

BACKGROUND DOCUMENTATION
TO THE COMMISSION ON
REGIONS

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SAMPLE ARTICLES ON WATER AND SANITATION
SERVICES
INSTITUTIONAL AND BOUNDARY ISSUES

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LOCAL GOVERNMENT POLICY AND PLANNING RESEARCH PROJECT

Water and sanitation policy study

Summary Paper

presented to

CONFERENCE TOWARDS A DEMOCRATIC SUB-NATIONAL GOVERNMENT
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For: Planact

By: T.G. Fowler

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DISCUSSION DOC.

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SUMMARY

The availability of water and sanitation services in South Africa, in relationship to the availability of resources, is poor. Three hundred and forty years of colonialism has created racially based inequality; of access to water and sanitation services; of access to skills and skills training; and of access to funds. While the past forty-two years of Grand Apartheid has created; a myriad of fragmented institutions; a myriad of laws and regulations which have resulted in wide spread corruption, economic inefficiencies and lack of accountability. Furthermore apartheid local authorities are in crisis because popular resistance to Black Local Authorities has rendered their administration ineffective with negative repercussions on their already poor servicing capabilities. Although the Department of Water Affairs has a Water Resources Policy which includes satisfying all proven demands, there is no comprehensive national policy for the provision of water supply and sanitation services¹.

1 NEED FOR A WATER AND SANITATION POLICY

The need for a **Water and Sanitation Policy** can be summarised as the scarcity of water and inequitable distribution of resources which is compounded by the lack of accountability and the financial inequity in the provision of these resources.

- 1.1 South Africa is a water scarce country.
 - 1.1.1 The average precipitation is 497mm which is well below the world average of 860mm¹.
 - 1.1.2 Seventy percent of the land area has only 11% of the useable water.
 - 1.1.3 The most productive industrial and largest metropolitan areas, as well as power generating capacity are located in areas of low availability of water as demonstrated in table 1 and figures 1, 2 and 3.
 - 1.1.4 The investment required for water transfer schemes to meet water demand in water scarce areas is enormous. The cost of the Lesotho Highlands Scheme designed to augment yield on the Vaal River System is R7 340 million².
 - 1.1.5 The groundwater potential remains largely untapped, however several towns utilise groundwater either partially or wholly^{3,4}
- 1.2 Great inequity exists in the distribution of resources, in particular, with regard to the provision of sanitation nationwide and water supply in rural areas.
 - 1.2.1 Health sustaining or adequate access to sanitation service¹ is unavailable to 7.67 million people in urban areas⁵ and 14 million people in rural areas. (Table 2 and figure 4 demonstrate)
 - 1.2.2 Health sustaining or adequate access to water supply² is unavailable to 4 million

1 Adequate Access to Sanitation is defined as access to a Ventilated Improved Pit (VIP) latrine while buckets, unimproved pit latrines (minimal) and no access is inadequate.

2 Adequate Access to Water is defined as having a supply point within 250m distance which international experience indicates will result in a per capita consumption of greater than 20 litres per day, the WHO recommended minimum for good health. Minimal service is considered inadequate.

- people in urban areas⁶ and 7 million people in rural areas. (Table 3 and figure 5)
- 1.2.3 Ninety-nine point nine percent (99.9%) of the whites have either full or intermediate water borne sanitation and virtually full access to water in urban areas⁷.
 - 1.2.4 Over 95% of those who have poor (either basic or inadequate sanitation) are Black. With the exception of the PWV, more Black people have poor (basic or inadequate) sanitation services than have intermediate or full servicing. (Table 4 and figure 6 & 7)
 - 1.2.5 The majority of townships administered by black local authorities are in crisis resulting in a crisis in service provision. In particular, poor maintenance of water and sanitation services have resulted in adverse health and environmental conditions.
- 1.3 A low level of accountability is prevalent at all levels of service provision due to institutional fragmentation. (and apartheid legislation)
- 1.3.1 Several institutions exist at national and regional level with duplicating functions in the provision of water and sanitation services, particularly in regard to Black people.
 - 1.3.2 Analysis of the 1571 registered treatment works indicate that only 17 are owned by black local authorities and the remainder are owned by 7 different types of authorities or agencies. (Table 5 & 6 and figures 8, 9, 10 & 11)
 - 1.3.3 The failure of 75% of rural servicing⁸ projects and the wide-spread occurrence of rent and service boycotts in townships is an expression of overwhelming dissatisfaction of the provision of services administered by black local authorities, particularly in the PWV.⁹
 - 1.3.4 Apartheid and security legislation has screened all institutions from financial accountability as demonstrated by the documented embezzlement of funds from the now defunct Department of Development Aid.
- 1.4 The existence of financial inequity and economic inefficiency as a result of the structure of apartheid cities and a proliferation of apartheid legislation and regulations.
- 1.4.1 A flat rate is charged for services in the black local authority areas while tariffs and rates recover cost in white local authority areas. The cost of services is run at a deficit in BLA areas while in white local authority areas the cost may be recovered, the majority of users are subsidised. The net effect is to reinforce apartheid structures.
 - 1.4.1.1 The cost balance of sewage services is run at a deficit in most areas and is subsidised from the general rates accounts as well as a subsidy from the DWA in some cases. By the very structure of apartheid cities, namely dormitory black townships as contrasted with white cities supported by a relatively high income residential, industrial and commercial tax base.
 - 1.4.1.2 The cost of water supply to domestic users, as in the case of Johannesburg, is subsidised from commercial and industrial users¹⁰ (again non-existent in most black townships).
 - 1.4.2 The legislation establishing the Rand Water Board in 1902 and the Water Act of 1956, although not specific, has been interpreted by water boards and authorities to mean charging a uniform price for water on a historical cost basis resulting in the inefficient use of water.
 - 1.4.2.1 In the case of the Rand Water Board supply area the effect of a uniform tariff has resulted in water being supplied to outlying areas at a cost greater than a water board in a closer proximity could supply.

- 1.4.2.2 In the case of the Lesotho Highlands Scheme the cost to supply additional water is borne by all users and not directly to the large volume users, both commercial/ industrial as well as high income domestic users, who will mainly benefit from the scheme.

2 WATER AND SANITATION POLICY ISSUES

A future **Water and Sanitation Policy** must, as a priority, account for the redressing of inequities due to apartheid, accountability in service provision, and sustainability through the economic use and allocation of resources. In conjunction with policy issues the rights related to water need to be addressed.

- 2.1 The redressing of inequities through redistribution is necessary because of the following:
- 2.1.1 The concerted effort by the apartheid system to raise the living standard of whites through subsidies and, later, (to stave off international criticism of apartheid) developed hidden subsidies to the oppressed communities resulted in a distribution of resources which is racially inequitable and has resulted in the following:
- 2.1.1.1 A polarised society with widely differing perspectives which are emphasized by the unequal material conditions of its citizens.
- 2.1.1.2 Persistent inappropriate water and sanitation solutions which were designed to maintain the unequal distribution has resulted in aspirations which are divergent from reality.
- 2.1.1.2.1 The white people of South Africa aspire to a level of consumption which is inconsistent with the availability of resources and the current level of inequity.
- 2.1.1.2.2 Oppressed people find adequate and good solutions unacceptable because the past provision of inadequate water and sanitation while inappropriately "high" standards were provided to white people.
- 2.2 In order to sustain future services there is a need for accountability and user participation.
- 2.2.1 Apartheid not only constitutionally denied the majority of the population access to the decision makers but created a crisis of accountability by imposing a police state. Virtually all institutions were screened from scrutiny by security legislation which resulted in the following:
- 2.2.1.1 A credibility gap was created in the delivery institutions such as local authorities in particular.
- 2.2.1.2 An occurrence of over-investment in administrative and engineering facilities.
- 2.2.1.3 Funds were embezzled within institutions such as the Department of Development Aid.
- 2.3 Long term sustainability is dependant on economic efficiency, particularly with regard to the allocation of resources.
- 2.3.1 The lack of scrutiny and abundance of public funds has resulted in a proliferation of projects which are under-utilised - from water purification works which exceed the

- yield of available impoundments; to trunk sewers designed for flow which exceed the anticipated water consumption; to water and waste-water reticulation systems designed for suburban (low density housing) use within the city centre.
- 2.3.2 The apartheid system has led to an isolation of the water and sanitation sector which has led to an antiquated approach to both water and sewerage designs.
- 2.3.3 The top down regulatory approach of apartheid has resulted in economic inefficiencies in seemingly successful institutions. For example the RWB provides water across watersheds over 300 kilometres and 400 metres in elevation.¹¹
- 2.4 Sustainable services which encourage economic development must as a priority provide for community health yet fall within both technical and economic constraints.
 - 2.4.1 In order to sustain desirable levels of service, realistic standards are critical and should be aimed at the provision of health sustaining levels of water supply and sanitation services.
 - 2.4.1.1 Standards which are enforceable would empower communities by providing an avenue to ensure that agreed standards are met by local authorities or other implementing agencies.
 - 2.4.1.2 Evidence shows that a minimum health standard is of the greatest urgency in the water and sanitation sector. Thus standards should be set a minimum initial level that is safe to encourage development and a maximum time frame for the service to be upgraded to a desired level.
 - 2.4.1.3 Standards must take into account the maintenance of the prescribed systems and the period required to develop sufficient operational capacity.
 - 2.4.1.4 Standards must developed as the result of a democratic process which empowers communities. Standards must be developed on the basis of minimum health requirements, macro-economic constraints, implementation capacity and a democratic process. It must be noted that the democratic process involves the resolution of individual user interests, which may conflict with community, regional and national interests. However, it should be noted that the concept "The User Chooses, the user pays." can be taken to the extreme where individual or small community interests conflict with broader interests. For example, the maintenance of unreasonably high standards by a minority at the expense of the broader community or the imposition of unacceptably low standards on a segment of the community because of a perceived financial burden on the broader community. This scenario is repeated countless in apartheid towns and cities.
- 2.5 The conservation of water and natural resources is necessary in light of past practises.
 - 2.5.1 The historic dependance on the mining of minerals and ill-conceived economic decentralisation policies without the benefit of the economic pricing of water has contributed in significant investment and growth in water - scarce areas.
 - 2.5.2 The effect of water restrictions, shown in figure 12, is to not only to reduce the consumption of water during drought years but results in a reduction of demand

allowing a delay in the investment in new infrastructure.

- 2.5.3 Current water rights are based on the principles of *dominus fluminis* and *riparian rights*. The emphasis in the law from 1906 was directed towards agriculture and mining. The result was that in 1965 agricultural water consumption represented 83% of the total consumption. Despite a de-emphasis agricultural consumption remains about 50% of the total. The application of riparian rights and the amendments in relation to the "Irrigation Acts" particularly disadvantaged the majority of people in South Africa. The access to water was reserved for property owners adjacent to the stream while the Black majority were legislatively denied ownership of property.

The ascendancy of the principle of *dominus fluminis* (state control) in the water act of 1956 did not improve access to water. This development occurred concurrently with the ascendancy of state control of the economy. In fact in the PWV area, two state run corporations, Sasol and Eskom, consume 12% of the total water consumed from the Vaal Dam and Barrage. This represents 40% of the water consumed by all the people in the Rand Water Board supply area, namely 29% of the total¹².

2.5.4 Water Rights in a Non-Racial Democratic S.A.

The African National Congress has proposed a Bill of Rights which guarantees the "Right to Shelter" and "steps to ensure that energy, access to clean water and appropriate sewage and waste disposal are available to every home"¹³. This latter principle needs to be incorporated not only into S.A. Water Law but a Water and Sanitation Policy. Access to water and sanitation would mean the following:

- i. Access to the institutions providing water and sanitation services.
- ii. Availability of water and sanitation services at an affordable cost.
- iii. Financing and capacity to implement water and sanitation services.

3 PRINCIPLES OF A WATER AND SANITATION POLICY

Based on the stated needs and analysis of the prevailing situation the following principles of a **Water and Sanitation Policy** have been developed:

- 3.1 Adequate and appropriate water and sanitation is provided for all people.
- 3.2 Immediate priority is given to ensure that every citizen has access to a minimum quantity of 20 litres per capita per day (lcd) of water³ of adequate quality and every household has access to the adequate sanitation.
- 3.3 Equitable distribution of resources is achieved by giving immediate priority to the following:
 - 3.3.1 The development of a programme which ensures that the racial imbalance in the distribution of water and sanitation services is eliminated with due haste.

³. The World Health Organisation (WHO) recommends 20 litres per capita per day as a minimum requirement for health.

- distribution of water and sanitation services is eliminated with due haste.
- 3.3.2 Water and sanitation services is provided at an affordable level to all people and is guaranteed through the following:
- 3.3.2.1 The first of 50 lcd⁴, consumed, is made available at the *variable marginal cost*⁵ per area, which excludes fixed, capital redemption and interest charges; (figure 13 & 14)
- 3.3.2.2 Standards are such that water and sanitation services are sustainable, namely that the long term operational and maintenance costs are met by the community at large;
- 3.3.3 People who have been denied access to service will not be penalised for entering the system late which is interpreted as follows:
- 3.3.3.1 It is assumed that subsidies which made the current level of service available was borne by all consumers therefore the service is available to all consumers⁶;
- 3.3.3.2 Efforts to provide minimum service and correct the past deficiencies in maintenance and inefficient service provision shall be borne by all consumers and include; (i) upgrading of deteriorated water and sewerage systems; (ii) upgrading or equalisation of cost where the marginal costs of service provision are higher because of apartheid planning; (iii) the compaction of the cities to produce more efficient allocation of resources.
- 3.4 Efficient distribution of resources with the aim of; a) the economic allocation of resources⁷; b) the recouping of expenditure in the provision of services⁸; c) sectoral self sufficiency⁹

4. The quantity of water which meets basic needs at a sufficient level of convenience, namely and on-plot connection, to encourage developmental activities.

5. **Variable Marginal Cost** for the purpose of this paper is defined as the direct costs in producing one additional unit of water and excludes indirect costs such as capital redemption and the cost of capital.

6. Significant capital has been invested in infrastructure during the apartheid era when direct state intervention was made to raise the living standard of whites and, in particular, exclude Black people from physical access (Group Areas Act) but also financial access (Laws maintaining wage differential between Black and white people). The repayment of this capital is thus assumed to be made not only by the consumers through tariffs and rates but by the society at large thus the "sunk" capital is used to the benefit of all people.

7. For example, large volume water consuming industries ideally should be located in Natal as opposed to the PWV assuming that water is there main or significant income generator or the consumption thereof is their main expense.

8. The cost of providing a service should be recovered from the consumers who consume the service to avoid an under or over availability of funds which would result in an under-provided service or investment in "white elephants".

which can be achieved through the following principles:

3.4.1 The recouping the cost of the service is interpreted as follows:

3.4.1.1 The consumer body must pay for the service they consume including the *variable marginal cost* of their first 50 lcd of water consumed.

3.4.1.2 Where the total cost of providing the service is above the income received for a consumers first 50 lcd of water, the remaining consumers will bear the cost.

3.4.1.3 The cost of the provision of either water or sanitation services should be recovered within the respective sectors.

3.4.2 The consumer body must pay for the service they consume based on the *principle of marginal costing*¹⁰ which would mean the following:

3.4.2.1 A volume related sliding tariff would be implemented which allocates the cost of increments in capital expenditure to the consumer who utilises the quantity requiring the increment¹¹.

3.4.2.2 Measures would be taken which ensures that marginal costing is possible and the cost of these measures shall be borne by all consumers because the economic benefit is to all consumers.

3.4.3 The recognition of; i) water as a scarce resource; and ii) the environment as a valuable resource would include; i) costing water transfer schemes not only on the cost of the transfer of water but the loss of the water to the water rich region and; ii) the cost of changes in water quality to the region receiving water which has been impacted by waste disposal upstream.

3.5 The aim of accountability and efficiency, which can be achieved through representation and participation, is to ensure services are provided as efficiently as possible. Institution and capacity building contributes to the achievement of this aim.

3.5.1 The Department of Water Affairs would be responsible for the management of the water resources and the implementation of a water supply and sanitation policy. In order, meet the immediate health goals of the water and sanitation policy, an

9. Water supply services should be treated separately from sanitation services to avoid the current situation where sewage disposal services are subsidised at the expense of other services.

10. The Principle of Marginal Costing is to charge a price which recovers the total cost plus the additional cost of providing one more unit as opposed to the average cost which charges a price equal to the total cost divided by the total number of units produced. For example the cost of water supply or sewage disposal may vary because of pumping to an additional height or distance.

11. The principle of marginal costing is applied by charging the cost of incremental supply to those who can afford and will consume it. Water is supplied in increments such as a large dam or treatment works when additional water is required such as the Lesotho Highlands scheme. For example, the additional water being provided to the PWV would be charged to those consumers who require the additional volume.

- appointed National Water Supply and Sewerage Board¹² would administer an emergency national programme.
- 3.5.2 The regional governments would carry out their duties at regional level as defined for the DWA above. Catchment based regional Water Supply and Sanitation Boards¹² would be established who would be responsible for the development, implementation, and operation of regional water supply and sanitation programmes.
- 3.5.3 Local authorities in the form of metropolitan authorities and rural authorities would implement the service ultimately to the consumer. Where local authorities deem to give up the responsibility of the local supply, the regional board must assume the responsibility.
- 3.5.4 The key responsibility of various tiers of government is to ensure that services and democracy through representation and participation is assured.¹³
- 3.5.4.1 Thus it is the responsibility of each institution to ensure that each institution at a lower tier has adequate technical capacity by providing advisory personnel and training and education programmes.
- 3.5.4.2 It is also the responsibility of each institution that basic needs in every area is met and is not thwarted by a lack of financial capacity.
- 3.5.5 The extent of industrialisation and use of advanced farming practices warrants an independent body to control the country's environment.¹⁴
- 3.5.5.1 An Environmental Management Board which has representatives nominated to it from government, industry, labour, academic field, regional water authorities, the NGO's in the field and the civics. The board would monitor and propose regulations and necessary legislation to affect control of the environment.
- 3.6 The empowerment of the community can be achieved through representation and participation in; a) the development of realistic enforceable standards; b) the planning and implementation of a realistic development programme; c) capacity building at community level.
- 3.6.1 An inclusive approach involving the community, multi-disciplinary practioners, amongst others in the development of standards will ensure that the aims of the Water and Sanitation Policy is carried out in conjunction with the overall aims of economic

¹². *Representatives would be nominated by government, industry, labour, academic field, regional water authorities (in the case of the National Board), the NGO's in the field and the civics. In the case of water authorities, large consumers would be represented such as local government.*

¹³. *The greatest threat to full democracy in the post apartheid era is the legacy of widely disparate financial and technical capacity of white, black, urban and rural communities.*

¹⁴. *Experience with catchment based Water Authorities in the U.K. has shown that these Water Authorities are not very effective at policing themselves. It can also be shown that the main exposure routes for toxics such as lead (32%/ 65%), magnesium (29%/ 71%), nitrates (14%/ 85%), trichloroethene (1%/ 94%), to name a few, is not from water but from food or air in the case of trichloroethene (% in water/ % in food/ air) (Pietrse, 1989, Zoeteman, 1985). Thus a wholistic approach to environmental conservation is required.*

- standards;
 - iii) encourage economic development by standards commensurate with community and financial capacity;
 - iv) guarantee the availability of water resources for the future.
 - v) ensure the goals of redistribution are met by providing an "expanding floor" concept.¹⁵
- 3.6.2 Particular attention should be paid to the involvement of women in the process of establishing standards and project development. Most water and sanitation systems, at consumer level, are maintained by women.
- 3.6.3 An inclusive integrated approach, namely considering the provision of all services including shelter, to economic and specifically project development is critical in the empowerment of communities. Community participation in the planning, implementation and decision making in developmental process ensures that the development will meet community needs.
- 3.6.4 Capacity building at community level is critical not only to ensure community participation but to ensure the continued sustenance of development programmes. Capacity building includes education programmes and a certain level of funding in accordance with the communities wishes.
- 3.7 Resource and environmental conservation would guarantee future generations access to water.
- 3.7.1 Water conservation measures should be taken to ensure that existing infrastructure is utilised to its capacity and delays future investment. Measures should include the following:
- i) incentives and tariff structures that encourage the reuse of waste-water;
 - ii) incentives and tariff structures which encourage the implementation water-saving devices by domestic, commercial and industrial consumers;
 - iii) penalties for luxury use of water such as water consuming entertainment (swimming pools).
 - iv) incentives and tariff structures which discourage consumption during peak hourly or seasonal demand;
- 3.7.2 Environmental protection measures which discourage the discharge of untreated effluent.
- 3.7.3 Alternate sources could be developed to augment existing supplies such as groundwater as in the case in Albertina and Graaf Reinet could be developed in Port Elizabeth.

¹⁵. The "Expanding Floor" concept of standards sets standards at a level that is achievable minimum and provides for a specified period during which a higher level of standards are met.

4 POLICY GOALS

The goals of the **Water and Sanitation Policy** can be divided in three categories, namely immediate, medium and long term and can be described as follows:

- 4.1 The immediate goal is to ensure that the basic health needs of all citizens are met, namely a minimum supply of clean water of 20 lcd and access to basic sanitation - a ventilated improved pit latrine and functional existing facilities;
- 4.2 The medium term goal is to ensure that each person has access to a supply of 50 lcd of clean water on-plot and that each person has access to appropriate sanitation¹⁶ within 15 years.
- 4.3 The long term goal is to ensure that the Water and Sanitation policy is sustainable, remains dynamic, that is, changes with the improved social and economic conditions in the country and finally meets the economic goals of efficient allocation of resources, protection the natural resources and promotes the health and welfare of South Africa's citizens.

5 POLICY IMPLEMENTATION

The implementation of a **Water and Sanitation policy** must be seen within the current needs of the country. Thus the immediate redistribution of resources can only be achieved through a national emergency programme that is implemented through a National Sewerage and Sanitation Board. However the implementation of this programme must be seen in the context of an **integrated development** programme which is a wholistic approach considering all services including shelter.

- 5.1 It is proposed that under the Ministry/ Department of Local Government and Housing that the coordination of development take place under a development board or agency be established that includes representatives nominated by all the authorities providing the aforementioned services including town and regional planning as well as finance and development planning. In addition representatives of NGO's providing the above services and the civics. The above institution would be duplicated at regional level.
 - 5.1.1 The Development Board would coordinate the long and short term plans for the aforementioned aspect of development. Review policy and development standards and make recommendations on these related to the provision of the aforementioned services. Coordinate and ensure that development goals are met. At regional level coordinate the implementation of new or upgraded services.
 - 5.1.2 The initiation of a development plan must commence with the calling of a public hearing with input from all aspects of service to the community as mentioned above. In particular both qualified interested individuals and organs of civil society would be invited and able to make a contribution. All other stages of the plan such as finalisation, implementation would be preceded/ accompanied by public hearings.

¹⁶. *Technical considerations in the disposal of 50 lcd of effluent would dictate some form of either on-site or off-site water-borne sanitation. Dry sanitation systems would require some innovative form of sillage disposal.*

- 5.2 General consensus has been reached in the sector on the need for catchment based water authorities thus the debate is being shifted to boundaries for such regional water authorities.
- 5.2.1 The watershed boundaries are shown in Figure 15 and the proposed ANC regions in Figure 16. When these two figures are superimposed on each other in Figure 17 it is interesting to note that the PWV is divided into 3 watersheds with the divide passing directly through Johannesburg.
- 5.2.2 Representatives of the Umgeni Water Board have made proposals on water region boundaries (figure 18) including a major metropolitan centre in each. Figure 19 shows that the Umgeni regions cut through the middle of the PWV and the Rand Water Board Supply area. Although political boundaries are not of prime importance the splitting of a major water supply boundary may be impractical to implement in the long term.
- 5.2.3 The boundaries of water regions should coincide with the natural watershed boundaries and account for the following:
- 5.2.3.1 The availability and demand for water in the region be selected in such a way that water-scarce and water-rich regions are able to complement each others' demands and availability. Figures 1 and 2 indicate that the greatest demand for water is in the PWV which represents a significant portion of the available water in the country. On the other hand, Natal is water rich in comparison to the majority of the remaining regions.
- 5.2.3.2 The long term financial viability of the region which would attract suitable personnel and maintain costs at an affordable level.
- 5.2.3.3 The drainage regions selected would not negatively impact water regions downstream of large industrial and highly populated regions which discharge significant volumes of effluent.
- 5.2.4 An analysis of the projected economic viability of the regions based on water-borne sanitation, no cost for the first 50 lcd, current day costs and pricing practises yields results showing the PWV, Natal and the Western Cape with a financial deficit. While assuming *variable marginal cost* for the first 50 lcd and the remaining cost being recovered from the consumer body results in no deficit.

6 Rural Water Supply and Sanitation Policy

The above policy has limits in it's application to rural areas which still require special programmes taking the water and land rights issues into account.

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TABLES AND FIGURES

TABLE 1: SUPPLY AND DEMAND

Region	Demand million m ³ /m				Supply million m ³ /m	
	Urban and Industrial		Mining		1990	2010
	1990	2010	1990	2010		
W Cape	400	700	25	30	3000	3000
N Cape	55	60	100	125	1670	1670
OFS	275	500	150	150	4340	4340
E Cape	125	250	0	0	3170	3170
Border	300	450	0	0	43420	43420
Natal	500	900	50	50	71500	71500
E Tvl	300	450	150	150	48000	48000
N Tvl	200	325	60	60	21000	2100
PWV	700	2740	450	700	15000	16200
W Tvl	50	75	10	10	6000	6000

Source: DWA: "Management of Water Resources of the RSA" 1986

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WATER DEMAND PER REGION URBAN & INDUSTRIAL

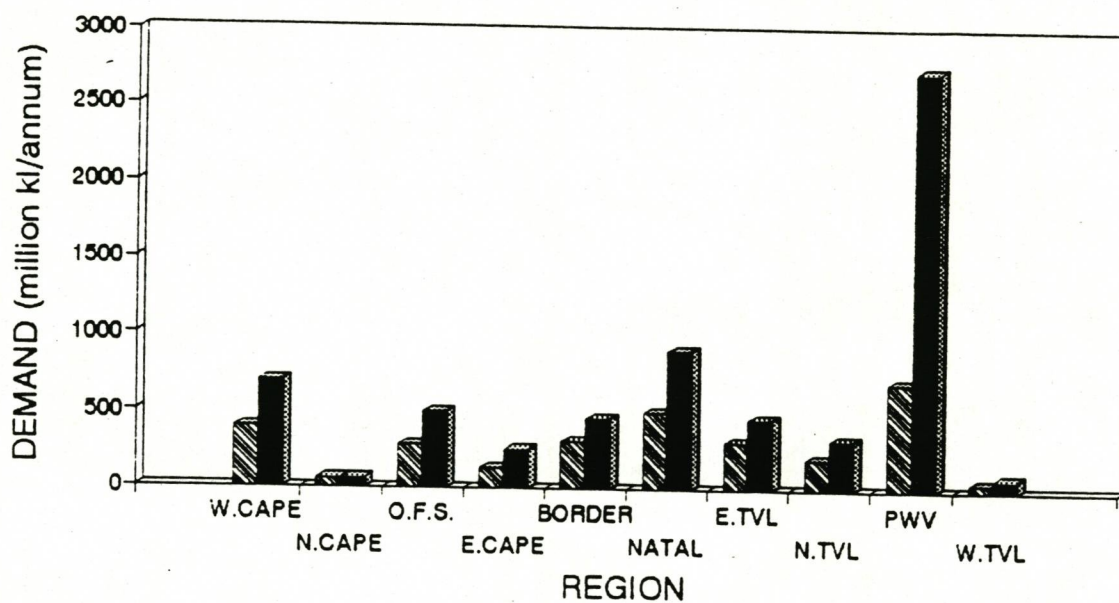


Figure 1.

1990 2010

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WATER DEMAND PER REGION MINING

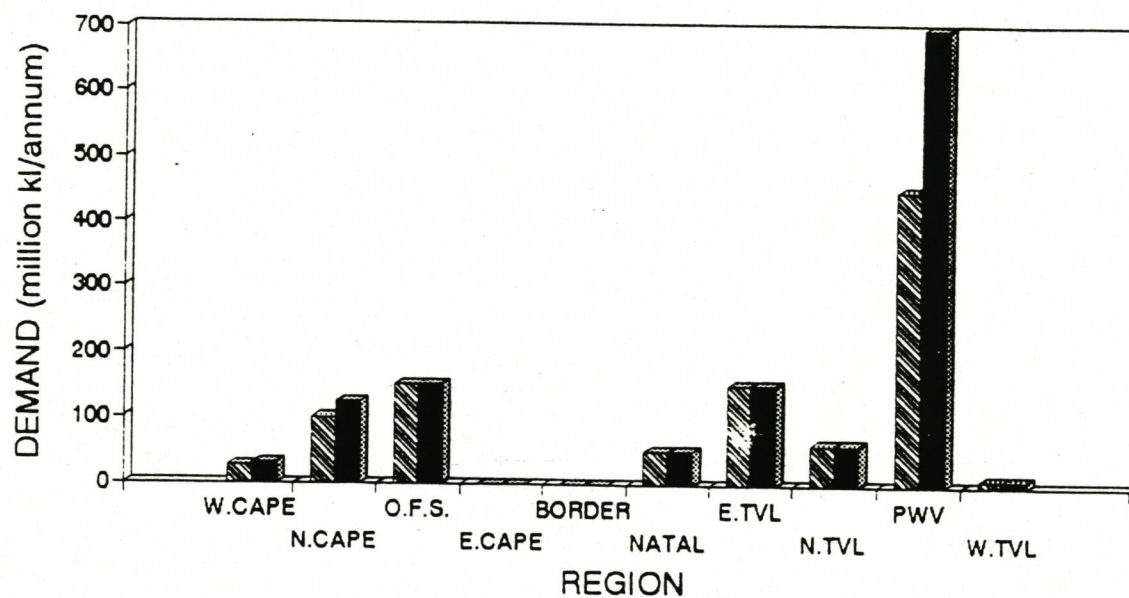


Figure 2.

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WATER SUPPLY PER REGION

TOTAL GROUND & SURFACE WATER

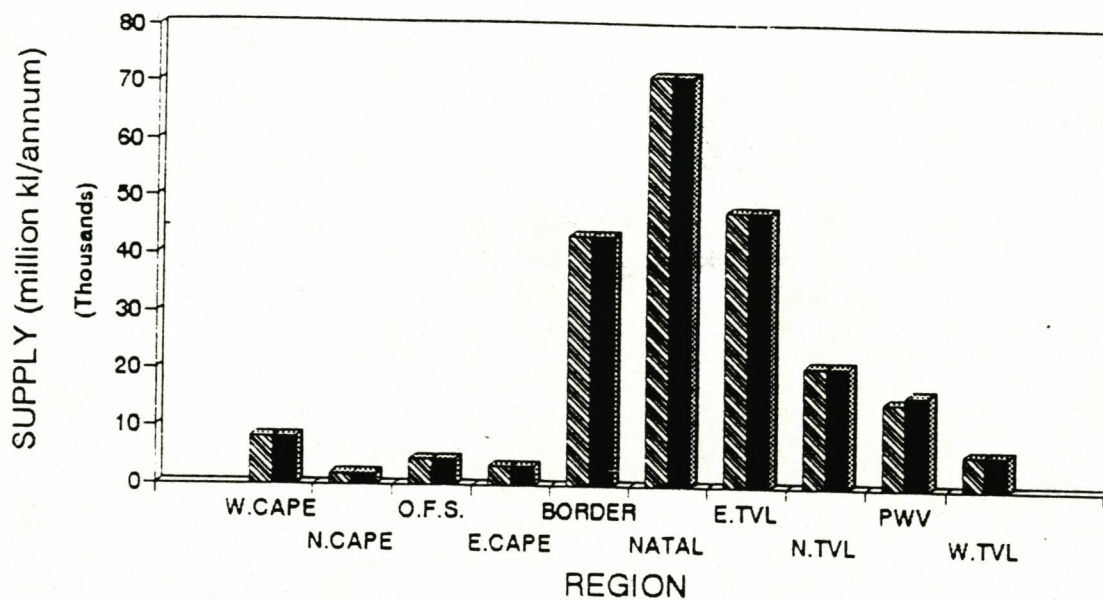
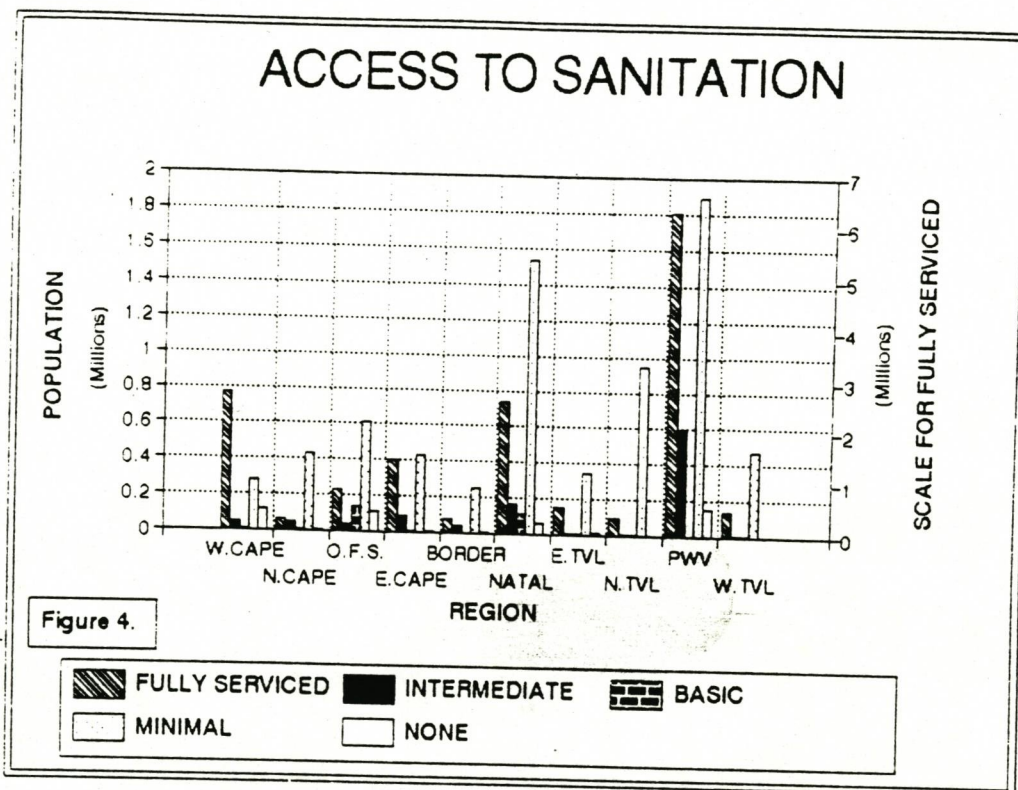


Figure 3.

1990 2010

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ACCESS TO SANITATION

Region	Full	Intermediate	Basic	Minimal	None
W Cape	2,706,000	46,300	3,200	281,500	119,000
N Cape	211,000	46,000	4,000	437,000	8,000
OFS	818,000	42,000	138,000	610,000	113,000
E Cape	1,424,600	91,800	4,200	437,800	7,500
Border	270,000	43,900	0	251,000	5,500
Natal	2,596,000	167,500	111,000	1,531,700	67,500
E. Tvl.	543,000	5,100	500	349,000	14,000
N. Tvl	354,500	700	2,500	949,600	0
PWV	6,306,000	598,000	0	1,887,000	156,000
W Transvaal	489,000	8,000	3,000	473,000	0

Source: Water Research Commission "Urban Sanitation Evaluation" Feb 1992

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TABLE 3: URBAN WATER SUPPLY

Level of Service	Population (Mil)
Minimal	3.95
Water Kiosk	0.5
Stand Pipe	1.6
Yard Tap	3
House Connection	13.25

Source: Water and Sanitation 2000 1991

ACCESS TO WATER: URBAN LEVEL OF SERVICE

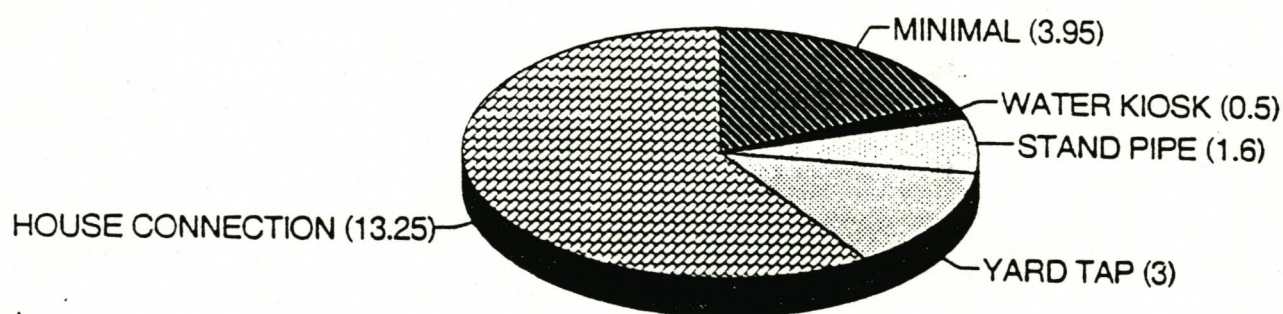


Figure 5

FIGURES IN MILLIONS

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TABLE 4: ACCESS TO SANITATION BY RACE (NATIONAL)

Type		White	Black	Coloured	Asian	Total
Full	Pop.	6,475,775	9,179,172	2,374,059	247,159	18,276,165
	%	96	65	91	99	100
Intermediate	Pop.	258,110	707,484	56,909	2,226	1,024,729
	%	4	45	2	1	100
Basic	Pop.	0	640,652	1,863	0	642,515
	%	0	5	0	0	100
Minimal	Pop.	2,844	2,998,743	161,863	0	3,048,934
	%	0	21	6	0	100
None	Pop.	0	679,855	3,511	0	684,857
	%	0	5	0	0	100

Source: Palmer Development Group, "Water and Sanitation in Urban Area", Draft Report, Urban Water and Sanitation Workshop, Johannesburg, August 1992

ACCESS TO SANITATION BY RACE NATIONAL

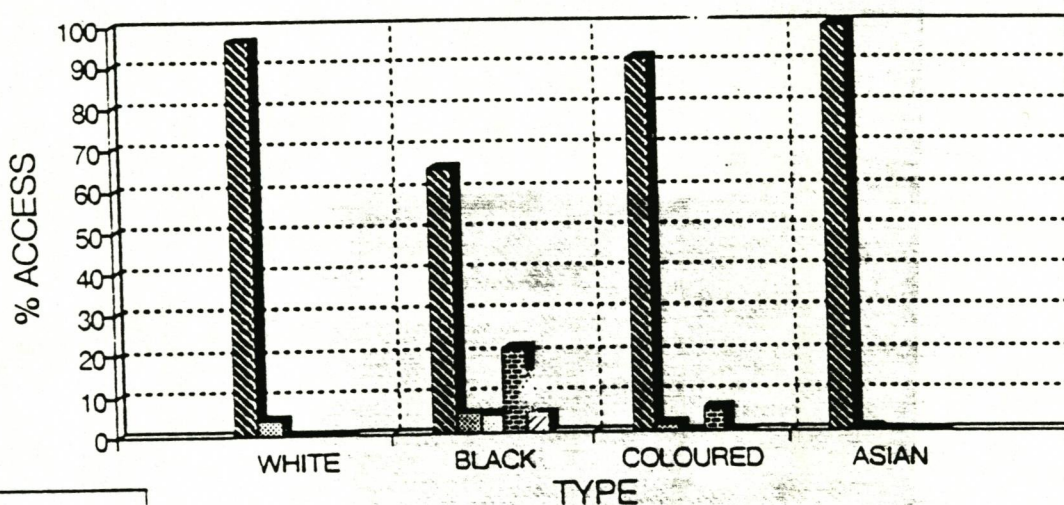
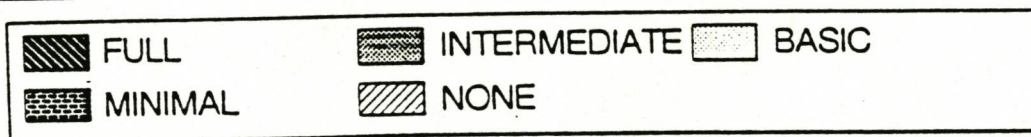


Figure 7



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ACCESS TO SANITATION BY RACE NATIONAL

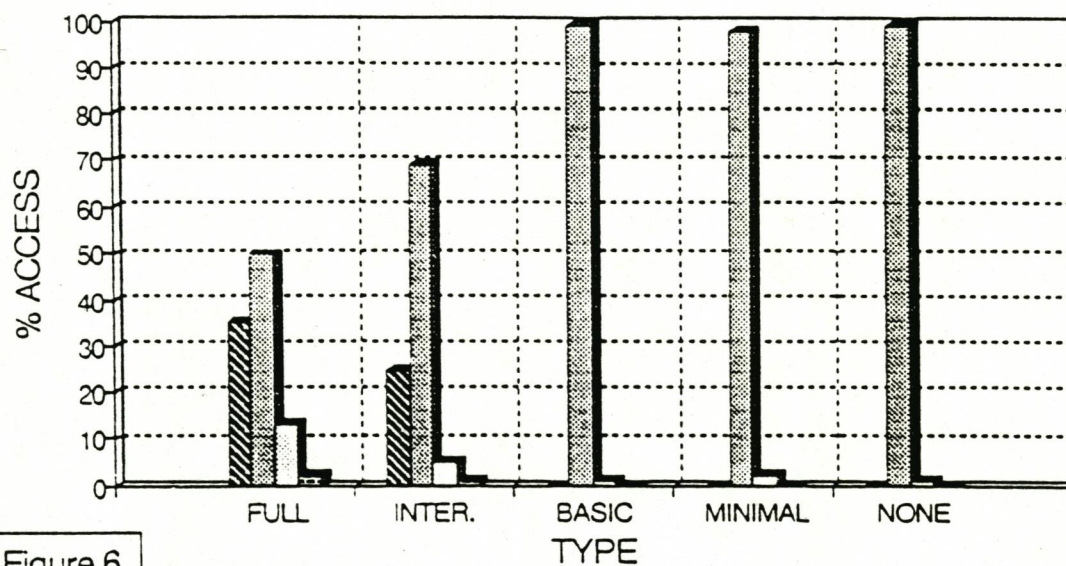


Figure 6

WHITE BLACK COLOURED ASIAN

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WATER TREATMENT WORKS OWNERSHIP

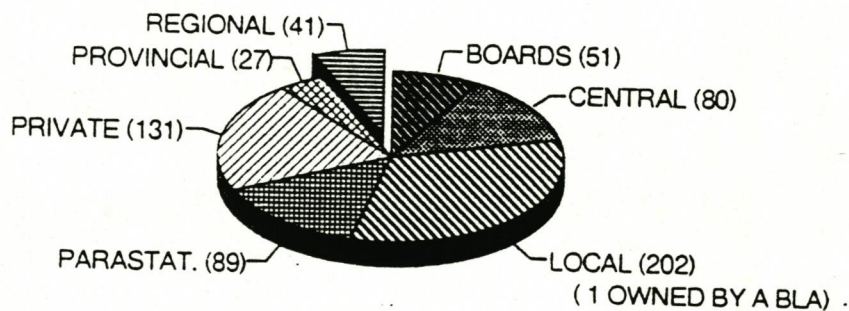


Figure 8

SEWAGE TREATMENT WORKS OWNERSHIP

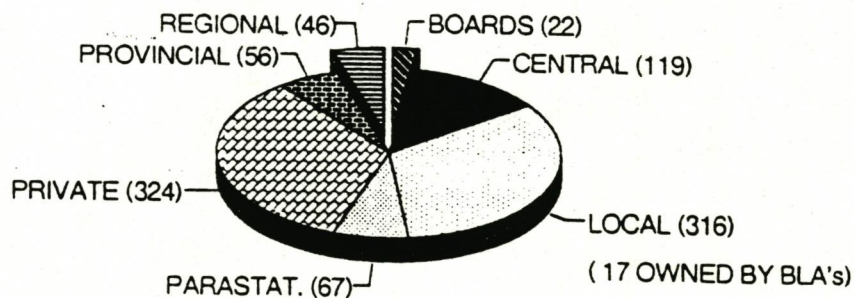


Figure 9

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PRIVATE TREATMENT WORKS

WATER:DESIGN CAPACITIES (m³/day)

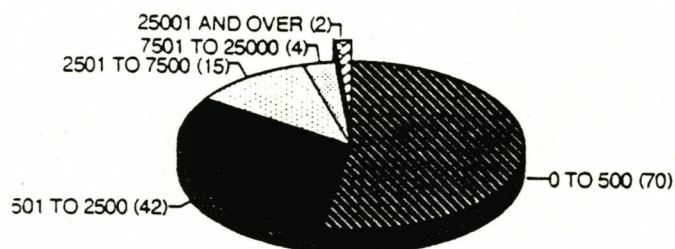


Figure 10

PRIVATE TREATMENT WORKS

SEWAGE:DESIGN CAPACITIES (Ml/day)

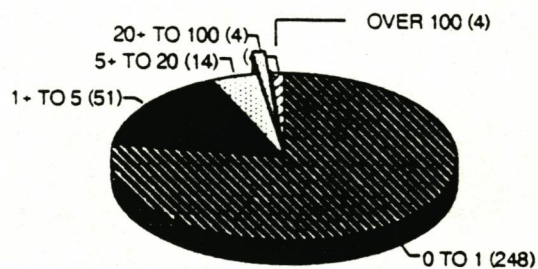


Figure 11

TOTAL DAILY AVERAGE DEMAND RAND WATER BOARD SUPPLY AREA

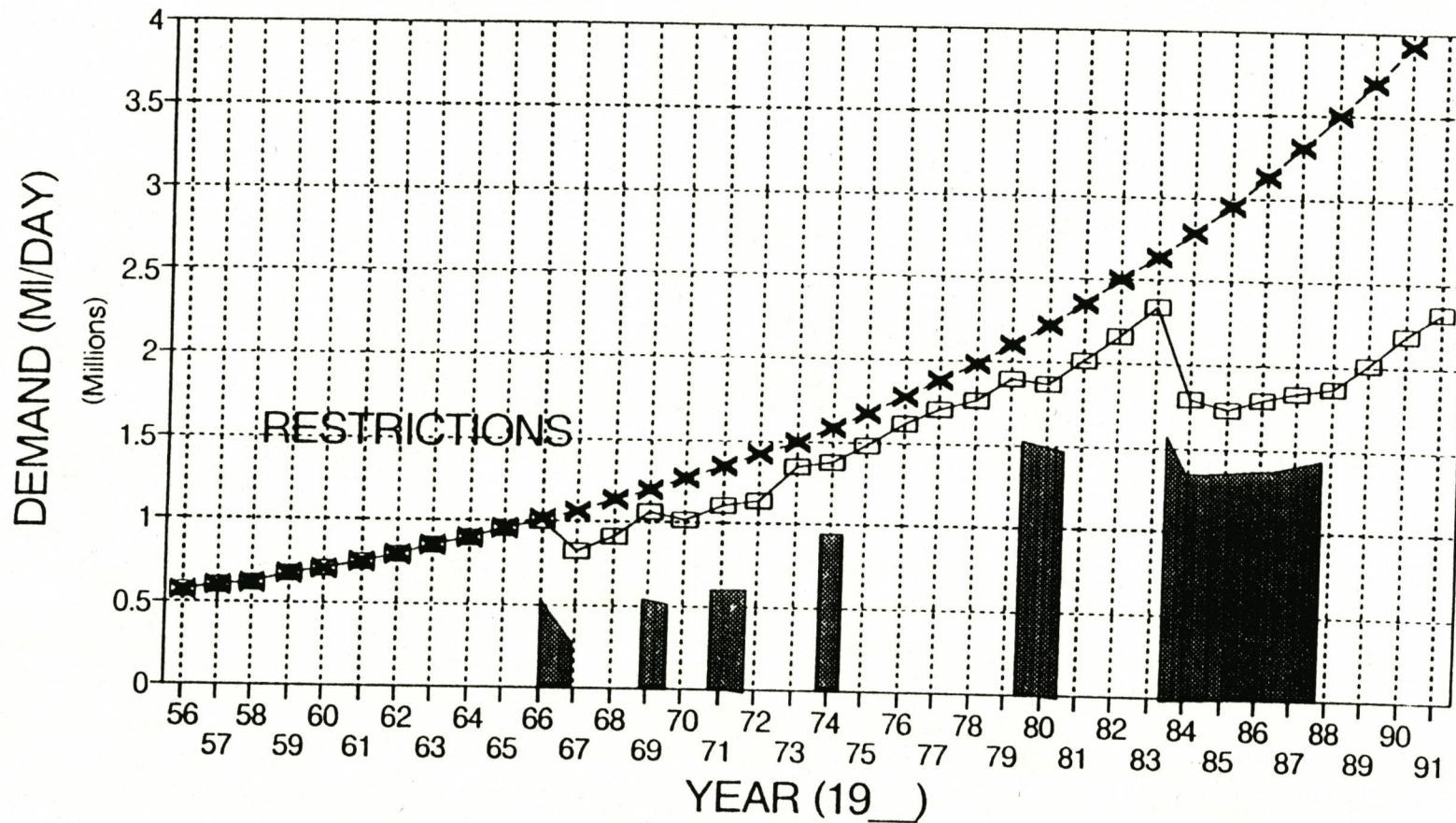


Figure 12

--x-- PROJECTED —□— ACTUAL

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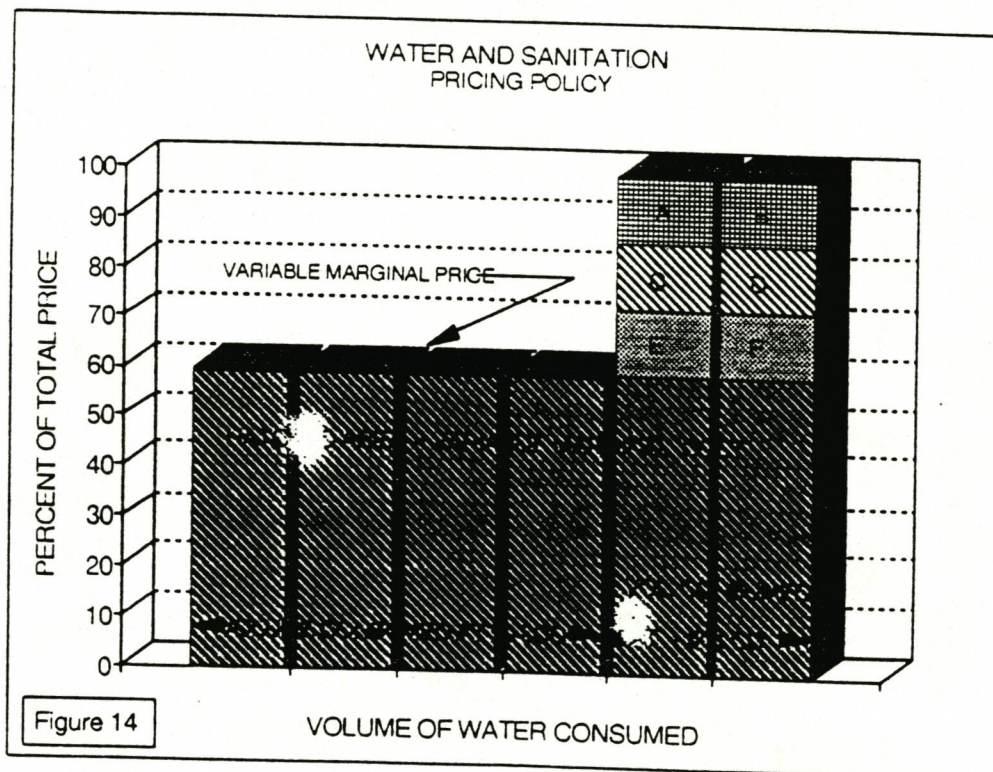
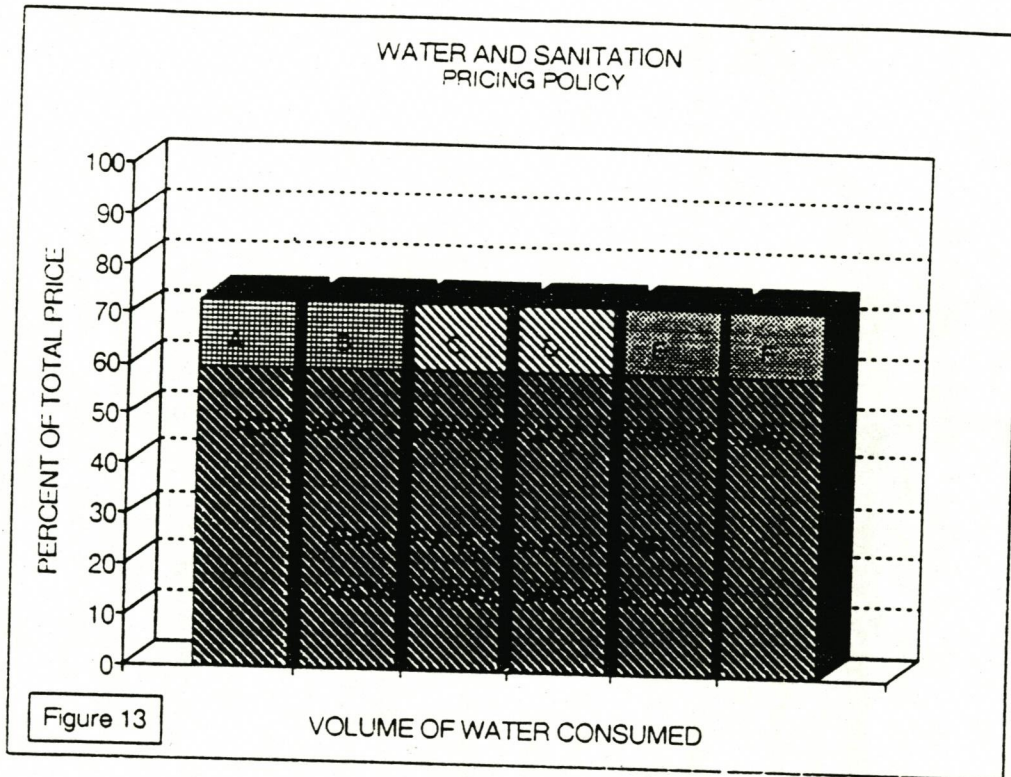


TABLE 7: PRIVATE TREATMENT WORKS

	Water			Sewage		
Population	Quantity	Des. Capacity m^3/day	Quantity	Des. Capacity MI/day	Quantity	
0 - 1000	830	500	7	700	1	248
1001 - 2000	2150	1 - 2500	421	5	51	
2001 - 5000	20250	1 - 7500	155	20	14	
5001 - 15000	7750	1 - 25000	420	100	4	
15001 - 50000	22500	1 +	2100	+	4	
50001 +	0					

Source: DWA: Treatment Works Database

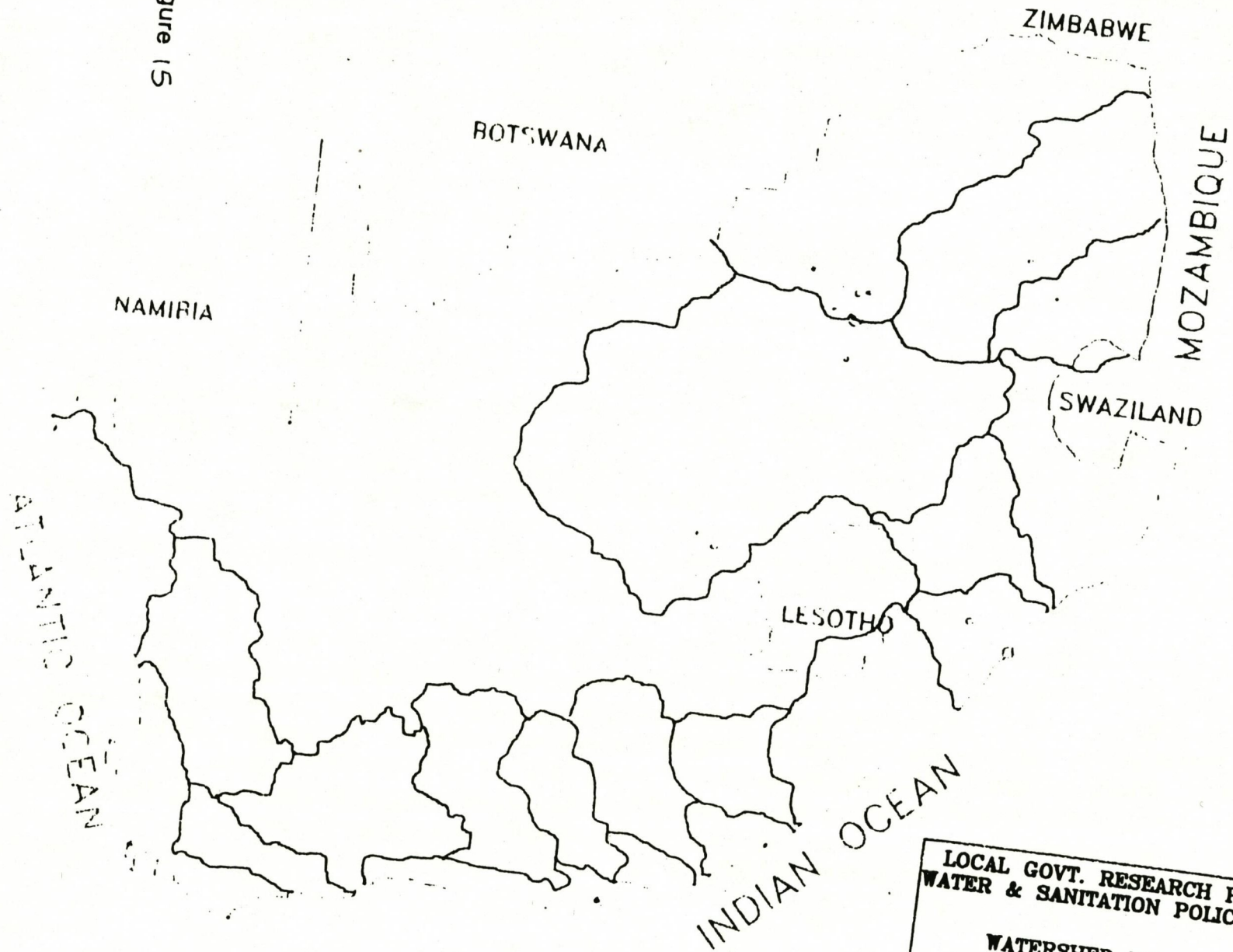
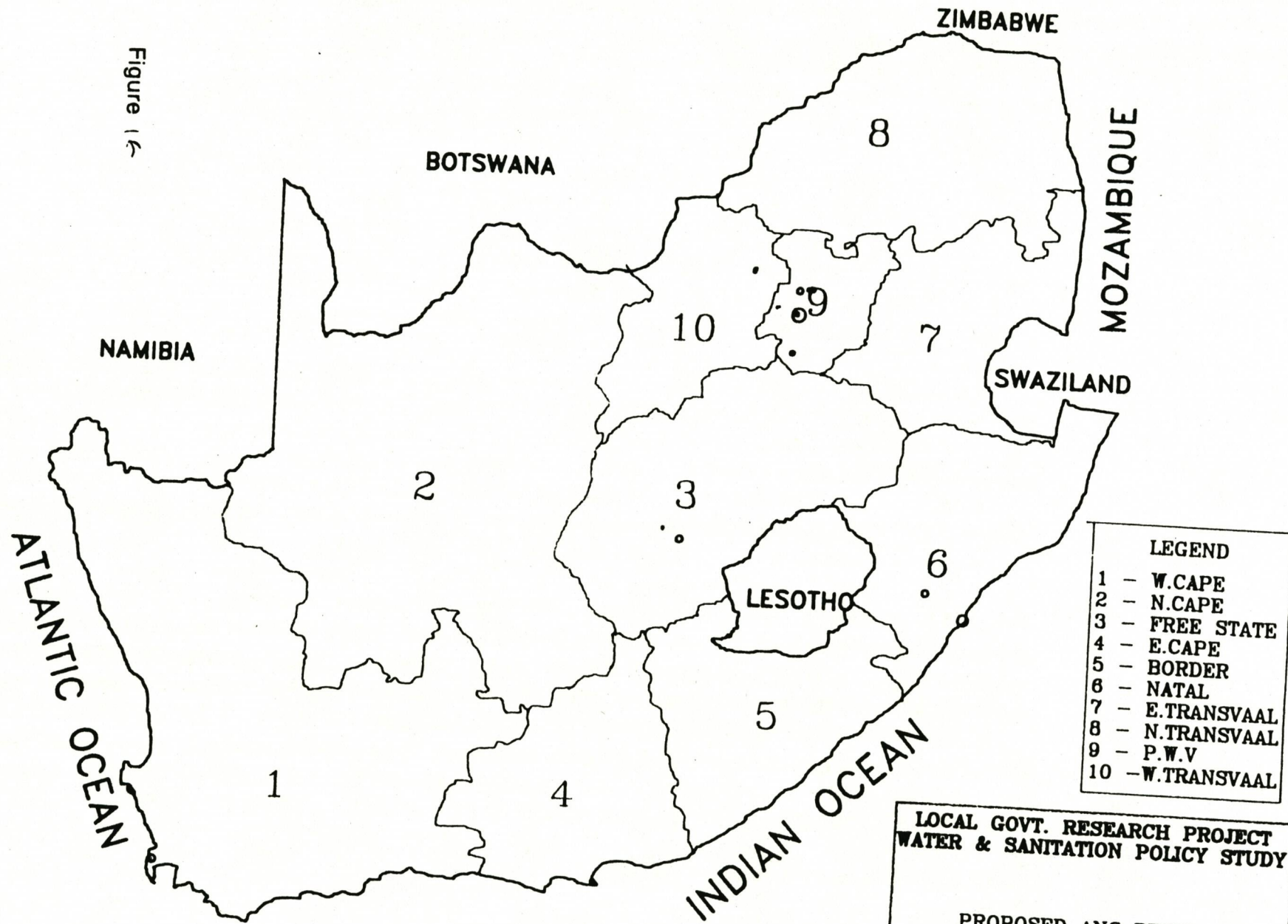


Figure 15

LOCAL GOVT. RESEARCH PROJECT
WATER & SANITATION POLICY STUDY
WATERSHED BOUNDARIES
drawn: T.Makgoeng date: Sept.1992

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LOCAL GOVT. RESEARCH PROJECT
WATER & SANITATION POLICY STUDY

PROPOSED ANC REGIONS

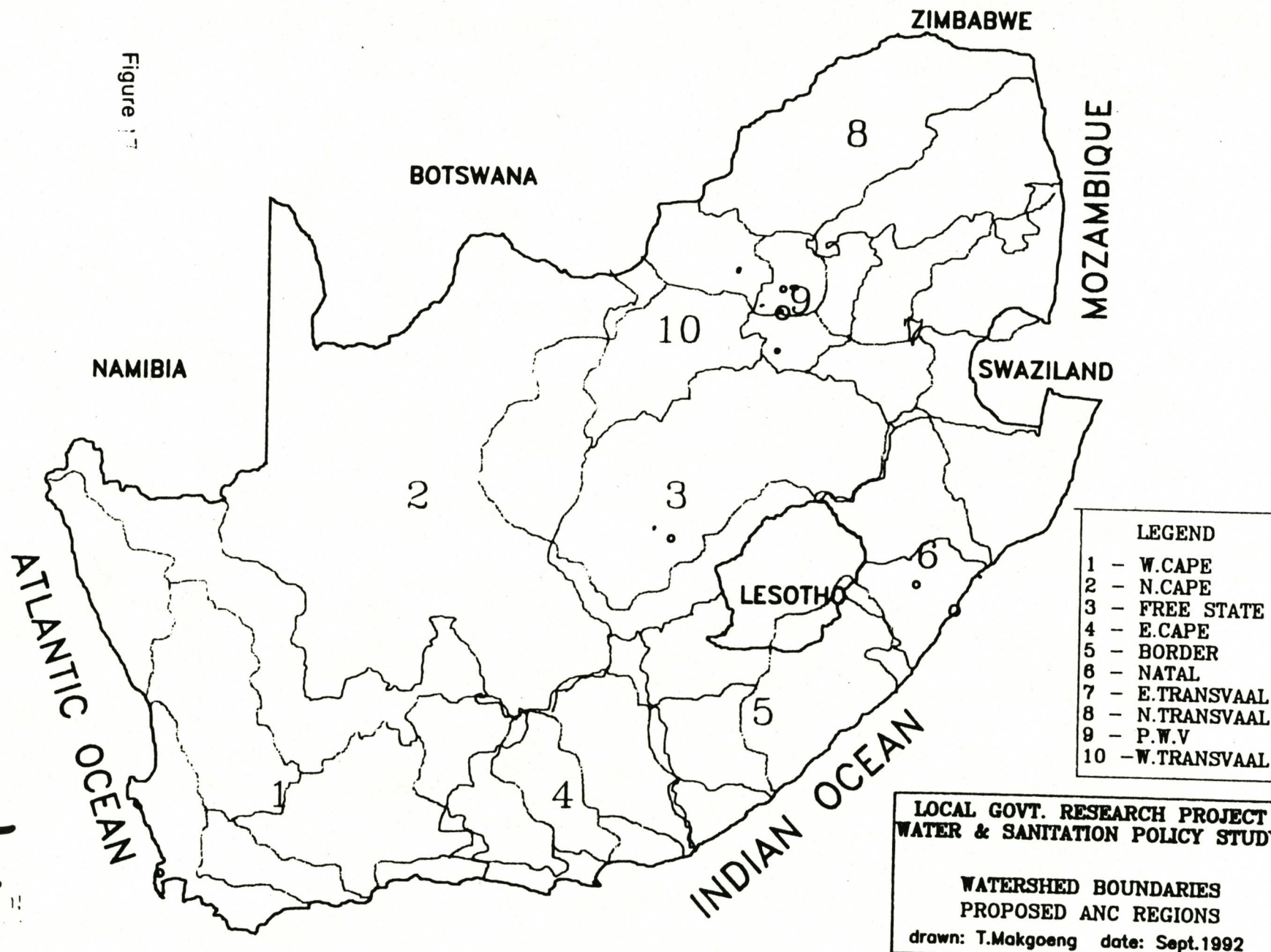
drawn: T.Makgoeng date: Sept.1992

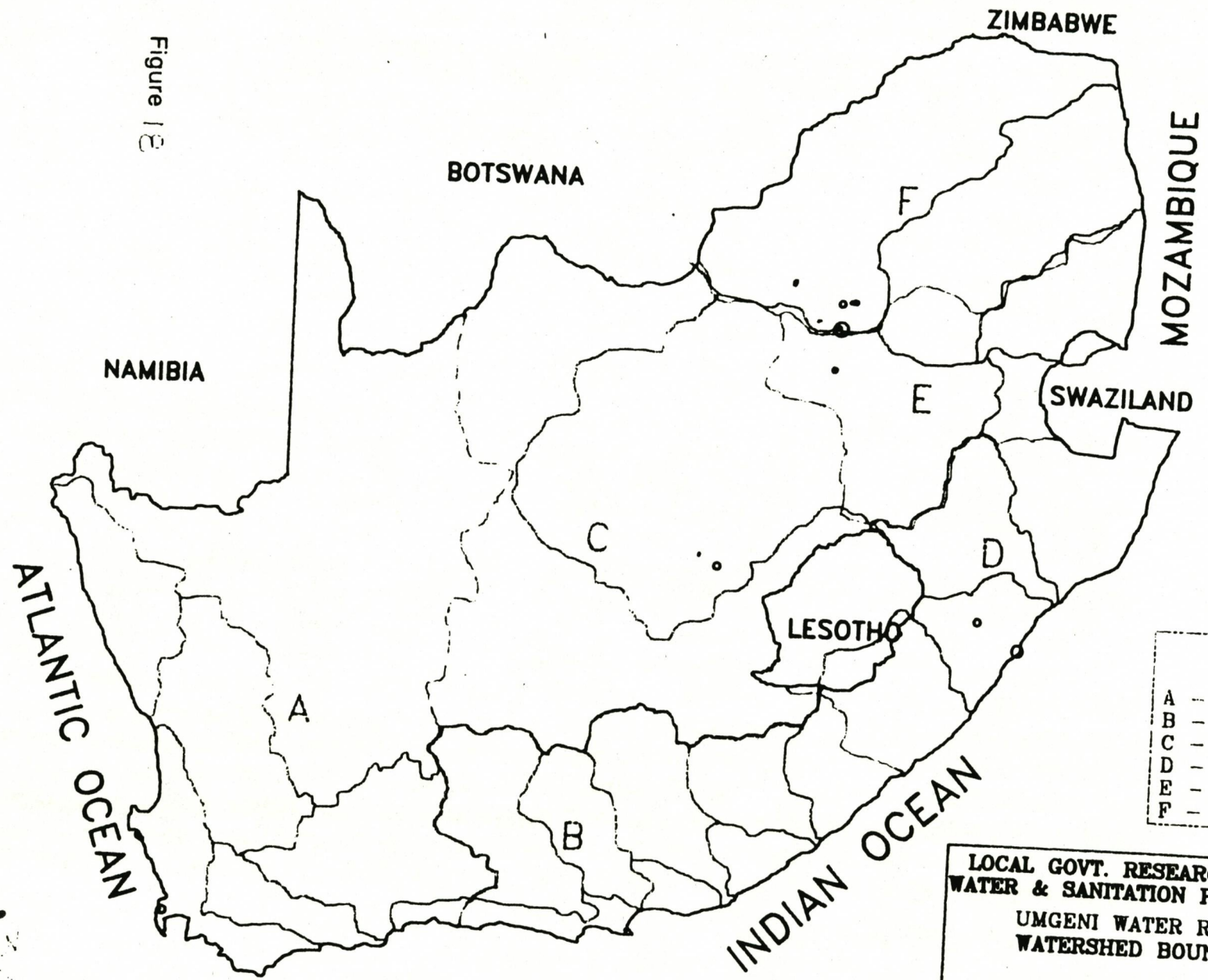
Figure 1.4

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Figure 17





- LEGEND**
- A -- W.CAPE
 - B -- E.CAPE
 - C -- FREE STATE
 - D -- NATAL
 - E -- HIGHVELD
 - F -- TRANSVAAL

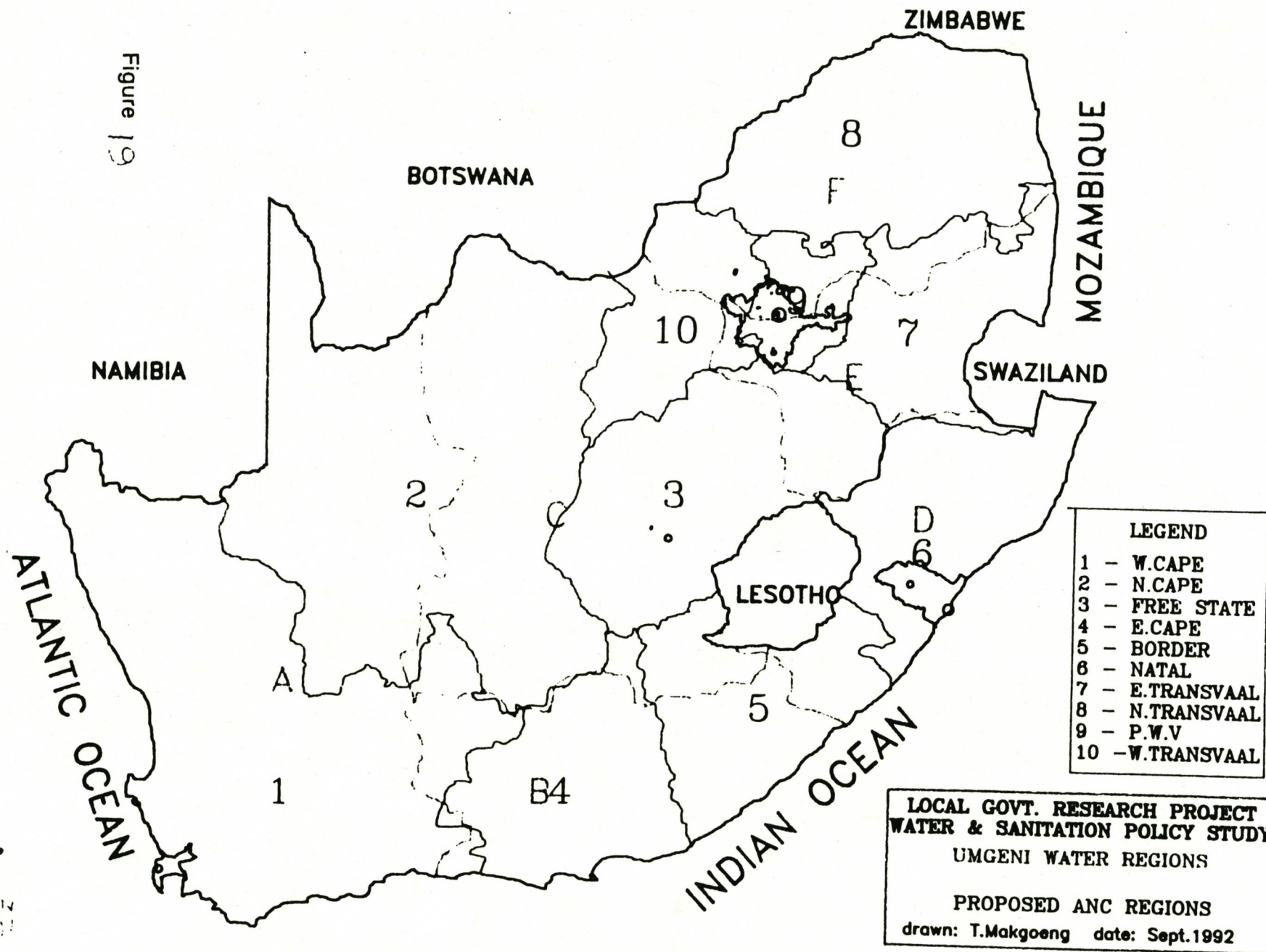
**LOCAL GOVT. RESEARCH PROJECT
WATER & SANITATION POLICY STUDY**
UMGENI WATER REGIONS
WATERSHED BOUNDARIES

drawn: T.Makgoeng date: Sept.1992

Figure 12

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Figure 19



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INSTITUTIONAL ARRANGEMENTS FOR WATER SUPPLY AND SANITATION IN
DEVELOPING AREAS (WSSD)

A survey of international literature

BMJ/REZ.
14/5/92

1. INTRODUCTION

The survey of the literature was done with the view to obtain a good idea of what the literature is saying; it was certainly not at the same standard required for a masters degree! The main aim was to obtain the key thoughts, trends and issues within a limited period of time.

Thus to a certain extent the literature review could be unrepresentative as personal subjectivity was involved in the selection of material to be read and the subsequent evaluation thereof.

In order to try to get to the heart of the matter as efficiently as possible the literature had to be "sifted". After an initial assessment it was decided not to look at literature before 1985. In searching for documents the keywords used were essentially "institution", "water supply", "sanitation", "developing country". The main sources of information considered to be representative practically was the WATERLIT database, the DWAF and the DBSA.

The material obtained was then further sifted by looking at key points of interest such as:

- the relevance of institutional arrangements;
- general idea of institutional thinking in the recent PAST;
- the main ingredients of current thinking;
- what possible developments there are going to be;
- the key issues and general principles underlying institutional arrangements;
- points relevant to the South African situation

In considering the key points of interest, issues that relate to institutional arrangements have to be assessed to determine if it does not have an "indispensable" relationship with it; more on this later.

2. FINDINGS

It could be gathered from the literature post-1985 that the main concerns in the early eighties, and probably before that too, was with the problem of sustainability. One of the main areas looked at, it seems, in terms of solutions to this problem were in the institutional arrangements for WSSD. The underlying

issue related to the diversity of institutions normally involved in WSSD and in the development in general.

The literature in the second half of the eighties seem to dominated by the recording and analysis of success stories in WSSD at grass roots level. Typically the institutional arrangement at this level would be a local committee system, which could have some hierarchical structure. It is normally seen as a organization parallel to third tier government or even to government as a whole. It has essentially developed as a result of the need to group together and survive due the inadequacy of statutory authorities.

The essential underlying problem that has been identified as the weak area associated with institutional arrangements, is the lack of "community management"; i.e. the community has no influence on decisions made regarding the supply of WSSD services.

It seems from the literature that in general the successful or potentially successful programs would be initiated by an "lead" organization, i.e. some body would take the initiative in getting a program off the ground. The successful approach would involve the community from the outset, with the eventual aim, in the ideal, of complete community management. The involvement of the community in fact would seem to be the main key to success but only if real needs and not assumed needs are met. To assess the real need and then to "fit in" an appropriate WSSD system within the culture of the community can consume a quarter of the budget for the program.

This involvement by the community cannot be divorced from the question of the development of institutional arrangements. This factor has had to be included whether by bitter experience or design particularly in the very poor and isolated villages. In fact the degree to which the community has been exposed to WSSD service provision, whether it be positive or negative determines to a large degree the nature of the initial approach. Experience in the field has also moved the emphasis from mere participation by the community to increasing degrees of management.

The lead organization invariably became the conduit or facilitator to the community of funds, expertise, training and education. In the ideal it seems that the facilitator should be the body or organization that works between government, representing the WSSD sector, and the community. Lead organizations range from specific government departments, to inter-departmental bodies, to NGO's to donor organizations.

From the governing authorities point of view it is normally the first and second, i.e. national and regional bodies that produce the lead organization. It is also at the these levels of government that the facilitator finds his contacts;

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occasionally a local authority or the third tier gets involved. The reason for this is that the resources i.t.o. money and expertise lie at those two upper levels.

In terms of the actual organizational structure that forms the link between the community and the "outside" bodies the most common it seems is something that resembles an extension service type organization from which field agents would do the ground breaking work in the community. These agents then depend on support form a hierarchy that is area based, e.g. a number of villages.

The very latest literature reflects the need to take what has been learnt from the DECADE and to try to find implementation models. It has been acknowledged in the literature that institutional issues are the most difficult problem facing this sector.

The literature particularly the most recent developments can be encapsulated by considering two key papers viz. "Institutional Issues" written by David Grey and Jennifer Sara of the World Bank, and "The drinking water supply and sanitation decade 1981-1990 What next?" written by Alexander H. Rotival of the WSS Collaborative Council.

The first key paper is called "Institutional Issues" written by David Grey and Jennifer Sara of the World Bank. Although this paper essentially looks at African countries, most of its content can be applied, it is believed, internationally.

3. "INSTITUTIONAL ISSUES"

Essentially what the paper says is that the objectives of rural water supply and sanitation (RWSS) programs have by and large not been met. The underlying problem is the general lack of a sound institutional strategy. Although there is a need for institutional arrangements to be reviewed, it is emphasized that there is NO general format for institutional arrangements.

The implementation of the a sound strategy for institutional arrangements is complicated by the lack of clarity in the definition of issues such as "rural", "community" and "demand".

Rural in the context of this paper refer to small dispersed communities, of generally less than 1000 inhabitants who represent the poorest of society and who have little political leverage. Communities of necessity vary in size the latter determined by environmental and socio-political factors; in the context of the paper the concept community is tied in with the idea of community management carried out by an extended family unit, a village association or a representative local government. Demand is off course ties up with perceptions of cost and

benefits of the service; in this context it is the poor that need more water close to their homes.

3.1. RWSS institutional issues in Africa:

Institutional issues in Africa can be divided into three key components viz. a structural and a sectoral sub-issue and the role of ESAs (external support agencies) . Structurally and in general, governments in Africa are too centralized with weak or unrepresentative local governments.

Sectorally RWSS does not fit readily into a single government institution. Thus typically there are several government agencies involved alongside donors and NGO's. This ironically would seem to call for stronger central coordination.

With respect to the ESA's, they have a major role sometimes providing up to 90% of sector investment. However, the potential for market distortions by ESA "investments" is great. It is thus significant that there is a strong trend for the coordination of ESA assistance to governments where cost recovery issues, community development and progressive and sustainable service improvements are key components of program arrangements with governments.

3.2. Promotion vs provision

The paper discusses also a provision/ promotion continuum as a framework for discussing the delivery of services to rural communities. This reflects a general trend in rural development in which there is an increased focus on decentralization to local bodies, and the resulting need to strengthen local organizations, the private sector and the outreach role of NGO's. This is a shift in role from the provision of services to the creation of a supportive environment, by the central authorities, that would promote service provision by others. The provision/ promotion continuum is divided into three basic approaches viz. the provision, provision/ promotion and promotion approaches.

The provision approach:

It is the centralised approach mentioned earlier.

The provision/promotion approach

It is typical of most RWSS programs in Africa currently. Communities may have advanced to a stage of managing increasingly complex services. However, the

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approach is still project based and probably still dependent on external financing, equipment and staff. Sustainability is still in question as local capacity building is limited, demand is not adequately assessed, service levels are prescribed and replication is still the responsibility of the central agency.

The promotion approach

This approach is not common in Africa. Here the central government would disentangle itself from and rather promote RWSS through the provision of credits, or grants where appropriate, and outreach work. The latter would involve long-term extension services to rural communities wishing to improve their own basic WSS services as well through the provision of incentives to the private sector to ensure the availability of competitively priced goods and services for sector development.

Success of a program would require that rural communities perceive a need for improved WSS which could be heightened by hygiene education. They would be willing to pay for part at least of the capital costs and also for O&M.

They would also be also be required to organize themselves to manage the services. Off course the promotion approach runs the risk of the poverty cycle when it is left to market forces; the appropriate measures must be taken initially to make the approach a success. The other end of the scale is also important and that is the merging of the community management into local government as they become more representative and responsive to community needs.

4. WHAT NEXT?

The second key document is titled "The drinking water supply and sanitation decade 1981-1990 What next?" written by Alexander H. Rotival of the WSS Collaborative Council. Although it states that coverage at the end of the Decade is disappointing, it notes that there has been major progress in consensus amongst the donor agencies and other sector organizations on major approaches and strategies to be adopted to ensure sustainable WSS development.

A series of consultative meetings, to deal with the above issue, were held at global, regional and national level to strengthen, note, collaboration between governments and ESA'S in policy and strategy formulation. These culminated in the "Global Consultation on Safe Water and Sanitation for the 90's" held in New Dehli in September 1990.

This consultation achieved remarkable consensus on four guiding principles, that was included in the New Dehli Statement, for the future in WSS development. These are

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- a) Protection of the environment and safe-guarding of health through the integrated management of water resources and liquid and solid wastes.
- b) Institutional reforms promoting an integrated approach and including changes in procedures, attitudes and behaviour, and the full participation of woman at all levels in sector institutions.
- c) Community management of services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes.
- d) Sound financial practices, achieved through better management of existing assets, and widespread use of appropriate technologies.

It was agreed amongst sector professionals that institutional development was the most important issue during the Decade and may be the key issue in the 90's.

The paper also then discussed other major issues, against the background of the above principles, that have to underlay WSS development in the 90's. Those issues that are directly related to institutional arrangements are as follows:

- Governments will have to assign greater priority to financing the WSS sector as it has important economic consequences.
- O&M has to receive greater attention as figures of the order of 50% has been reported for facilities in rural areas that are out of order. One of the major factors contributing towards this is inadequate institutional environment and policies.
- The major issue relating to institutional arrangements is that of capacity building. It includes institutional and human resources development and it is essential for ensuring efficient and sustainable use of the sectors physical and financial resources.

Capacity building (CB) may require:

- decentralization of structures and services to make them closer and more responsive to community needs;
- strengthened intersectoral cooperation;
- shift in the role of the governments from that of providers to that of promoters and facilitators; and
- rethinking of human resources development policies to increase attention to

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gender issues, and promote the role of staff involved in low-profile functions such as O&M, community participation, applied research, communication and data collection.

An important development is highlighted by the paper and that is the creation of the External Support Agencies' Collaborative Council in 1988. Also significant was that opened its membership, prior to New Dehli, to sector professionals in national sector agencies and ESA's in sector development; consequently it also changed its name to the WATER SUPPLY AND SANITATION COLLABORATIVE COUNCIL. Its mission statement as defined at New Dehli is to:

"enhance collaboration among developing countries and ESA's. so as to accelerate the achievement of sustainable water supplies, sanitation and waste management services for all people, with emphasis on the poor".

5. CONCEPTUAL MODEL

Taking account all that has been said with respect to the literature a conceptual model which includes most of the key ideas relating to institutional arrangements in successful programs, is proposed. The model is not there as a model for institutional arrangements but rather a framework within which or from which specific institutional arrangements for a specific situation can be designed. The implication is that for a specific program detailed studies will still have to be done to establish the finer points of an institutional arrangement. Also the model is not necessarily true for all time; it is there to solve problems within the current state of the WSSD sector.

The model has three main players viz. the central authorities representing the WSSD sector, the community and the facilitators. The central authorities as such are normally involved at the national and regional government and not normally at the local level as the resources i.t.o. funding and expertise are found at the higher levels. The community management structure is off course an informal arrangement in the sense that it is not statutory.

The facilitators are any bodies or organizations that would provide the right environment within which sustainable WSS development can take place; these private or public sector bodies or parts thereof that would function at the end of the day as an extension service to the community. NGOs and ESAs are the most common type of organization from the private sector and a single government department or a inter-departmental team from the public sector.

The relationship between the government and the community is characterized by the strong link, bridge, provided by the facilitator, i.e. there is no direct line of contact envisaged between these two bodies whether this be formal communication or

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any sort of resource allocation. Note that the assumption here off course is that one is still dealing with "real world" ineffective national and regional authorities.

The most important role then in terms of sustainability is thus played by the facilitator. The most important characteristics and functions of the facilitator then going back to the literature is that it must:

- establish a working relationship with the community;
- assess the development potential of the community;
- assess the nature of the need/ demand;
- assess the level of service that could be installed against an appropriate time scale;
- Establish an education and training program

6. CASE STUDIES

TOGO

The important thing to note is the pre-implementation community support provided by the Ministry of Public Health and Social Affairs. In particular the ministry promoted a high degree of community participation and instituted comprehensive training activities for all project participants including government field agents, members of village committees, etc.

Project implementation was the responsibility of the ministry which concentrated training at local level, establishing village committees and intensive promotional work in the project communities.

Training was conducted in three tiers: instruction was first provided for government field agents, who then trained village development committees members, who in turned trained others in the community.

The program was promoted by ministry teams, each assigned 20 villages, which were visited once a month. These teams provided field training and supervision for field agents, village committees, etc.

Training is not only given in health education, community development and construction techniques, but also for pump caretakers, repairmen, etc for after project maintenance.

Maintenance/ sustainability was also provided by the establishment of a local maintenance fund and mobile repair teams from the Ministry.

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It is widely considered to be one of the most successful examples of the participatory approach. Its success is the result of this and the long lead time given to promotion; about 25% of the budget went to training and extension services.

If one would relate this case to the conceptual model then one would see that although the ministry teams are providing an extension service, a facilitative service there might still be a lingering question of sustainability as there seems to be little encouragement of private sector involvement, i.e. there is still a measure of provision.

AQUA DEL PEUBLO

NGOs can play an important role as illustrated by the activities of a private organization called Aqua Del Pueblo. About 90% of the population of Guatemala live in dispersed highland communities.

At least three national agencies are involved in implementing water schemes in the rural areas but ultimately these schemes are administered and maintained by the local water committees. These agencies provided only general guidance since it lacks the institutional mandate and adequate human resources.

ADP has gained a reputation for pioneering self-help community water projects. It uses simple technologies and local materials and ideas. It responds to requests from villages and then establishes community participation from the outset. A technician liaises with the inhabitants to identify the preferred level of service and potential community inputs i.t.o. labour and finance.

ADP's education program is probably encapsulated by a strict rule that it enforces and that is that the community must build pit latrines before work on the water system begins.

ADP also helps organize a voluntary committee that will take responsibility for construction, operation and maintenance.

As part of its extension program, and very important, it trains local technicians in planning, design, organization, supervision, O&M skills, etc; they are then expected to design and supervise two projects a year.

ADP enters into a contract with each village; ADP subsidizes about 50% of the materials, the community supplies the labour and agrees to pay back a soft loan over a six year period.

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Evaluating the work of the ADP against the conceptual model one sees that it has a hands off approach and has apparently encouraged private enterprise to play its part. Although the local community is it seems being "trained" to be at the end of the day to be self reliant, there is still some question as to sustainability if one goes according to the literature which seems to say that firstly that governments should view development assistance, particularly w.r.t. WSS, to the local community as a long term "investment", i.e. it should at the end of the day be actively developing this sector. And secondly capacity building must not only happen in the local community but also within the relevant parts of the central authorities, i.e. it should develop its institutions and human resources to optimize natural and financial resources. This might mean effective decentralised bodies and in the case of Guatemala an extension service with the emphasis on "after care" once the NGO has moved on.

7. CONCLUSIONS

It is apparent that some sound principles can be drawn out of the survey of the international literature to guide general strategy formulation for WSSD. Although this is the case the principles ascertained do not preclude, but in fact encourage in-depth research of the finer details encompassed by these principles as well as of the community themselves when applying them.

It seems that the principles obtained can be applied in SA as the problems identified are found to a large extent here. There is the problem of an under developed WSSD sector, large poor developing communities and the lack of funds to establish conventional services.

G. BING
DWAF

14/05/92

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PAPER FOR IWSA SEMINAR 25th - 26th JUNE 1992

PROVISION OF WATER AND SANITATION SERVICES TO DEVELOPING URBAN COMMUNITIES

by Vincent Bath

AN EVOLVING PLAN FOR SOUTH AFRICA

1 INTRODUCTION

This paper addresses only part of the overall need for water and sanitation services in our country. The words "to developing urban communities" in the title are necessarily exclusive of other important needs. The provision of water and sanitation to our rural areas is urgent and the way we approach it will influence the arrangement to be made for the provision to urban areas. In this discussion therefore an attempt has been made to be mindful of rural needs in addressing the various aspects that constitute water and sanitation services in urban areas.

At the core of our capability to provide essential services in a transformed South Africa will be the forms of government and supporting institutions that are adopted in a new dispensation. And whilst constitutional draughtsmen and theoreticians may propose ingenious and indeed utopian solutions designed to produce more from less in terms of services provision, it will be practical people with practical methods who will actually be called upon to supply what is required to satisfy the peoples needs. In order that they should not have to accomplish this in untried and unworkable systems it is necessary that the water community (in this I include all with a serious interest in the provision of water and sanitation services) should help to define essential elements that ought to be incorporated into any new order.

After deliberating on principles and issues for many months The Standing Committee on Water and Sanitation, constituted of members from a wide and national spread of consumer/practitioner/professional base, is presently analysing and evaluating options for services provision which it hopes to make available timeously to political decision makers for their consideration in restructuring the country.

As one of the tools for evaluating the options the matrix format in the Annexures A and B is being utilised. The matrixes summarize the various functions to be performed and attempt to suggest appropriate accountabilities for various tiers of government and institutions. From the functions to be performed it is hoped one might be led to the type of institution that would best fit requirements. Some of the functions to be performed also poignantly underline the need for rationalisation in these matters. Whilst the full matrixes being investigated are more detailed than those annexed it is nevertheless possible even at this stage to gain from the summarized versions some indication of the tentative allocation of accountabilities. It is hoped that firm recommendations on acceptable options will be available to decision makers during the course of this year.

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The setting of boundaries for the various entities will be decisive for the best dispensation for services; and this particularly so for water and sanitation. But experience has taught us that in a dynamic country like ours, which is still in a development stage, boundaries, especially local government boundaries, are extended from year to year and in a new dispensation, whose aim will be to move away from artificial group based municipalities, it would be surprising were there not to be major revisions to these boundaries as existing authorities combine to remove the divisions of the past and render the poorer communities more viable. In such a rearrangement interfaces between various levels of government and service utilities will have to be redefined.

(c) The expectations

With the high expectations of water and electricity for all as of right, as proposed by major political players, all will want first world services within a short space of time but few will understand the cost implications of this before they become inexorably committed to paying their way in one form or another. For the real cost of providing services may have been underestimated by those advocating services as a right but the difficult task of financing such a vision will be evident all too soon. The tax cow will have to regain health and grow considerably before it will provide the necessary volumes of financial milk. Yet by urbanising themselves the settlers are committing themselves to a different and more costly mode of living than the rural circumstances they were used to. That requires an adjustment in attitudes which is already having to be made.

(d) The institutional deficiencies

Whilst many institutions engaged in water supply and sanitation are functioning well, many do not. And indeed, even more importantly, there are many needs which are not addressed because no institutions have been created to deal with them. Long established local authorities, water boards and the Department of Water Affairs provide the first world water service that is available to certain sectors of the South African population. Away from these institutions the service is not as good, and in certain areas is better described as "third world". With regard to sanitation the position is worse.

There are no really effective national or truly regional co-ordinating bodies for sanitation. There are however many institutions that have a limited say in these matters with apparently little accountability. The exceptions with regard to acceptance of clear accountability for performing the sanitation functions are the established local authorities, many of whom perform their functions well and some operate as highly successful 'regional' institutions e.g. Johannesburg. There are also some institutions which are becoming more involved or have assumed responsibilities to improve the position, such as water boards and Regional Services Councils but in these instances the lack of precise delegation of responsibilities by central and provincial government is unhelpful.

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- (viii) Some consensus needs to be reached on the political dispensation and the political settlement must be followed by the full restoration of law and order in developing urban communities. The use of a strategy of non-payment for services as a weapon to address other unrelated political grievances must be discontinued.

(b) Broad institutional proposals

The possible institutions examined thus far which might be expected to undertake the provision of water and sanitation services seem to indicate a clear need for a three tier system in the more general circumstances of the country whereas this arrangement could be reduced to a two tier system in specific circumstances. The three tier system referred to here is a water tier system and not a political hierarchy, which might also be a three tier system. The three tier system, which for water is much the same as the present system, comprises the national, regional and local levels as set out hereunder. A three tier system for sanitation might also be implemented along the lines set out hereunder :-

<u>National level</u>	Water supply	Sanitation
Management of resources at national level	Department of Water Affairs	Department of Health or Department of Water Affairs with sanitation duties
<u>Regional level</u> Procurement of raw water, purification, pumping and primary distribution (including primary storage) in bulk to local authorities	Water Boards	
<u>Regional level</u> Receiving and treating of sewage in bulk from local authorities		New Sanitation Board or Expanded Water Board with sanitation duties
<u>Local level</u> Local storage of water and reticulation to individual consumers and collection of sewage for disposal to outfalls and treatment works all based on economic sized units	Combined or enlarged local authorities Private contractors	Combined or enlarged local authorities Private contractors

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(d) The "political region" concept i e the Regional Government

One of the issues that needs careful consideration is how a future regional government (as opposed to the present day provinces) are to be delineated and what functions will be entrusted to them. Whatever their size and shape one can reasonably assume that there will be more regions than the four present provinces but probably not many more than the nine or ten regions being negotiated at present by the major political parties. On this basis regions are likely to contain between say two and eight million people with a probable average of about 4 to 6 million for each region. Each region is likely to have at least one major city providing the seat of the regional government. It is furthermore probable that the new regions will have boundaries that in whole or in part disregard topographical features such as mountain ranges and water divides and may well tend to follow river courses with the result that most regions will not coincide with river catchment basins.

(e) The "water and sanitation region" concept i e the Regional Service Utility

An efficient water supply and sanitation system in a relatively dry country like ours, where water is a scarce resource, ought to focus on both economic and catchment considerations with particular regard to sources of raw water. The location of raw water sources and the extent of either part or complete catchment areas will have an important influence on the economic and environmental impacts of water and sanitation provision. It is very likely that the most efficient and environmentally acceptable solutions for water and sanitation provision will be accomplished by an entity managing the operation of an infrastructure in an area which does not coincide with regional government boundaries. In this connection it is interesting to note that none of the areas of operation of major water boards in the country coincide with present political boundaries and at least one serves parts of two provinces. The reason why there is no coincidence in these matters is that the criteria for establishment of water boards depend on factors different from those on which provincial or demographic boundaries depend. If one is not to end up with consequences patently detrimental to consumers it will be necessary to guard against attempting to make water areas coincide with political areas in order to satisfy a political philosophy or a constitutional draughtsman. Political philosophy ought, after all, to be directing itself to achieving maximum benefit for the people, including maximum benefits in water and sanitation matters.

(f) Reconciliation of interests of "political regions" with those of "water regions"

If one accepts the greater good of all being served by the creation of water management areas not coinciding with political states, departments, regions or counties, then it is vital to establish a viable working relationship between them. There are many examples of this arrangement working well in other parts of the world and, as with so many other matters in this regard, it is not necessary to evolve a new and untried system if we can adapt any of the existing working models. Perhaps the one that has been most in the news in recent years is the British system where one has central government, county or regional government and local government in the political sphere and central water management, regional water authorities and statutory water companies, and local authorities in the water and sanitation sphere. The areas of jurisdiction of the Regional Water Authorities and statutory water companies tend not to coincide with the areas of political entities.

- (g) The advantages and disadvantages of the various options will have to be explored fully with all interested parties in the supply of water and sanitation services. In the meantime, however, we have examples of some of the options already in existence in the form of Rand Water Board and Goldfields Water Board on the one hand which were brought into being by the central government at the instance of local authorities and the mining industry to provide a water supply, and on the other hand Umgeni Water which was established by the central government with the purpose of rationalising an existing water supply in a defined area of operation.

5 CONCLUSION

As the title of this paper suggests many in the water community are engaged in a process of evolving a plan for the provision of water and sanitation services in our country which will afford politicians choices when they come to decide on the new dispensation and the new entities, institutions and structures arising therefrom. The emphasis therefore at this stage, with so many unresolved issues, is on the evolving nature of the plan. Whilst one may discuss principles at length, and conjure up solutions, unless proposals for new entities are thoroughly analysed and tested against practical criteria such proposals may result in expensive and time wasting experiments. The clarification of issues and the use of the analytical tools discussed in this paper, however tentative and incomplete they may be, are it is hoped, at least a constructive step forward to finding solutions. Intensive and focused debate on these and related issues during the next few months should help to clarify our options.

The contribution of fellow members of the Standing Committee on Water and Sanitation to the preparation of this paper is gratefully acknowledged

FUNCTIONS	ACCOUNTABILITIES																															
	Setting of service and quality standards								Achieving service and quality standards								Provide funding								Set tariff							
	G	R	I	U	C	L	P	G	P	I	U	C	L	P	G	R	I	U	C	L	P	G	R	I	U	C	L	P				
PROVIDE RAW WATER SOURCES																																
Dams	G							G		I	U				G		I	U				G		I	U							
River/stream/weir	G									I	U						I	U				G		I	U							
Underground	G									I	U						I	U				G		I	U							
Reuse from system	G									I	U						I	U				G		I	U							
ABSTRACTION OF RAW WATER																																
Regional Service Utility	G									I	U						I	U				G										
Local authority	G									I	U	L					I	U	L			G										
Industry	G									I	U						I	U		P		G										
Riparian rights (individuals)	G									I	U			P			I			P		G										
Irrigation (schemes/rights)	G									I	U			P			I			P		G										
TREAT RAW WATER																																
Removal of suspended solids	G									I	U						I	U						I	U							
Removal of mineral contaminants	G									I	U						I	U						I	U							
Removal of organic contaminants	G									I	U						I	U						I	U							
Disinfection	G									I	U						I	U						I	U							
DISTRIBUTE RAW AND OR POTABLE WATER																																
Primary distribution																																
Pumping in bulk to required elevations	G									I	U						I	U						I	U							
System storage	G									I	U						I	U						I	U							
Gravitating in bulk	G									I	U						I	U						I	U							
Disinfection	G									I	U						I	U						I	U							
Metering	G									I	U						I	U						I	U							
Billing and accounting	G									I	U						I	U						I	U							
Secondary distribution																																
Inter suburb trunk mains	G									I		C	L	P			I		C	L				I	U		L					
Local elevation to towers (where required)	G									I		C	L	P			I		C	L				I	U		L					
Local reservoirs	G									I		C	L	P			I		C	L				I	U		L					
Disinfection	G									I		C	L	P			I		C	L				I	U		L					
Tertiary distribution																																
Suburban mains	G									I			L	P			I		C	L				I	U		L					
Street mains	G									I			L	P			I		C	L				I	U		L					
Meters for individual stands (end users)	G									I			L	P			I		C	L				I	U		L					
Billing and accounting	G									I			L	P			I		C	L				I	U		L					

FUNCTIONS	ACCOUNTABILITIES																											
	Setting of service and quality standards							Achieving service and quality standards							Provide funding							Set tariff						
	G	R	I	U	C	L	P	G	R	I	U	C	L	P	G	R	I	U	C	L	P	G	R	I	U	C	L	P
SEWERAGE SYSTEM																												
Connection from individual stands	G			U						I			L				I			L				I			L	
Street sewers	G			U						I			L				I			L				I			L	
Interstreet sewers	G			U						I			L				I			L				I			L	
Inter suburb sewers	G			U						I			L				I			L							L	
Pumping of sewage where required	G			U						I	U	C	L				I	U	C					I	U	C	L	
Main outfall sewers	G									I	U	C					I	U	C					I	U	C		
Billing and accounting	G									I	U	C					I	U	C					I	U	C		
SEWAGE TREATMENT WORKS																												
Removal of solid matter	G									I	U	C					I	U	C					I	U	C		
Removal of organic matter	G									I	U	C					I	U	C					I	U	C		
Maturation and disinfection	G									I	U	C					I	U	C					I	U	C		
Discharge to river system	G									I	U	C					I	U	C					I	U	C		
Billing and accounting	G									I	U	C					I	U	C					I	U	C		
SOLID WASTE DISPOSAL																												
Primary collection																												
Container provision	G			U						I			L				I		C	L				I			L	
Transport to transfer site	G			U						I			L				I		C	L				I			L	
Billing and accounting	G			U						I			L				I		C	L				I			L	
Regional disposal																												
Container provision	G			U						I	U	C					I	U	C					I	U	C		
Transport to tip sites	G			U						I	U	C					I	U	C					I	U	C		
Landfill or alternative reuse options	G			U						I	U	C					I	U	C					I	U	C		
Billing and accounting	G			U						I	U	C					I	U	C					I	U	C		

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ATTACHMENT (1)
B. JACKSON

DEPARTMENT OF WATER AFFAIRS AND FORESTRY

PROPOSED
INSTITUTIONAL ARRANGEMENTS
FOR THE FUTURE
MANAGEMENT OF WATER
IN
SOUTH AFRICA

MAY 1992.

BMJ/REZ
14/5/92

Private Bag X313
PRETORIA
0001

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PRETORIA
0001

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2.0 SHARING OF WATER MANAGEMENT RESPONSIBILITIES

2.1 PRIMARY FUNCTIONS OF A NATIONAL (1st Tier) WATER MANAGEMENT AGENCY

(i) National Water Management Strategy

The custodianship, development, maintenance and dissemination of a National Water Management Strategy comprising overall objectives, basic philosophies guiding principles and national policies for managing the nation's water resources in a professional and sustainable manner. The monitoring of the actions of other water agencies to ensure compatibility between conditions prevailing throughout South Africa, the measures adopted by water managers to cope with such conditions and the content of the Strategy.

(ii) International Water Relations

The negotiation of international treaties and arrangements pertaining to the joint development and management of common water resources, and the design of management systems for international catchments.

(iii) Inter-regional Water Resource Planning and Development

The planning and development of inter-regional water schemes which have water-related impacts extending beyond the borders of the beneficiary regions.

(iv) National Water Legislation

The custodianship and maintenance of national water legislation and associated regulations.

(v) Operation of Multi-regional and International Water Schemes.

The operation of certain water schemes which serve more than one region, or which are the product of international treaties on water resource development and management. This task can be readily sub-contracted to the private sector or to second and third tier government structures, although ultimate responsibility for the operation of the scheme will always rest with

the National Water Management Agency.

(vi)
(iv)

Inter-regional Conflict Resolutions

The anticipation, avoidance and resolution of inter-regional conflicts over water.

(vii) Long-term National Planning

Long-term planning to ensure the reconciliation of water supply and projected water demand at a national level.

(viii) Establishment of Catchment-Based Organisations

The establishment of catchment-based organisations, which may transcend Second Tier Government boundaries, to oversee the management of water resources in problem catchments and to advise First Tier Government of any catchment-specific measures which need to be adopted in the interests of holistic resource management. Such measures might include determining water quality criteria, control of land-use, apportionment of water and the management of inter-sectoral conflicts.

(ix) National Consumer Communication

The dissemination of information to the general public at a national level on relevant water topics, and the promotion of education of all sectors of society on issues such as available water supply and demand projections and the importance of using water judiciously with the minimum waste and contamination.

(x) National Water Information System

The development and maintenance of a comprehensive and up-to-date national water information system detailing all relevant aspects of the occurrence, availability, quality of, and demand for, water in South Africa.

(xi) National Consumer Protection Programme

The design and implementation of, and regular public reporting on, a programme to protect the water-related interests of water-users throughout the country. Such a programme might encompass monitoring the design of water works to ensure functionality and appropriateness, investigating the safety of dams, assessing compliance with national water quality criteria, maintaining acceptable assurances of supply, determining the adequacy of water supply and sanitation services, and the fairness and proper disclosure of service

payment systems.

- (xii) Assume Ultimate Responsibility for Water Management and Water Supply.

On instruction from First Tier Government, take on the water management (including any water supply) functions of Second Tier Government, where these are not being performed.

- (xiii) Administer State Funding Assistance

Administer State assistance for the funding of regional and local water works according to the criteria laid down by First Tier Government. This includes the allocation of subsidies and loans at preferential interest rates to qualifying communities and water agencies for essential works.

- (xiv) General Responsibilities

Perform any water-related task which by virtue of its spatial extent, complexity or magnitude cannot be undertaken at a regional level.

4.0 WATER SUPPLY AND SANITATION IN DEVELOPING AREAS

4.1 INTRODUCTION

The establishment of institutional structures for WSS in developing areas should in the "ideal" situation occur

- (i) in a sector built up and supported by government for this purpose and
- (ii) within a holistic development strategy.

In this "WSS sector" ideally the government, external support agencies (ESA's) and non-governmental bodies (NGO's) have developed coordinated plans to establish WSS in developing areas. It is in fact the policy of the WSS Collaborative Council that ESA's should work closely with governments as part of any "strategy" to establish sustainable WSS development. Appropriate government involvement is seen as a key success factor in development work.

This ideal condition described above does not exist as yet in SA. There are many factors that make the successful implementation of WSS programs difficult. There is above all a mistrust of government intentions if any program is initiated by them. However, the need for basic services is very great. Thus the approach in institutional arrangements have to be flexible enough to cater for complex changing circumstances but at the same time begin to address urgent needs in a pragmatic but not necessarily unsustainable fashion. It must be emphasized that the initial institutional arrangements to be described will not necessarily be started by government but that the latter should rather provide the climate within which they can develop.

International experience shows that for long term success to be achieved in such non-ideal situations, i.e. in the interim phase before the above ideal situation is attained, there have to be two main ingredients. The one is that health education, and at the very minimum hygiene education, has to be included in a WSS program. Secondly that there should be an underlying process of "capacity building", particularly within the developing community initiated by the "lead" organization (the "lead" organization is the driving force in a programme). Such a lead organization can arise out of the formal/informal or private/public sphere. It usually sees its role as that of a channel for training, funding and expertise to the community as well as the agent for community participation and management.

Successful capacity building has in fact two inseparable

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components viz. human resource development and the development of institutional structures.

4.2 HUMAN RESOURCE DEVELOPMENT

At the community level the aim of human resource development would be essentially to enable the community to sustain their WSS service. The education and training would thus range in scope from basics of water supply to book keeping skills. At the government level human resource development would imply an orientation of those who are in positions effecting WSS in developing areas, towards creating the climate for the PROMOTION, as opposed to provision, of services. With respect to the NGO's and the ESA's the need would be to develop a view towards more coordination and cooperation between themselves and the governing bodies.

Currently the WSS sector is far from ideal with all the important role players, i.e. government, ESA's, NGO's, water committees, etc all operating with various degrees of independence and according to many uncoordinated plans. It will be the task of the committee to start the process whereby the appropriate skills, aptitudes and attitudes for each role will be developed.

4.3 INSTITUTIONAL ARRANGEMENTS

The "conceptual model" for institutional arrangements in the interim phase, bearing in mind the ideal, will have three main groups of role players. One group will consist of the main WSS sector members viz. the government, NGO's and the ESA's and as the emphasis in the ideal is on the key position of the government, this group will be called "Government". The second group are those who need WSS service, i.e. the "Community" and the third are those who are going to provide the communication "bridge" between the first two, i.e. the "Facilitators".

As the institutions currently are not in their ideal roles, the development of institutional structures in the interim phase must be such that the following is in place:

- (i) A government that accepts the responsibility of establishing the enabling environment for WSS in developing areas for project success and sustainability. This includes encouraging private sector involvement in the extension (outreach) function, supply of physical infrastructure, training, maintenance, etc. It involves also coordination with ESA's, particularly funding organisations, in the controlled deployment of funding to minimise market distortions which is particularly counter productive with respect to full/ partial cost

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recovery and sustainability.

It has been proposed in the DWA Draft Policy that on the government side an "Interdepartmental Task Group (ITG)" should be formed to "determine policy, advise government and monitor the water supply and sanitation problem and the progress made towards its alleviation". It has also been envisaged that an "independent national development organisation" (INDO) would be formed to represent the interest of non-governmental bodies and through which funding can be channelled to the Community. The ITG and the INDO would then together develop guidelines and procedures for the development of WSS programs.

(ii) Facilitative mechanisms between the government and the community

The role of the Facilitator would be to essentially ensure that at the end of the day that WSS projects are implemented if necessary and if they are implemented, that they are sustainable. The long term goal of the Facilitator is to develop the Community up to a point where it can be incorporated into normal local government.

Facilitative mechanisms in SA will have two major dimensions.

Firstly on a national scale where a body (WSS Steering Committee, or WSSSC, for want of a name) will have to be created to a) get the capacity building exercise off the ground and b) to subsequently act as a watchdog. The first function entails on the one hand to establish/create contact areas in government so that the enabling climate can be encouraged or strengthened; and on the other hand set the scene for the emergence of organizations that would provide an extension type service to developing communities. The second function will be to ensure that the process of sector development is maintained and that the extension bodies are keeping to approaches that have proven to be successful and sustainable. The DWA Draft Policy proposes also that a national strategy must have a monitoring and assessment component to ensure standards are adhered to.

Secondly at the community level the main facilitative function would be carried out by the extension body/ service or extension services established that would bridge the gap between government bodies and the community. It should be noted that whereas the extension body must

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interact directly with the community, its link to Government on the other hand might not be so clearly defined.

As the WSS sector and the community at a specific site are at their own level of development, the Facilitator should in the final analysis match a particular situation with the appropriate WSS program.

- (iii) A community management structure that will maintain the development momentum; if not possible at least the physical infrastructure that has been put in place.

The role of the community would be to express needs/ demand as coherently and clearly as possible to determine in conjunction with field officers what the most sustainable system would be. With time it will progressively take on the responsibilities of planning and operational management.

4.4 THE EXTENSION SERVICE

The extension service, once it has been identified would help develop the institutional structure at community level. The focus of the extension service must be placed on the key role played by the field officer or team that has direct contact with a community. The title field officer might not do justice to the key role that this office has. In general terms he must not just be a technocrat but should also be able to relate to people and understand how a community functions. He should rather be called a development officer. The extension service should extend beyond the implementation phase to deal with the O&M aspects.

In general the approach to be taken by the development officer would be to assess the level of demand for service, the level of real need, the ability to pay, etc. by initiating discussions with community representatives or even lobbyists within the community.

4.5 SUSTAINABILITY

Sustainability implies essentially that at least the minimum level of service aimed for and agreed upon continues to exist. The sophistication of the service would probably be required to rise in tandem with the development of the community. A drop below the minimum level of service might mean accelerated decline which would be difficult to arrest. The possibility of statutory/ contractual accountability for a decline below a minimum standard should probably be investigated.

- end -

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