Ponds, Anaerobic Oxidation, maturation ponds, reed beds	DWA WSDP Guideline	Capacity of uncontrolled treatment processes (e.g. oxidation ponds) used during the primary, secondary and/ or tertiary treatment of sewage that are designed to treat sewage to meet the effluent quality standards, particularly in terms of organic and biological quality.
"Bulk Services: Pump stations"	DWA WSDP Guideline	Functional service is: Capacity of pump stations (designed to hold pumps and equipment for pumping sewage effluent to the treatment facility). Existing pump stations that are functional.

TERM	REFERENCE SOURCE	APPLICATIONS				
"Bulk Services: Bulk sewers" <i>Example:</i> Bulk sewer manholes	DWA WSDP Guideline	Functional service is: Capacity of bulk sewer pipelines and/or manholes (designed to transfer sewage from the collector sewers and/or pump stations to the treatment works Existing bulk sewers and/or manholes that are functional (e.g. allow frequent repairs and avoid multiple frequent leaks)				
"Connector Services: Pump stations"	DWA WSDP Guideline	Functional service is: Capacity of pump stations (designed to hold pumps and equipment for pumping sewage effluent to the treatment works or a bulk pump station). Existing pump stations that are functional				
"Collector Services: Reticulation sewers" <i>Examples:</i> Reticulation sewer manholes	DWA WSDP Guideline	Functional service is: Capacity of collector sewer pipelines and/or manholes (designed to transfer sewage from the households to the bulk sewers) Existing collector sewers and/or manholes that are functional (to be repaired and avoid multiple frequent leaks)				

1 UNDERSTANDING THE THEMES AND AREAS OF APPLICATION: BACKGROUND

In this section, some general terms, concepts and definitions related to the provision of basic sanitation as well as health and hygiene user education, are outlined. In instances where terms have already been defined in relevant existing legislation or policies, these documents are referenced in the table of relevant legislative imperatives, in section 2 of this document.

The development of this user-friendly guide for Implementing Sanitation Project-Based Health, Hygiene and User-education has been a collaborative effort of the Department of Water and Sanitation, and various stakeholders.

In order to apply aspects of this guide, it is strongly recommended that local assessments are undertaken to determine the circumstances of backlog communities in the particular municipal area or jurisdiction. It is especially necessary to determine whether infrastructure for water and sanitation is already in place, as this should allow for the devising of a coordinated strategy in line with the municipality's Integrated Development Plan (IDP).

1.1 What the Implementation Guide is About

This guide sets out a comprehensive approach to the delivery of sustainable and effective sanitation projectbased health, hygiene and user-education, in terms of water and sanitation related health and hygiene practices, particularly at the domestic level. The aim is to provide user education within programmes for the delivery of water supply and sanitation services, and through ongoing awareness initiatives implemented as part of local health programmes. The guide has been developed based on the current health and hygiene education status in South Africa and within the framework of current South African applicable policies.

1.2 Why is this Guide Necessary?

The Guide: Implementing Sanitation Project-Based Health, Hygiene and User Education is designed to provide direction and support in respect of the concept, the application and implications of providing sanitation project-based health, hygiene and usereducation.

From the assessment done through literature review, engagements with national, provincial and local municipality practitioners, it has been established that; while there are various national acts and policies on the provision of health and hygiene, there are no guidelines on implementation of health and hygiene education at a local level. It was also confirmed that Community health workers, municipality environmental health practitioners, municipality officials and sanitation infrastructure provision within communities, is done outside of any common affiliated structure or guidelines, making it difficult for the implementing authorities to objectively evaluate the efficacy of any health and hygiene user education, to the beneficiary population.

This guide provides practical applications to implanting authorities, responsible for health and hygiene education within communities.

1.3 What Process was Applied in Compiling Information?

The process of developing this document included a consultative process and close collaboration between the Departments of Health and Water and Sanitation. Various discussion sessions, review forums, participatory workshops as well as literature review of policies and legislation across the various spheres of government (municipalities, provinces, national departments) were conducted. These include the identification of needs via regional workshops and a national workshop attended by national stakeholders and regional representatives of the Departments of Water and Sanitation as well as of the Department of Health. Water research and implementing entities including the Water Research Commission, The Mvula Trust - as reference partners in providing feedback on drafts in the compilation of this document.

The culmination of the consultative process has provided a wealth of information and knowledge, and has identified key issues required in practical applications which are included in the guide.

1.4 Who should use this Implementation Guide?

This guide should be utilised for implementation on sanitation projects, to achieve health and hygiene education; at local government level. It should be used by officials responsible for municipal health services, supported by provincial and national partners.

2 LEGISLATIVE IMPERATIVES AND CONTEXT

Various acts and policies govern; and are used to legislate and regulate health and hygiene implementation in South Africa and therefore – health and hygiene user education.

Below, are the relevant aspects of legislation that provide the context and structure of health and hygiene educational imperatives, in sanitation projects.

The legislation spans national acts and guidelines that are located within national departments that focus on health welfare and sanitation, specifically the departments of Health and of Water and Sanitation. These are presented below, in no relevant order of importance:

2.1 The 2003 Strategic Framework for Water Services

Ensuring access to efficient, affordable, economical and sustainable water sources is a Constitutional obligation for all municipalities. In this case, the guide provides a foundation on how sanitation services fit into the overall legislative and policy framework for municipal and local water services.

The Strategic Framework for Water Services (SFWS) approved by Cabinet in September 2003 refers to the WSA's universal service obligation.

Water Services Authorities have a responsibility to ensure that all people living within their jurisdiction are progressively provided with at least basic water and sanitation services.

2.2 The National Water Act (Act 36 of 1998)

The National Water Act (36 of 1998) and the Water Services Act (108 of 1997) provide the legislative framework within which water supply and sanitation services and water use must take place.

The purpose of the National Water Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account the following aspects:

- (i) Meeting basic human needs;
- (ii) Promoting equitable access to water and sanitation
- (iii) Redressing the results of past racial and gender discrimination; Promoting the efficient, sustainable and beneficial use of water; Facilitating social and economic development;

- (iv) Providing for growing demand for water use; Protecting aquatic and associated ecosystems;
- (v) Reducing and preventing pollution and degradation of water resources; Meeting international obligations;
- (vi) Promoting dam safety;
- (vii) Managing floods and droughts; and
- (viii) Establishing suitable institutions and to ensure that they have appropriate community, racial and gender representation.

2.3 The Water Services Act (Act 108 of 1997)

The main objectives the Water Services Act is to provide for:

- (i) Right of access to basic water supply and to basic sanitation
- (ii) Setting of national standards and norms; and standards for tariffs
- (iii) Preparation of water services development plans
- (iv) Regulatory framework for water services institutions
- (v) Establishment of Water Boards and Water Services Committees
- (vi) Monitoring of water supply and sanitation services
- (vii) Intervention by the Minister or by the relevant province
- (viii) Financial assistance to water services institutions
- (ix) A national information system
- (x) Accountability of water services providers and promotion of effective water resource management and conservation

The overall objective of the Water Services Act is to:

Legislate the municipal function of ensuring water supply and sanitation services. Through the Act, DWS to ensure that it is aligned with the Strategic Framework for Water Services as well as other legislation that governs the sector.

2.4 The Municipal Systems Act (Act 32 of 2000)

The Municipal Systems Act (Act 32 of 2000) focuses on the internal systems and administration of a municipality. It addresses various aspects including:

 Public accountability and public involvement in policy formulation and decision making; Guidelines for establishing bylaws;

- (ii) Establishing Integrated Development Plans; and
- (iii) Establishing a performance management system

The Act introduces the differentiation between authority and provider functions of a municipality, to ensure consistency with the Water Services Act (Act 108 of 1997). The importance of alternative mechanisms for providing municipal services, and setting out of certain requirements for entering into partnerships with others is also identified in the Act. This applies to Water Services Authorities that contract water services providers to fulfil their water services provision function.

A range of new institutional entities associated with municipal services, notably multi-jurisdictional service districts, municipal business enterprises and service utilities are also introduced in the Act. These institutional options may be applied to the delivery of water services, as appropriate.

2.5 The White Paper on Basic Household Sanitation (2001)

The White Paper on Basic Household Sanitation (2001) focuses specifically on the provision of a basic level of household sanitation to mainly rural communities and informal settlements. These are the areas with the greatest need. The White Paper also deals with the need for an environmentally sound approach to providing sanitation services and addresses the need to protect surface and ground water resources from sanitation pollution through integrated environmental management practices.

The purpose of this policy document is to highlight the impact of poor sanitation on health, living conditions and the environment; articulate government policies on sanitation; provide a basis for the formulation of local, provincial and national sanitation improvement strategies aimed at addressing the backlog; provide a framework for municipality driven implementation programmes; promote greater coherence and co-ordination amongst the different spheres of government and amongst other role players in addressing the sanitation problem; ensure that sanitation improvement programmes are adequately funded; and put in place mechanisms to monitor the implementation of this policy and sanitation improvement programmes so that corrective action can be taken when necessary.

2.6 The National Health Act (Act 61 of 2003)

In April 1997, the White Paper for the "Transformation of the Health System in South Africa" was published by the Ministry of Health with the objective of presenting, to the people of South Africa, a set of policy objectives and

principles upon which the Unified National Health System of South Africa was to be based and in addition to these objectives, presented various implementation strategies designed to meet the basic needs of all of the people of South Africa, given the limited resources available.

This White Paper served to consolidate the reform process in health services management in South Africa by setting out the following key policy initiatives for the achievement of comprehensive primary health care and the delivery of quality health care for all citizens, efficiently and within a caring environment, including:

- Decentralizing the management of health services, by placing an emphasis on a district health system;
- (ii) Increasing access to services by making primary health care available to all citizens;
- (iii) Ensuring the availability of safe, good-quality essential drugs in health facilities;
- (iv) Rationalizing health financing through budget reprioritization;
- (v) Focusing on sustainable food security for the needy, through the Integrated Nutrition Programme;
- (vi) Strengthening disease prevention and health promotion in areas such as HIV/AIDS, Sexually Transmitted Diseases and maternal, child and women's health; and developing a National Health Information System, to facilitate health planning and management.
- (vii) These key policy initiatives then became the essence of the National Health Act (Act No. 61 of 2003) which was the promulgated in July 2004. Further to this, the Constitution of the Republic of South Africa (Act No. 108 of 1996), in schedule 4B, stipulates that Local Government is entrusted with the responsibility for the provision of Municipal Health Services (MHS), and the Municipal Structures Act (Act No. 117 of 1998), in section 84 (1) (i), determines that District and Metropolitan Municipalities are responsible for rendering municipal health services within their area of jurisdiction.
- (viii) In terms of the National Health Act 61 (2003) Municipal Health Services excludes port health, malaria control, control of hazardous substances and immunizations, but includes the following services: Water quality monitoring; Food control; Waste management; Health surveillance of premises; Surveillance and prevention of communicable diseases, excluding immunisations; vector control; environmental pollution control; disposal of the dead; and chemical safety.

3 PARTNERS AND INSTITUTIONAL RESPONSIBILITIES

Various entities are responsible for specific functions of Health and Hygiene User Education implementation, as prescribed by relevant legislation that governs them. The following are important partners in the delivery of Sanitation Based Health and Hygiene User Education.

3.1 Water Service Authority

Municipalities with powers and functions for water services, i.e. WSAs, need to fulfil the following key functional roles and responsibilities:

- To ensure access to basic water services, WSAs need to ensure water services infrastructure development through the capital programme funded by the Municipal Infrastructure Grant (MIG).
- (ii) To ensure effective water and sanitation services to communities, there are a number of key policy decisions that municipal councilors need to make with regard to setting the municipal bylaws in the context of national policy and legislative frameworks.

Water services authority functions in relation to health and hygiene education delivery include:

Functions - Ensuring Access to water services, of which health and hygiene education is a key component: WSAs are to ensure that health and hygiene education makes up a key component of all water services delivery projects.

Planning - The preparation of water services development plans, which will highlight the water and sanitation project priorities and the associated health and hygiene education requirements as part of the IDP.

Regulation - The regulation of water service provision and providers within their areas of jurisdiction within the policy and regulatory frameworks set by national and provincial government, including DWA. In relation to health and hygiene education a key regulatory requirement is to ensure that the public is aware of health regulations that apply to water supply and sanitation services (including the disposal of solid wastes), and to ensure that households, institutions, commercial enterprises and industry complies with these regulations. WSAs may issue additional regulations from time to time to ensure protection of the environment and maintenance of environmental health. **Provision -** Ensure the provision of effective, efficient and sustainable water services. The provision of water services also includes communication activities related to gender sensitive hygiene promotion, the safe disposal of human wastes, and the wise use of water.

Through a strategic decision-making process (complying with section 78 of the Municipal Systems Act), WSAs decide on appropriate institutional arrangements for water services by assessing various viable delivery mechanisms against legislated criteria and municipal challenges.

Where WSAs opt for external mechanisms for the provision of water and sanitation services, the appointed WSP is responsible to liaise with beneficiaries in keeping with its agreement with the WSA. The contract or service delivery agreement between the WSA and WSP must set out the roles and functions of the WSP and differentiate these from the roles and functions of the WSA.

A *Water Service Provider* - is contracted by a WSA to perform certain services on behalf of the WSA. These services include either one or both of:

The implementation of water and sanitation service projects; and / or the operation and maintenance of water and sanitation services.

Health and hygiene education are components of both of these activities, and hence the Water Services Providers will be responsible for some components of the health and hygiene education programmes. Water services providers may assume responsibility for conducting either the initial and/or the on-going health and hygiene education programmes as part of its contracted responsibilities for the project implementation or the operation, maintenance and customer relations activities.

The Water Services Authority should work in close partnership with either or both of Municipal Health Services and Personal PHC services, and hence the following activities may be carried out within this partnership.

The Role of a Water Services Provider

WSAs can provide water services through partnerships with external mechanisms such as organs of state, community based organizations (CBOs), non-governmental organizations (NGOs) or the private sector. It is also possible for WSAs to structure WSP institutional arrangements so that combinations of internal and external mechanisms for various settlements in the area or across municipal boundaries are put in place.

Municipal Health Services - Health and hygiene education forms part of both the water and health sectors with District Municipalities and Metros assuming primary responsibilities for planning and implementing health and hygiene education in their respective sectors. Health and hygiene education is a component of Municipal Health Services (MHS) by virtue of the fact that it relates to a number of the environmental health services as defined in the National Health Act namely: Water quality monitoring Waste management; Surveillance and prevention of communicable diseases, excluding immunisations; Vector control

Therefore, Municipal Health Services must assume the lead role in ensuring that health and hygiene education programmes in relation to water and sanitation services are implemented on a sustainable basis in all communities within its area of jurisdiction. The variations in capacity and the resources within Municipal Health Services are recognized and therefore this strategy does not impose a prescriptive list of functions for the Municipal Health Services to adhere to.

Collaborative planning with other key role-players and in particular the Water Services Authority and Personal PHC Services is critical. The MHS must contribute to the development of the District Health Plan that incorporates water supply and sanitation related health and hygiene education activities. This planning needs to focus on:

- Identification and quantification of water supply and sanitation services and health and hygiene education needs;
- Identification of high risk areas and strategies to reduce these risks;
- Clarification of roles and functions of the role players operating at the municipal and district level; Ensuring links with other planning initiatives;
- Identification of health and hygiene education delivery mechanisms (project based and ongoing);

- Assessment of MHS capacity and resources to implement health and hygiene education; and
- Co-ordination of programmes with Personal PHC services and the WSA.
- The management of a health and hygiene education programme in the MHS is an essential requirement of Municipal Health Services, as is the establishment of an effective health and hygiene education monitoring system. In terms of water supply and sanitation services, the

MHS is required to ensure that all the associated health and hygiene education programmes are integrated into the broader health and hygiene education programme of the MHS and DHS, and that these comply with minimum requirements for effective health education.

In terms of monitoring, the MHS is required to keep records of all health education initiatives

taking place in each community. In addition, the MHS should monitor the prevalence of water and sanitation related diseases within the communities, and where feasible the impact of the various health education initiatives. The MHS must ensure that the ongoing H&H education services are delivered, and that they are associated with project related H&H educationinitiatives. It is important that there is good communication and collaboration between the MHS, Personal PHC services in relation to planning and implementing health and hygiene education.

Municipal Health Services are responsible for nine of the Environmental Health Services (EHS) recently devolved in terms of the National Health Act. There are certain practical scenarios in relation to the devolution process:

- Some EHS are still being performed by Provincial Health Departments; and
- Some EHS are still being performed by Local Municipalities' health services.

These scenarios can be accommodated through the implementation of Service Level Agreements that delegate or assign these services either:

- From the Municipal Health Services to Provincial Health; or
- From district based Municipal Heath Services to a Local Municipality's health services.

4 ENVIRONMENTAL AND GEOLOGICAL SIGNIFICANCE

Human waste contains a number of chemical and bacterial agents which are harmful both to people and to ecosystems. Any toilet or sanitation system has the potential to pollute ground or surface water sources, and impact on the health of the soil.

For dry on-site systems, key variables are the height of the water table, the nature of the substrate and the density of the settlement. The issue is not whether there will be any contamination, because some degree of groundwater contamination is likely, however small, and certainly long term - rather - the issue is whether the aquifer is strategically important. Water-borne systems potentially pose a far greater risk of polluting ground and surface water than dry on-site systems, because of leaking sewers, blockages, spills and malfunctioning treatment works.

4.1 Undertaking a Groundwater Protocol for a Basic Household Sanitation Project

Conducting a groundwater assessment should always form part of a set of procedures for the provision of sanitation and the protection of water resources, and should not in itself be used to justify a particular choice of action without the financial and socio-economic assessments required for holistic decision-making. Groundwater assessment procedures should be integrated into local institutional structures to ensure that the responsible authorities are informed of all studies and outcomes, and responsibilities for the various tasks of the assessment should be allocated in conjunction with institutional structuring.

Environmental impacts cannot generally be resolved in absolute terms, but can be resolved in a water resources strategy. While certain practices are better than others, and there are certain interventions that can be made to further protect groundwater from contamination, absolute protection from any contamination by sanitation systems is unrealistic - certainly in the context of developing areas. Communities should be involved in the site assessments to be carried out, including a hydro-census, and made aware of the health impacts related to contamination of the groundwater resources. They should also be involved in the longer-term monitoring of the groundwater and the potential sources of contamination.

Groundwater resources are likely to become more valuable in the future, even in urban areas where piped water is supplied from surface sources - for this reason, appropriate steps to ensure reasonable groundwater protection should always be taken. The assessments associated with conducting a groundwater review is based on the principle of risk. Hence the assessment of the impact of a sanitation system should be based on the level of risk of the sanitation system to contaminate the groundwater in comparison to other sanitation alternatives, and in relation to the risk of contamination from other sources.

Groundwater contamination risk levels are based on three factors: the vulnerability of the underground water resources (aquifers); the contamination load from the particular sanitation system; and the strategic value or current and/or future use of water from the aquifer.

The vulnerability of the underground water source is related to the distance that the contaminant must flow to reach the water table, and the ease with which it can flow through the soil and rock layers above the water table. An assessment of the soil and rock types, and the distance to the water table may be obtained from an area hydro-geological report or from a site inspection.

The contamination load from a particular sanitation system is usually related to the design or type of sanitation system, the use of the system, and the ongoing maintenance of the system. This must also be measured in the context of the total contamination load from all sources within the community.

The strategic value of the groundwater is a function of the potential yield of the aquifer, the present or probable future use of the groundwater, and the existence of alternative water sources. The options for addressing situations that give rise to unacceptable risk are dependent on the specific situation on site. These should be negotiated and decided on by the sanitation engineer in consultation with the geohydrologist and the community.

Groundwater contamination risks can be reduced by taking one or more of the following remedial or precautionary steps: moving groundwater abstractions point sufficiently far from contamination sources; using less polluting sanitation systems, e.g. VIP, eco-san, LOFLOS; increasing the flow-path from the sanitation system to the water table, e.g. raise pit, seal lower part of pit, install fine sand filter; treating water abstracted from boreholes, e.g. chlorination; removing liquid effluents from households close to abstraction points, e.g. pipe to wetland; and protecting water abstract from deep levels, pump management to minimize cone of depression.

4.2 Undertaking an Environmental Impact Assessment for installation of Bulk Sanitation Infrastructure

The National Environmental Management Act (Act no 107 of 1998) Regulations require that a basic assessment or scoping and environmental impact assessment (EIA) process be undertaken to support an application for environmental authorization when new townships or bulk wastewater treatment infrastructure is established.

A key component of these processes is the identification and assessment of potential impacts of the proposed activity.

The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise from the undertaking of an activity. The findings of impact assessments are used to inform the competent authority's decision as to whether the activity should be authorized, authorized subject to conditions that will mitigate the impacts to within acceptable levels or should be refused.

Impacts are the changes in an environmental parameter that result from undertaking an activity. The change is the difference between the effects on the environmental parameter where the activity is undertaken compared to that where the activity is not undertaken. Impacts occur over a specific period and within a defined area.

Different types of impacts may occur from the undertaking of an activity. The impacts may be positive or negative and may be categorized as being direct (primary), indirect (secondary) or cumulative impacts. The main purpose of the assessment of alternatives and impacts is to provide the competent authority with relevant and objective information that will enable the authority to make informed decisions on an application for environmental authorization. In order to achieve this purpose, it is important that:

- Methodologies that are used are clearly described so that it can be understood and considered by the competent authority and interested and affected parties;
- Methodologies and techniques are applied in such a way that accurate and objective information and/or opinions are provided;
- (iii) Any issues raised by interested and affected parties in respect of alternatives and impacts are addressed in the comments and responses report; and the assessment of alternatives and impacts results in options that represent the minimum impact on the environment.

(iv) Considering the on-going implications of Climate Change

The evidence for global climate change, largely attributable to human activities that produce greenhouse-gas emissions, is overwhelming. Predictions obtained from a range of global climate models reveal rapidly growing consensus regarding the nature and extent of the change. Water resources (surface and groundwater) are likely to be impacted through increases in temperature, changes in potential evaporation, shifts in precipitation patterns, increases in the frequency of floods and droughts, and, in coastal areas, sea-level rise.

In 2002, the South African water sector, initiated a comprehensive research programme on waterresource impacts of climate change, which provided valuable insight into the magnitude of the potential impacts and consequential adaptation needs in the sector.

The largely successful impacts research leaned heavily on the outcomes of considerable prior investment by the WRC in water-related climate, atmosphere and ocean-atmosphere research, as well as hydrological modelling research, undertaken over a period of more than 15 years. The rapid growth in awareness and understanding of global-change issues over the past decade has produced the need to continually refocus climate-related research.

The most necessary shift is probably for such research to be integrated into the larger body of national climate change research, thereby embracing a multi-sectoral, multi-level approach towards securing the water sector's contribution to enabling South Africa to deal effectively with a multiplicity of existing stresses that climate change will undoubtedly be adding to over coming decades.

A high priority for national and local water-resource and water-use planning and management is to pilot the mainstreaming of climate change considerations into water institutional arrangements, including policies, strategies, pricing, governance, etc. At catchment or community level, priority is given to either leading or contributing to cross-sectoral case studies that pilot adaptive action to reduce the socio- economic impacts of climate variability and change on already stressed and vulnerable groups.

5 TECHNOLOGY OPTIONS AND CONSIDERATIONS

A wide variety of water supply and sanitation systems are currently in use in South Africa, with varying degrees of success. They impact differently on the environment and have widely differing costs and degrees of acceptability to the users.

There are numerous factors that must be considered in a transparent manner and in close contact with prospective beneficiaries when deciding on the most appropriate technology for providing sanitation services to communities in a particular situation.

The following list is not exhaustive but should address most of the issues related to selecting the most appropriate technology for use in achieving sustainable sanitation services to communities:

- Affordability: By far the most important factor influencing the choice of technology is affordability - at household, local and national levels.
- (ii) Institutional needs: The more complex water services technologies, the more they may require substantial Intermediary or communitylevel organisation and institutional support both for delivery and for operation and maintenance.
- (iii) Environmental impact: All water supply and sanitation systems should be designed to reduce the environmental impact of unmanaged greywater and human waste disposal.
- (iv) Social issues: Social and cultural practices and preferences vary considerably from area to area.
- (v) Water supply service levels: Higher water supply service levels imply not only increased water usage and cost, but also the need for a sanitation system which must also facilitate wastewater disposal.
- (vi) Reliability: It is extremely important that those households who least can afford a basic water supply or sanitation service are not served with unreliable water services technology, and only proven technologies and designs should be adopted.
- (vii) Upgrading: As water supply and sanitation improvement is a process, it is desirable to consider infrastructure upgrading (e.g. borehole to yard connection or VIP to septic tank) sequences, where this is likely in the foreseeable future.
- (viii) Site-specific issues: The geology, hydrology and topography of an area may influence the choice of technology, insofar as they may affect water resource availability, ease of excavation, percolation rates and pipeline gradients, amongst other factors.
- (ix) Use of local resources: The local availability of materials and skills has an important bearing on the choice of technology or construction method.

(x) Settlement patterns: The density and layout of a settlement are important factors in selecting technology.

The aim of any sanitation facility is to contain human wastes such that they do not pose a threat to other people through normal disease transmission routes, and do not pose a threat to the environment. The facility should also be such that it preserves the dignity of those making use of it. All the sanitation systems referred to in this booklet do make provision for achieving these basic objectives, although it must be noted that the technologies do not in general result in the destruction of all disease-causing organisms. Rather the systems ensure that these are isolated from contact with humans, and will die off naturally over a period of time.

The full range of technical options for providing adequate basic sanitation is wide, and in particular, there is little appreciation of the long-term financial implications of operating and maintaining the various sanitation systems. As a result, communities and local governments may be currently choosing technical options that, in the long term, are unaffordable and/ or unsustainable.

Complications arise from the wide range of options available and the differing environments to which they are more suited. Experience shows that it is important to allow local solutions to be developed. The options include the ventilated improved pit toilet in all its variations, composting toilets, separation toilets, dehydration type toilets, on-site wet systems such as septic tanks, and full water borne systems.

The choice of technology is not only based on the technical aspects of the technology, but also on such factors as the permanence of the settlement, financial costs and affordability, design life, expectations and preferences, institutional capacity, the potential for job creation, and environmental considerations.

Below, we present the different technical characteristics of the various technology options which have proved to be viable for large scale use within the South African context. The most appropriate technical option always needs to be considered within all the sustainability requirements, e.g. affordability, operation and maintenance.

The options are divided into three categories: Dry onsite systems (that do not require water for operation and collect waste on-site), wet on-site systems (that do require water for operation and also collect waste on-site) and wet off-site systems (that do require water for operation and "transport" the waste off-site to be treated). The table below indicates some of the general service maintenance requirements for different sanitation technologies:

SYTEM	TECHNOLOGY	OPERATIONAL CONSIDERATIONS		
Dry on-site systems				
	Digesters: VIP	Build a new VIP or Manual or mechanical pit emptying or Relocate top structures. Considerations:		
		 Space and runds Procurement of the appropriate equipment (incl. the costs) Suitable space to gain access to the pit contents Equipment operators / transporters Access to an appropriate dumping & treatment site 		
		 Existing top structure materials that are appropriately movable (plus expertise re pit appropriate construction The quantity of sullage, solid waste, refuse and other chemicals disposed of in the pit 		
Desiccators: Urine Diver	sion			
	Digesters: VIDP Manual pit emptying	 Adapted pit and pedestal construction at the outset (higher capital building cost) Thorough user education (and cultural awareness) Frequent manual removal of "dried" waste (UDS) Less frequent removal of matured waste (VIDP) Appropriate method of secondary disposal of excreta 		
Wet on-site systems	<u> </u>			
	Septic Tank	 Conservancy tank Mechanical tanker desludging - Appropriate desludging equipment and transportation Equipment operators / transporters 		
		 Access to an appropriate dumping & treatment site Finances to sustain and maintain the service (pay the workers, cover transport and treatment costs, as well as cover hardware replacements costs as necessary) Wet off-site systems 		
		 Waterborne toilet A reticulation system and wastewater treatment plant/Water resources Sewer network and wastewater treatment capacity Skills and finances to operate, maintain, repair and sustain a reticulated system and treatment plant 		
Conservancy tank	Mechanical Tanker Desludging	 Appropriate desludging equipment and transportation Equipment operators / transporters Access to an appropriate dumping & treatment site Finances to sustain and maintain the service (pay the workers, cover transport and treatment costs, as well as cover hardware replacements costs as necessary) 		
Wet off-site systems	Waterborne toilet	 A reticulation system and wastewater treatment plant Water resources Sewer network and wastewater treatment capacity Skills and finances to operate, maintain, repair and sustain a reticulated system and treatment plant 		

6 FINANCIAL ALLOCATIONS AND BUDGETING

The WSAs water and sanitation services budget should identify tariffs and funding mechanisms required for financial sustainability, and tariffs should be determined in keeping with the tariff policy and the water services budget approved by the Municipality. Financial planning and management should incorporate Municipal Infrastructure Grant (MIG) budgeting and financial reporting, which address basic infrastructure development for the poor.

Allocating capital and operational subsidies for sanitation services in backlog communities requires a status quo assessment and careful financial planning. In the interests of sustainability and long-term planning, WSAs need to keep an updated register of sanitation facilities and assets constructed, and household where sanitation project-based health, hygiene and user-education is conducted.

The MIG is a conditional infrastructure grant to expand the delivery of basic services to poor households.

Each municipality's MIG allocation can be used for:

- MIG programme management (Project Management Units are established in municipalities for this purpose);
- Project feasibility studies and the development of project Business Plans;
- New infrastructure for basic services;
- Upgrading existing infrastructure to a basic level of service or its previous level; and
- Facilitating community participation, health, hygiene and user-education and awareness, operator training and project level communication and facilitation. MIG is a conditional grant

- the three types of conditions that apply to the MIG are Division of Revenue Act (DoRA) (Act 1 of 2005) conditions, cross cutting conditions within the MIG policy framework, and sector conditions.

Relevant MIG conditions include:

- The use of MIG funds within the framework of the IDP and its approved budget; the need to achieve basic service coverage targets;
- The need to maximize economic spin-offs from infrastructure delivery through job creation; prioritizing residential infrastructure in line with MIG and sector policies;
- The requirement for three-year capital and operational budgets; and
- Water services fees levied on the users (depending on the nature of the service and the economic profile of the users).

During 2009/2010, the COGTA Industry Guide to Infrastructure Service Delivery Levels and Unit Costs - 2010 (Final Draft 4.0) was developed in conjunction with DWS and the guideline budget for sanitation community development costs has been compiled and is comprised of four main components: material, labour, community development and project feasibility, assessment and management.

The costing for community development (including technical and social training, producing training materials and conducting household awareness) per household is often not fully appreciated or budgeted for by municipalities, and hence is set out below as an individual cost item.

Training, health, hygiene and user-education are to be budgeted for by municipalities, as part of all sanitation household infrastructure projects, as follows:

ACTIVITIES PER HOUSEHOLD	UNIT	QTY	RATE	TOTAL	
Community liaison, builder and quality assessor training and record keeping	person days	1	R 150.00	R 150.00	
Health, hygiene and user education materials	User material pack	1	R 100.00	R 100.00	
Health, hygiene and user education training	person days	0.5	R 150.00	R 75.00	
Peer education house to house visits (x 3)	Visit	3	R 40.00	R 120.00	
TOTAL COMMUNITY DEVELOPMENT PER HOUSEHOLD					

Source: An Industry Guide to Infrastructure Service Delivery Levels and Unit Costs - 2010 (Final Draft 4.0)

**Note: The 2010 costs are out of date. Professionals (Quantity Surveyors, Engineers, Project and Construction Managers have been consulted regarding estimation of cost at current rate. The estimates need to be discussed, agreed to and authorised by the DWS.

On average the community development unit cost, to be included in every municipal sanitation project to be implemented, for liaison, training, health, hygiene and user-education is R445-00 per household (2010/11). In order to ensure sustainable sanitation service provision, municipalities must also draft a local funding framework for the provision of ongoing sanitation services and have the latitude to determine subsidy amounts - within national guidelines.

Given that sanitation service provision to indigent households is costly, ongoing subsidization will be needed. The Equitable Share grant is an unconditional grant to supplement municipalities' revenue to deliver basic services to poor households. It subsidizes the actual provision of services, e.g. salaries, operational costs, maintenance costs, administrative and management costs where free basic services are provided. Ongoing sanitation service provision costs can also be covered by:

- Municipal rates levied on private land in terms of the Local Government: Municipal Property Rates Act (Act 6 of 2004);
- Water and sanitation charges levied elsewhere in the municipal area; and
- Water services fees levied on the users (depending on the nature of the service and the economic profile of the users).

7 PLANNING AND ALIGNMENT WITH OTHER PROGRAMMES

The 2001 Sanitation White Paper spelt out the roles and responsibilities of different national and provincial departments in achieving the objectives of national policy. These roles need to be reviewed in the light of recent developments and practical experience to date. Every department has a role to play in supporting successful achievement of government's sanitation objectives, but the following departments warrant specific comment:

The Department of Water and Sanitation is the co-ordinator of the national sanitation programme, and plays a major role in funding and supporting sanitation improvement in rural areas. As its role shifts increasingly to support and regulation in all settlement types, its own internal competencies need to be strengthened to address the range of service problems confronting municipalities in dense settlements. Water Quality Management and Geo-hydrological personnel should play an active support role in municipal sanitation forums, and co-ordination between Water Resource Management and Water Services should be strengthened, with sanitation more centrally on the departmental agenda.

National and Provincial Departments of Health have a leading role in sanitation-related health and hygiene education, health monitoring and crisis interventions, as well as provision of amenities in clinics and other health installations. The new National Health Act assigns responsibility for most aspects of environmental health to municipalities, and complex transfer arrangements are underway. The sanitation role of Health must now be redefined to address implementation of the revised mandates of Environmental Health and Health Promotion Directorates and municipalities.

The national Department of Co-operative Governance and Traditional Affairs, together with its provincial counterparts, play a key role in supporting local government to deliver on its service provision mandate. This covers a wide range of activities, including integrated development planning support, managing disbursement of funds for infrastructure development through MIG, co-ordination of Equitable Share allocations, oversight of capacity building programmes and associating monitoring systems. National and provincial departments must begin to address the sustainability aspects of sanitation servicing more pro- actively, in line with an expanded national sanitation policy framework.

National Treasury has a pivotal role to play in developing financial policies, norms, standards and guidelines around the use of MIG and Equitable Share funds.

National and Provincial Human Settlements Departments also play a major role in urban sanitation provision, through providing facilities in new housing developments. Housing agencies frequently have their own norms and standards for sanitation infrastructure which do not necessarily align with municipal servicing capabilities. Far closer co-ordination with municipal technical and health authorities is needed to achieve sustainable servicing, in line with an expanded national sanitation policy framework.

Local leaders and politicians have a decisive role to play shaping debate about realistic approaches to sanitation improvement, and should be encouraged to play this role more prominently.

Ward Committees are also an obvious structure through which to co-ordinate user involvement. User involvement entails considerably more than participation by a select few in a project steering committee. Ward structures need to promote and facilitate local discussion of needs, options and priorities, and ward- level decision-making needs to be informed by active engagement with local residents. In a growing number of projects, a substructure of the ward committee functions as the project steering committee, with representatives from each settlement addressed by the project. Municipal community development officers and environmental health workers play an important complementary support and liaison role.

In an effort to ensure and strengthen stakeholder networking and participation,

Municipal sanitation working groups can also be used as solution-oriented hands-on action groups where challenges are tackled as they occur and before they become complicated - the close monitoring of the implementation of grant funded sanitation projects can be one of the primary objectives of the municipal sanitation working group.

By causing municipal officials, politicians and community representatives, service providers and other government departments to gather together in one location, the working groups can facilitate the adoption and implementation of uncomplicated integrated monitoring systems at municipal level, and investigate solutions to longer terms challenges such as the best methods of emptying full pit toilets and desludging of septic tanks. Some municipalities have established working groups in order to support the implementation of accelerated sanitation project implementation in urban and rural areas. Working groups also aim to facilitate networking between sanitation, water supply and other programmes such as housing and health, in order to achieve integrated programme partnership and synchronization between technical and social project role-players and representatives of provincial and national ministries, as well as to assemble and authenticate progress data and address project challenges where necessary. The main advantages of local municipal sanitation working groups are that they offer:

- A constant 'bottom-up' approach across numerous projects and service providers which enables the support and improvement of sustainable municipal sanitation service delivery;
- (ii) the opportunity for community representatives, living in the villages where sanitation projects are being implemented, to engage with service providers, municipal officials and elected councilors, so as to ensure responsibility for the provision of services is handled within one municipal forum;
- supervision of a variety of responsibilities through bringing various role-payers together on a monthly basis in one venue and thereby economizing on time and no doubt cost;
- (iv) information sharing opportunities and a platform for debating and solving implementation challenges practically, as well as the chance to encourage knowledge and transfer of

expertise between all members; the chance to validate and gather the comprehensive project data which municipal managers are required to report on in alignment with their integrated development and service delivery budget implementation plans, and in so doing, verify the actual project implementation performance of service providers;

- (v) a platform from which to enhance the achievement of the aims of ensuring labourbased construction skills transfer so as to support the municipality to groom local emerging contractors;
- strengthen (vi) the chance to the working relationships which inform collaborative governance, through encouraging hands-on team work, and employing sector approaches to municipal challenges in order to work through project implementation bottlenecks by directly linking representatives of provincial and national ministries with officials at municipal project level - in order that they also be placed in situations to directly support municipalities in adopting the best possible solution, and in so doing comprehend the delivery challenges first hand, and give advice on policy-related aspects, as well as receive project progress data directly.

Ensuring that service providers are truly delivering what they have been appointed to do is the only way that a municipality can make sure that integrated sustainable sanitation development projects are being addressed, and municipal sanitation working groups can provide a key mechanism towards ensuring this.

8 KEY MESSAGES, MATERIALS AND APPROACHES

Sanitation systems often fail because people do not use facilities properly. This leads to poor sanitation and unhygienic practices that have an adverse effect on community and environmental health. According to the World Health Organization, effective health and hygiene promotion programmes require supportive environments, which can only be established if communities are empowered to join other role-players across departments in taking responsibility for promoting sanitation and environmental health.

The White Paper on Basic Household Sanitation (2001) South Africa also states that in order to help people to help themselves requires a knowledge of, and sensitivity to, the social context of a sanitation improvement programme. Municipalities as one of the government organization should adopt peopleoriented strategies in which community members play an active role in the planning and organisation so that they incorporate local social values to ensure that the resulting messages and programmes is done accordingly.

Community involvement is essential for long term success. Urban local governments need to develop the capacity to involve people in local decisionmaking. In rural areas, existing bodies such as Local Development Committees or Water and Sanitation Committees, assisted by local government or water boards where possible, should be involved in promoting sanitation programmes.

It is the responsibility of each community to safeguard public health, and to reach consensus as to the sanitation system that is affordable and acceptable to the majority. The improvements that can be made to existing systems will be promoted as part of the education process, and consideration should always be given to the potential for upgrading any option. Key health, hygiene and user-education messages in sanitation projects must aim to achieve the following:

- 8.1 Strengthen action through the empowerment of local communities to take responsibility for promoting sanitation and hygiene in their surroundings;
- 8.2 Assist in reorienting health and hygiene through collaborative partnerships of roleplayers across departments; and enhance enabling and supportive policy environments.

- 8.3 Hygiene messages, information, education and awareness programmes must be developed hand in hand with toilet-building projects, and must be targeted at all levels such as:
 - Personal Hygiene: Washing hands after going to the toilet or changing the nappies of babies, and before the preparation of food.
 - Household Hygiene: Keeping the home clean, particularly the areas where food is stored and prepared, and ensuring that food and drinking water is kept covered and uncontaminated.
 - Community Hygiene: Vectors do not respect household boundaries. To achieve improved public health. The whole community must be mobilised to work together for better health and a cleaner environment.
- 8.4 In order for health and hygiene education to be implemented effectively access to sufficient material and equipment in required - such as:
 - Health and hygiene education resource packs e.g. Sanitation Improvement Toolkit (SIT) or similar; Health and hygiene education manuals e.g. PHAST or similar;
 - Health and hygiene education posters and pamphlets;
 - Administrative materials e.g. monitoring and survey sheets, stationary etc.; Transport; and office space and equipment.
- 8.5 The inability to access funding and resources will severely inhibit the implementation of effective and sustainable health and hygiene education. It is important that health and hygiene education programmes are well planned and that materials and equipment requirements are clearly and realistically identified and provided for in line with the allocated MIG funds (refer to section 6 above for more details). The WSA needs to ensure that materials and equipment are provided for in the water or sanitation services project budgets.

- 8.6 Detailed materials and budget resource assessment audits should be conducted within all WSAs and MHSs in order to assess resource levels and assist with identifying and planning for future resource allocations to effectively implement health and hygiene education.
- 8.7 Training and capacity building at community level is a universal need in South Africa. There is, at present, shortage of suitable persons to undertake this function in the municipalities. Municipalities must ensure the training of health personnel in the community level this will ensure the required skills for the promotion of sanitation and hygiene.
- 8.8 Health promoting materials must be developed and health personnel and field workers should be trained on these promotional materials and then be deployed at community level to assist in the spreading the key messages on sanitation in the community. Good sanitation includes appropriate health and hygiene promotion. This implies that proper health and hygiene promotion would have the desired effect as part of sanitation. Effective health and hygiene promotion requires the following key elements:
 - The empowerment of local communities to take responsibility for promoting sanitation and environmental health;
 - Collaborative partnerships of role-players across departments; and supportive policy and environment.
- 8.9 The education programme can be done through either with strong media coverage and publicity, and most importantly at a local level, through existing structures such as Ward or Development Committees.
- 8.10 The use of participatory training materials must be promoted and encouraged wherever appropriate. Traditional channels for information can be done though employed where suitable, particularly communal forms such as drama and song. Schools in particular can be targeted, as children are often the most direct route for information to enter households.

- 8.11 Extensive experience has also been gained both locally and internationally regarding the approach to implementing successful health, hygiene and user-education programmes. The key Implementation Principles are as follows:
 - Community Participation: The involvement of the community and local leadership structures in all aspects of programmes is important to ensure their relevance and cceptability.
 - Integration: Water and sanitation related health and hygiene education must be integrated into:
 - (i) All water and sanitation services projects;
 - (ii) All primary health care programmes
 - (iii) Other development projects where appropriate such as housing projects;
 - (iv) The school curriculum; and
 - (v) Disaster response and management programmes.
- Collaboration: Collaboration and partnership between key role-players is vitally important. This is especially important in planning for sustainable health and hygiene education programme delivery. Collaboration should take place through coordination structures in all spheres of government.
- Sustainable Delivery: The health and hygiene education programme must be implemented as a more intense programme in the short term (project related) and also in a sustainable manner over the long term.
- Flexibility: Capacity and resource levels vary greatly within the key responsible institutions (Water Service Authorities, Municipal Health, and Personal PHC and Outreach Services). Therefore, innovative and flexible planning at a local level is required in order to achieve sustainable health and hygiene education delivery.
- Results Oriented: Health and hygiene education programmes should have as an objective the achievement of specific results that can preferably be measured, rather than just a general provision of information.

9 HEALTH, HYGIENE AND USER-EDUCATION IMPLEMENTATION

In the end, water and sanitation provision is aimed at improving the quality of life, dignity and health of all municipal constituents. Unless improved water and sanitation services are used effectively and for improved hygiene practices, these benefits will not be realized. This is particularly pertinent in the context of HIV/AIDS. Health and hygiene promotion and user-education therefore must be an integral part of water services provision to all residents. Experience has shown that the value of sound usereducation in relation to household operations and long -term maintenance of infrastructure, cannot afford to be under estimated a key component of sustainability.

Municipal health workers are ideally suited to implement user-education and environmental health and hygiene promotion programmes with residents, based on the health concerns and current conditions of residents. It is strongly recommended that in instances where the powers and functions of WSAs (particularly local municipalities) and District Health differ, both parties must resolve to work closely together. WSAs needs to:

- Determine and budget for the operational costs of Health and hygiene promotion
- Create a monitoring system of environmental health conditions, needs and initiatives; and
- Ensure that health promoters are effectively trained in participatory health and hygiene promotion methods such as Participatory Health and Sanitation Transformation (PHAST) and
- Implement effective use of, and care for, water and sanitation facilities for improved health.

9.1 **Pre-Project Activities**

Water and sanitation projects identified and prioritised in the WSDP and IDP processes require detailed planning that involves:

- (i) Thorough background information assessment by means of a baseline survey focusing on social and cultural factors, current understanding, and behaviours and practices related to water and sanitation.
- (ii) The baseline survey which includes a participative health and hygiene assessment conducted in collaboration with community leaders and representatives through the implementation of participative planning exercises within the community e.g. PHAST processes.
- (iii) A project focussed health and hygiene education programme based on the baseline survey findings.

- (iv) Identification of locally available human resources within the health services (MHS and/or PHC), the community (CHWs, health promoters), and based on the number and availability of these resources, identification of the requirement to train additional project based health and hygiene fieldworkers (e.g. community health workers).
- (v) Inclusion of health and hygiene education in the feasibility study, technical report and implementation plan; and,
- (vi) The monitoring of health indicators should be incorporated into the project monitoring system.

Health and hygiene education planning must take place within Water Services Authorities and within the Municipal Health Services as these two institutions play a primary role in ensuring the delivery of health and hygiene education. The District Health Council should support the planning within the WSAs and municipalities, ensuring that programmes are integrated with the primary health care programmes being implemented. Collaborative planning between WSA, PHC services and MHS is important with each participating in the others planning initiatives and in the Integrated Development Planning process.

The following issues must be addressed when planning ongoing health and hygiene education:

- The outcome of planning must be to develop an integrated and sustainable health and hygiene education programme as part of the District Health Plan (DHP);
- The facilitation of the implementation of the health and hygiene programmes must be linked to the programmes of PHC, MHS and the WSA;
- Roles and functions within the district and local structures must be clearly and realistically defined, particularly between the PHC, WSA and MHS;
- Existing co-ordination and collaboration structures such as District Sanitation Task Teams, Water Services Forums, Provincial Health Forums or similar structures must be consulted and where possible fully incorporated into collaborative planning initiatives;
- An approach to implementing sustainable health and hygiene education must be developed and linked into the WSDP, IDP and DHP. This approach must focus on two key health and hygiene education implementation scenarios:
- Short-term project based health and hygiene education initiatives as part of water and sanitation projects;
- Long-term ongoing health and hygiene education programmes that form part of the Municipal Health Services and Primary Health Care Programmes;

- Planning must address resource requirements and associated constraints as well as methods of overcoming these constraints;
- Priority areas, particularly in terms of health risks associated with water and sanitation related illness, must be identified and these integrated into WSDPs and DHPs; and
- A sustainable health and hygiene education monitoring and evaluation framework must be implemented.

9.2 During Project Activities

Project based health and hygiene education must be included as part of all water supply and sanitation service delivery projects. In water supply and sanitation projects, the WSA assumes primary responsibility for project based health and hygiene education programmes. The health and hygiene programmes are fully integrated into the project development processes, and follow the stages of standard project planning and implementation as outlined in the MIG processes.

The following programmes for the delivery of water supply and sanitation related health and hygiene end education are most commonly used:

- Short-term project based Health and Hygiene Education programmes;
- Long-term ongoing Health and Hygiene Education programmes as part of the municipal health services and primary health care programmes;
- Health and hygiene education implementation in schools; and
- Health and hygiene education as part of emergency programmes.

Figure 9.1. A Flow Diagram Indicating a Project-Based Health and Hygiene Education Implementation Approach:



Table 9.1. A Project-Based Health and Hygiene Education Programme Framework

Project Implementation Steps	Description	Aim	Resources	Organisations/ Personnel Involved
Step 1: Project Identification	Collaborative planning of water supply and sanitation with key role players Ensuring health and hygiene included in all WSS projects	Identify health and hygiene education projects linked to water supply and sanitation projects	IDP and WSDP guidelines	WSA, MHS, PHC
Step 2: Feasibility Stage	Introduction to community leaders Knowledge, Attitude and Perception Assessment, Assessment of health risks, Assessment of availability of skilled and semi- skilled personnel	Assess specific health risks and best approach linked to WSS project to address these	Baseline health survey guidelines	WSA, MHS, PHC, Contractors, Community Leaders
Step 3: Health & hygiene pre- project Planning Phase	Initial project introduction to the whole community, Establishment of Project Steering Committee Identification of role players for joint planning	Introduce the community and leaders to the project, establish the PSC and prepare for joint planning	Health and hygiene education resource pack	WSA, MHS, PHC, Community Leaders, Contractors
Step 4: Participative Planning Phase:	Joint planning of the health and hygiene programme using participative planning tools	Joint planning for effective health and hygiene education delivery	Participative planning tools Baseline survey results	WSA, WSP, MHS/PHC, Community Leaders, Contractor
Step 5: Implementation Plan	Allocate time frames and responsibilities and linkages for different tasks	To plan the implementation of the programme linked to the WSS implementation plan	Health and hygiene education resource pack WSS Implementation Plan	WSA, WSP, MHS, PHC, Implementing Agent, Community Representatives
Step 6: Delivery of Health and Hygiene Education programme	Implementation of the planned activities in accordance with the requirements of the minimum standards	The aim of these activities is to increase community understanding and knowledge about water and sanitation health and hygiene related issues, and to support activities that address specific health risks	Health and hygiene education resource pack Standard Message Resource Pack Drama H&H Education Materials Videos Radio and TV	Health Promoters and Community Health Workers (if available) and/or Locally based Health and hygiene Field Workers
Step 7: Monitoring & Evaluation	An evaluation of delivery programme activities compared against the baseline survey information and the project plan	To assess impact of the delivery programme and to take steps if necessary	Survey and participative assessment tools	WSP, WSA, MHS/PHC, Community Leaders, Contractor

Project Implementation Steps	Description	Aim	Resources	Organisations/ Personnel Involved
Step 8: End User Education	The focus of these activities is: To re-enforce the messages presented Present end-user and operation and maintenance training to the households and appointed community members	To reinforce messages already presented; To ensure the household understands and practice safe O&M and use of the facilities	Health and hygiene education resource pack O&M manuals for the specific project	Health Promoters and Community Health Workers if available Or Locally based Health and hygiene Field Workers
Step 9: Final Evaluation and closure report	Once step 8 has been completed a final evaluation takes place and a closure Report must be prepared.	Review the success of the programme in comparison to the base-line study Highlight areas that should be followed up on as Part of the ongoing H&H programme of MHS & PHC.	Health and hygiene education resource pack Survey and participative assessment tools	WSP, WSA, MHS, Community Leaders, Implementing Agent

9.3 Post-Project Activities

In order to achieve long-term knowledge, attitude and behaviour change it is important that an ongoing Health and Hygiene Programme is implemented as part of the municipal health services. The aim of ongoing health and hygiene education is to ensure that health and hygiene education forms an integrated part of the MHS and the personal Primary Health Care programmes (PHC).

Ongoing health and hygiene education programmes should aim to:

- Enhance and reinforce the project based health and hygiene education programmes;
- Ensure that communities not receiving project based health and hygiene education also have access to health and hygiene education;
- Capacitate communities to respond to health emergencies and threats appropriately; and
- Facilitate an increase of the knowledge and awareness of communities of environmental health issues.
- An ongoing health and hygiene education programme must form part of the Municipal Health Services. As described in the National Health Act (2003), the Municipal Health Services are primarily responsible for ensuring the implementation of health and hygiene education. The Municipal Health Services need to plan and ensure the implementation of the ongoing health and hygiene education based on locally available resources. The Personal PHC services should

similarly plan to incorporate ongoing health and hygiene education within their programmes at the local clinics.

Three implementation options for ongoing health and hygiene education programmes are presented in the following diagram. The choice of option is dependent on the current capacity and programmes of the MHS and PHC within a particular district.

The options are:

Option 1: This is a primary option, where, Municipal Health Services can facilitate regular health and hygiene education programmes within communities through health and hygiene field workers. These programmes should focus on a specific health issue such as cholera, diarrhea, immunisation, TB or malaria, but also include general hygiene issues relevant to the specific community.

Option 2: In this situation, the MHS would not appoint their own field workers, but instead provide support and training to the primary health care coordinator and clinic staff. This support may include management and training of health promoters, community health workers, traditional health practitioners and relevant NPOs and CBOs in the delivery of appropriate health and hygiene education messages as part of existing health care programmes.

Option 3: This is a combination of option 1 and option 2. The MHS carries out some of their own programmes through appointed fieldworkers, and also supports the PHC programme.11.

10 MONITORING, REPORTING, REGULATING AND ENSURING SUSTAINABILITY

The aim of monitoring and evaluation is to provide information and knowledge to affected role players on the effectiveness, efficiency and impact of the health and hygiene education programme, and to enable effective decision making to correct or modify activities so the programmes become more effective. Various levels of government, entities and authorities, are tasked with varying levels of responsibilities; in monitoring and sustainability planning:

Provincial and national government require information on the utilisation of resources, the direct impact of the programmes, the indirect impacts and benefits according to policy and strategies, and the progress against provincial and national targets. However, the provision of this information should not be an unwanted burden for local government, but rather be aligned with the information needs for management at local government level. Provincial and national government must take appropriate measures to address issues raised in the M&E reporting, and provide reports to parliament as required.

10.1 Who?

Three levels of monitoring and evaluation should be implemented on both project related and ongoing health and hygiene education.

(i) The Department of Health: is the important stakeholder, being the custodian of the National Health Acts and Policies and should be consulted in compilation and supply of national resource packs for health and hygiene education; related to water supply and sanitation that is updated from time to time. The resource pack should represent the minimum standards for health and hygiene messages, methodologies and materials. Other materials proposed for use must be submitted to the Department of Health in each province for quality assessment and approval before being used on programmes.

It is acknowledged that there is wide variation in knowledge and in social and cultural practices pertaining to water and sanitation health and hygiene in South Africa. The minimum standards do not exclude the use of other locally relevant resource materials.

(ii) Local Government Level Monitoring and Evaluation: The local government structures must monitor the utilisation of resources in the implementation of health and hygiene education programmes, their effectiveness in terms of value of impact for the inputs made, and the improvement in the health environment of the communities. Where required, appropriate interventions must be planned in response to the information from the monitoring and evaluation programme. Local government must ensure that their reporting systems comply with the requirements of DORA and MIG. Appropriate data and indicators must be incorporated into the District Health Information System (DHIS).

(iii) The WSA: must ensure that an effective monitoring system is in place as it is the cornerstone of a WSA's performance. This can effectively be achieved via the mechanism of a WSA Sanitation Forum. It is essential to provide updated service delivery data in relation to people served and funds expended, for submission to provincial and national departments. The data is useful in relation to municipal IDP and WDSP planning and review processes.

The WSA must also focus on sustainability issues such as operations and maintenance, repairs, health and other benefits of improved water services; and be able to ensure that knowledge is stored and managed effectively.

(iv) Community Level Monitoring and Evaluation: Community based health workers must be equipped to monitor the effectiveness and impact of health and hygiene education programmes. This should include indicators for household knowledge, behaviour change and an improved environment (including incidents of water and sanitation related illness).

10.2 How?

- (a) Effective monitoring evaluating systems should be put in place during project planning. These must be built into municipal and service provider performance management systems; effectively applied via WSA Sanitation Forums. The system must also accommodate and empower communities to solve problems.
- (b) In order to determine the success of the sanitation project, it is very important to monitor the project on a regional basis on the municipal level. It is essential also that the community be given a role in the sanitation project .in order to ensure that proper monitoring and reporting is taken into consideration.
- (c) The Project Management Unit (PMU) of the municipality must conduct the project site meetings on weekly basis, where the contractor and representative form project steering committee in the community and health and hygiene promoting team will be present. At this meeting site inspection of the infrastructure

installed must be done to ensure that the linkages with health and hygiene promotion are adhered to.

It is important to ensure that monitoring and evaluation is not just a top-down activity, but is carried out as a partnership programme with the community members, implementing agencies, local government and other government agencies. A key development process must be to equip the communities themselves to participate in M&E at an appropriate level.

All monitoring systems require the following components or steps in order to be effective:

- Identification of key issues to be monitored (participative process);
- Definition of indicators and agreement on their meaning in the specific context;
- Allocation of responsibilities for data collection, data processing, and reporting;
- Information collection and analysis;
- Reporting and feedback to role players at all levels; and responsive actions where required.

Each health and hygiene education programme should be planned and implemented based on the local physical, social and cultural environments. These factors must be assessed via a baseline survey conducted during the planning phase of the health and hygiene education programme.

The aims of health and hygiene education programmes are to:

- Increase knowledge related to healthy water and sanitation practices and the types and transmission of diseases;
- Positively impact and change behaviour and practices related to the hygienic use of water and sanitation services;
- Positively impact on personal hygiene practices that minimise the transmission of water and sanitation related diseases;
- Reduce water and sanitation related illnesses and death in vulnerable communities; and
- Promote a demand for good water services and a responsibility for their proper use and maintenance. Therefore, the messages presented and the manner or methodologies in which they are presented are of vital importance in determining the impact of a health and hygiene education programme.

These messages and methodologies provide a minimum standard requirement for health and hygiene education programmes which will help ensure a uniform approach to health and hygiene education programme implementation in South Africa.

Programme/Frequency	Project Based Initial phase Reinforce twice	OngoingEnd user phaseEvery 6 monthsMonitor, and evaluate reinforce	Target problem areas. Apply frequently in problem areas 	Project Based Ongoing Initial + twice reinforce Ongoing end-user phase Every 6 months 	 Monitor, evaluate, reinforce More frequent in problem areas 	PROJET Phase – ongoing	 Initial Follow twice Reinforce End user Every 6 months (monitor, evaluate, reinforce Apply more frequently in problem areas 	Project-based	 Ongoing End user phase Initial, then reinforce twice Every 6 months Monitor, evaluate and reinforce More frequent in problem areas 	Project-based	Ongoing	End user phase	 Initial, then reinforce twice 	 Every 6 months Monitor, evaluate and reinforce More frequent in problem areas 	Ongoing	 As the need arises 	
Implementation Tools / Resource	Primary Resource: Standard H&H education resource pack	Other resources: Pamphlets Posters Drama Radio/Television 	Various Resources combination • Demonstrations	Primary resources Resource packs Demonstrations, Drama Pamphlets, posters 		Primary resource	 H&H education resource pack Other resources (pamphlets, posters, drama, videos) 	Practical demonstrations	 Handover session participation Manuals Pamphlets 	H & H resource education pack	Other relevant resources	(painprinets, urarina, posters, demonstration)			Primary resource:	 H & H education resource pack 	 Pamphlets, drama, demonstration, posters
Minimum Methodology	 Participatory approach Small group workshops House visits 	As above, with various combinations as appropriate	As required, with various combinations as appropriate	Participatory Small groups Workshops House visits 		Participatory	GroupsWorkshopsHouse visits	Testing	Demonstration	Participatory approach	Groups Workshops	 House visits 			Participatory	Groups Groups	 Teaching/Demonstration Workshops
Minimum Standard Message	Understanding disease transmission routes	 Creating effective barriers to disease transmission How to keep food and water free of germs Hand washing at critical times How to purify water 	How to safely and effectively dispose of household wastewater (grey water)	VIP's and other sanitation systems could contaminate water resources and the soil.Construction siting operational maintenance issues.	 Dangers of unimproved toilets Dangers of unprotected water sources Dangers of open defecation Protection of the environment 	Cases of cholera and diarrhea	 Identifying symptoms Treatment of cholera and diarrhea Preparation of oral re-hydration mixture to treat acute symptoms 	How water is treated and distributed (taps, supply	 systems). How to operate and maintain sanitation facilities Understanding technical options Benefits derived/ Consequences of poor operation and maintenance 	Disposing of body fluids and blood.	 Preventing transmissions Good sanitation practices for the affected 	 Protecting babies while feeding 			How to upgrade on unimproved pit latrine	Conversion for disabled suitability	 Attachment of handwashing unit
Theme	Breaking the cycle of disease			How poor sanitation affects the environment		Water and	sanitation – related disease identification and basic treatment	Operating and	maintaining water supply and sanitation facilities	Impact of poor	sanitation, health and hygiene on	HIV affected			Improving	Sanitation Facilities	

Table 10.1. Minimum standard, implementation methodologies of programmes in health and hygiene implementation

11 UNDERSTANDING OF THE AREAS OF APPLICATION: IMPLEMENTATION

Sanitation is more complex than most people acknowledge, because of the need to integrate technical, health and environmental dimensions, because of the need to engage individuals, not communities, through household-level user education, and because different technologies have different vulnerabilities and operating requirements.

Provision of safe domestic water claims primacy in most services planning, yet failure to consider the close interplay between health and well-being of our water and sanitation services can compromise the quality of our drinking water, threaten the health and well-being of our people, undermine infrastructure functioning, jeopardise the financial viability of municipal management and result in polluted groundwater and river systems.

Sanitation is more than an adjunct component of a water service, and should inform settlement planning, housing design, broader service provision policies and primary and preventative strategies. Consequently, sanitation warrants far higher priority in every IDP.

Sustainable sanitation means different things to different people. Ordinary people want a good quality of life, and a smell-free, trouble-free, affordable facility that offers convenience and dignity. Municipalities want to satisfy voters, balance their budgets and do themselves proud. Provincial and national government wants a healthy, economically productive population, living in a clean environment, with dignity.

It is therefore hoped that this booklet will assist in providing the meaningful guidance to water service authority municipalities in order to assist them in terms of their mandate to ensure sustainable sanitation in conjunction with appropriate health, hygiene and user-education to all of the constituents within their areas of jurisdiction.

NOTES



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