

Water, Sanitation and Health

The Development of the Environmental Services in Four South African Cities, 1840–1920



Harri Mäki

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Man is born to thrive with pure air to breathe, pure water to drink, and a pure soil to live on. The impurities which tend to render air, water, and soil unfavourable for his best development are the product of his own life. The removal of the source of this impurity must be effected by his own act.

Certain diseases to which he is subject, and which tend to spread through the race by contagion or infection, it is within his power to control.

(John Fletcher, the Borough Engineer of Durban, in the Report on the Sewerage of the Borough of Durban, Natal, January 1891, 62–63. CSO, 1296, 1891/2422, NAB.)

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The Development of the Environmental Services in Four South African Cities, 1840–1920

Keywords:

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Front cover photo: Cape Town from Table Mountain cable car (Petri Juuti).

Back cover photos: Grey Reservoir (Harri Mäki).

Pool over old reservoir in Durban Botanic Gradens (Petri Juuti).

Zuurbekom pumping station (Petri Juuti)

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Contents

List of Figures	x
List of Pictures	x
List of Tables	xi
Terminology	xii
1. Introduction	1
1.1 The Relevance of Water	1
1.2 Research Questions, Problem Setting, and Sources	4
1.3 The Relevance of Environmental and Water History Research	10
2. South Africa's Early Cities	15
2.1 South Africa in the 19th Century	15
2.2 Urbanization, the Local Government, and Public Health	22
2.3 Case Cities	30
2.3.1 Early Cape Town	30
2.3.2 The Birth of Grahamstown Municipality	37
2.3.3 Early Durban	40
2.3.4 The Birth of Johannesburg in 1886	42
2.4 The Early Development of South African Cities	49
3. Water Supply	50
3.1 Cape Town	50
3.1.1 The Situation in Cape Town from the 1840s to the 1870s	50
3.1.2 More and More Water from Table Mountain	56
3.1.3 The Search for New Solutions	66
3.1.4 Towards Municipal Unification	75
3.1.5 Steenbras Selected as a New Water Source	83
3.1.6 From Oranjezicht to Steenbras	88
3.2 Grahamstown	91
3.2.1 The First Water Pipes	91
3.2.2 The Building of Reservoirs	96
3.2.3 Water Supply in the Early 20th Century	107
3.2.4 Municipal Finance Dictate the Way Forward	115

3.3 Durban	118
3.3.1 Water Supply from the 1850s to Currie’s Fountain in 1879	118
3.3.2 The Era of Improvements	123
3.3.3 The Demands of Population Growth after the South African War	129
3.3.4 Water from Wells and Rivers	135
3.4 Johannesburg	137
3.4.1 The Water Supply Concession	137
3.4.2 Barnato and the Competitors	144
3.4.3 The Early 1890s and Droughts	158
3.4.4 The Creation of the Municipality	169
3.4.5 The Time of the Rand Water Board	178
3.4.6 Water Supply without Municipal Control	189
3.5 Key Findings concerning Water Supply	191
4. Sanitation and Sewerage	202
4.1 Cape Town	202
4.1.1 Sanitary Conditions in the mid-19th Century	202
4.1.2 Sanitary Reform	208
4.1.3 Drainage and Sewerage	213
4.1.4 Housing and Conditions in the Early 20th Century	222
4.1.5 Sanitary Reform for Whites	226
4.2 Grahamstown	228
4.2.1 Cesspools and Health	228
4.2.2 Improvements in Sanitation after 1897	231
4.2.3 Discussions about Locations and Sanitation	236
4.2.4 Money and Sanitation	240
4.3 Durban	242
4.3.1 The Drainage of the Town Area	242
4.3.2 Sewerage and Lavatories	247
4.3.3 Durban in the 1900s and 1910s	253
4.3.4 When the Drainage is done	255
4.4 Johannesburg	257
4.4.1 Early Sanitary Arrangements	257
4.4.2 The Sanitary Situation after the South African War	263
4.4.3 Development after 1903	269
4.4.4 The Rapid Increase of Population and Sanitary Problems	276
4.5 Key Findings concerning Sanitation	278

5. Health	284
5.1 Epidemics	284
5.2 Public Health	296
5.3 Health, Water Supply, and Sanitation Hand-in-hand	302
6. Water Supply and Sanitation Drives Environmental Health	304
6.1 The Development of the Water Supply in South Africa	304
6.2 The Development of Water Supply and Sanitation in the Case Cities	305
6.3 Main Drivers for the Development	310
6.3.1 Population Growth	310
6.3.2 Municipal Finance	311
6.3.3 Racial Attitudes	311
6.3.4 The Role of Experts	312
6.3.5 Infrastructure Building	314
6.3.6 Hygienic Revolution and South Africa	315
6.3.7 Public-Private Consideration	316
6.3.8 The Lack of Good Governance	317
6.4 Further Research	318
6.5 Water and South Africa	319
References	320

List of Figures

Figure 1.1.	The case cities and some other cities mentioned in text	5
Figure 1.2.	The populations of case cities from 1840–1920	8
Figure 2.1.	South Africa in 1885	17
Figure 2.2.	The distribution of urban population in 1904	23
Figure 2.3.	The plan of Grahamstown in 1824	38
Figure 2.4.	The plan of Port Natal in 1852	41
Figure 2.5.	Farms, streams and mining camps of the Witwatersrand area	44
Figure 3.1.	The plan of Cape Town in 1854	52
Figure 3.2.	Plan of Cape Town in 1881	59
Figure 3.3.	Table Mountain water supply system in 1890–1904	63
Figure 3.4.	Cape Town water storage schemes in the early 20th century	73
Figure 3.5.	Suggested schemes for the Cape Peninsula water supply	74
Figure 3.6.	Proposed Table Mountain schemes	77
Figure 3.7.	Cape Peninsula municipalities in 1913	82
Figure 3.8.	Map of Grahamstown in 1870	101
Figure 3.9.	Sketch plan of reservoirs at Slaai Kraal	106
Figure 3.10.	The plan of Grahamstown in 1909	108
Figure 3.11.	The plan of the Natal Botanic Gardens	122
Figure 3.12.	Durban Corporation Waterworks in 1925	131
Figure 3.13.	The plan of Durban in 1911	133
Figure 3.14.	The plan of eastern part of central Johannesburg	145
Figure 3.15.	Plan for the Klip River Scheme, 1889	147
Figure 3.16.	The supply area of the Waterworks Company in 1892	153
Figure 3.17.	Braamfontein water sources	157
Figure 3.18.	Johannesburg and its suburbs in 1890–1914	159
Figure 3.19.	Reticulation network of the Waterworks Company in 1894	164
Figure 3.20.	Boundaries of Johannesburg from 1901–1930	175
Figure 3.21.	Area served by the Rand Water Board in 1930	188
Figure 4.1.	Sewerage and sewage disposal plan for Cape Town in 1891	218
Figure 4.2.	Irrigation area for the sewerage	219
Figure 4.3.	The reconstruction of the early site of Durban	243
Figure 4.4.	Area proposed to be sewered in Durban in 1891	249
Figure 4.5.	Drainage areas of Durban	250
Figure 4.6.	Native Location and surrounding areas	263

List of Pictures

Picture 2.1.	Hurling Swaai Pump	36
Picture 2.2.	Hurling Swaai Pump in 2007	36

Picture 2.3.	Tank and pump by the Drosty Gate	39
Picture 2.4.	Ferreira's Camp in 1886	43
Picture 3.1.	Platteklip filter bed	54
Picture 3.2.	Labourers laying pipe-line on Table Mountain	61
Picture 3.3.	Building of Steenbras Dam	87
Picture 3.4.	Table Mountain Reservoirs	89
Picture 3.5.	Grahamstown in 1842	94
Picture 3.6.	Grey Reservoir in the 1880	97
Picture 3.7.	Grey Reservoir in 2007	98
Picture 3.8.	Old rivers are today used as gutters	110
Picture 3.9.	Grahamstown in 1846	116
Picture 3.10.	Place of the original well in the Garrison area	119
Picture 3.11.	Umbilo filter construction site	125
Picture 3.12.	Camperdown dam	130
Picture 3.13.	William Henry Miles	139
Picture 3.14.	Charles Aburrow	139
Picture 3.15.	Saratoga Avenue Reservoir	143
Picture 3.16.	Business centre of Johannesburg in 1889	150
Picture 3.17.	Selling water from water-cart in 1896	166
Picture 3.18.	Old pump house at Zuurbekom	180
Picture 3.19.	Old well in Zwartkopjes area	186
Picture 4.1.	Coffee Lane on the waterfront	204
Picture 4.2.	Dr. A. John Gregory inspecting old stormwater sewer	223
Picture 4.3.	Native huts in location	229
Picture 4.4.	High Street from the Railway Station	233
Picture 4.5.	John Fletcher	248
Picture 4.6.	Brickfields	261
Picture 4.7.	House from cardboard boxes in slum yard in 1903	267
Picture 5.1.	Dr. A. Jasper Anderson	290
Picture 5.2.	Burning of the Indian Location 1904	293
Picture 5.3.	Dr. Charles Porter	300
Picture 6.1.	Settlement near Zuurbekom pumping station in Johannesburg	318

List of Tables

Table 1.	The brief overview of historical events, 1795–1910	21
Table 2.	Public health officials and laws, 1874–1919	29
Table 3.	The major episodes of water supply, 1836–1919	192
Table 4.	The development of reservoirs and water schemes, 1836–1917	198
Table 5.	The development of sanitation and sewerage, 1836–1918	279
Table 6.	Epidemics and the public health administration 1836–1919	302
Table 7.	The milestones of the development in case cities	309

Terminology

I have used terms such as “African”, “Black”, “Coloured”, and “White” in this research. They are used only as ethnic labels and racialised categories. I have tried to avoid using terms that would be obviously more offensive in current times. Unfortunately, you cannot avoid terms like “Native” or “Kaffir” when using direct citations from the original sources.

I have also used local South African terms that are probably unknown to readers outside South Africa. Those terms I have explained in the reference, when the term occurs for the first time in the text. In the same way, I have explained in the references some of the technological and medical terms.

1. Introduction

1.1 The Relevance of Water

According to Kofi Annan, the former General Secretary of the United Nations, the shortage of clean drinking water and shortages in sanitation were the most serious immediate challenges in the world at the turn of the millennia.¹ Water supply and sanitation are vital services. Although mainly invisible, they form a vital part of the socio-economic and technological infrastructure of a community. Effective environmental services are essential to ensure public health, hygiene, the protection of the environment, and sustainable industry. Water supply and sanitation, sewerage, and waste management are also key issues in environmental history. Looking at these services in a historical context can provide new ideas for dealing with contemporary problems caused by increasing demands due to rising expectations of living standards and growing populations.

Water supply, sewerage, and waste management are essential elements in strategies to promote the development of communities. Collectively these are called environmental services. These services promise direct and indirect benefits. The concrete infrastructure is the basis for economic and social systems, which can be vulnerable to environmental changes. The success of urbanization and the modernization of rural areas are closely connected. It is important to find solutions to prevalent environmental problems in both spatial contexts before sustainable development can be successful in the area of service supply and delivery. Environmental considerations should be a priority. For the responsible authorities it would be wisest to invest in a water supply and sanitation infrastructure. As Marjatta Hietala concluded in her research about the diffusion of innovations in German cities from the final decades of the 19th century to the 1910s, “the development of services is connected in different ways with the municipal decision-makers’ attitudes and their estimations of the need of services, as well as with their willingness to pay adequate attention to some service sectors and their ability to adopt the latest innovations”.²

¹ Annan 2000, 60. [<http://www.unmillenniumproject.org/documents/wethepeople.pdf>], visited 4 Oct. 2007.

² Hietala 1987, 407.

South Africa suffers severe water shortages; the annual rainfall varies between 100 to 2,000 millimetres. Some 65 per cent of its territory does not receive enough rainfall for successful dry-land farming. In order to maximize the benefits of the existing supplies South Africa is rationalizing the distribution of a significant part of its total water resources. In the important Vaal River catchment area, which supplies the heartland of South Africa's manufacturing, mining, and power industries, the critical limits of the natural run-off had already been reached in the 1980s and thus massive interbasin transfer schemes from other regions in South Africa, as well as from the neighbouring country of Lesotho, had to be implemented.³ The utilization rates for groundwater and surface water are respectively 60 per cent and 29 per cent of the sustainable maximum. About 20 per cent of all the water is derived from groundwater. Wells and boreholes form the backbone of rural water supply; there are more than 225,000 boreholes in the national South African groundwater database, which only reflects a fraction of the total.⁴

Some two-thirds of South Africa's surface area depends primarily on groundwater due to the lack of perennial streams.⁵ To overcome the problem of variable river flows, many large storage dams have been built. Dams experience high evaporation rates, further reducing available water, as do commercial afforestation and sugarcane farming. In 2001, the government started the *Free Basic Water* policy. By February 2005, c. 31 million people were said to have access to free clean drinking water.⁶ The backlog in supplying people with access to safe drinking water is a national priority and scheduled to be eliminated in 2008.⁷

The introduction and augmentation of water supply and sanitary reform were amongst the most important municipal issues in 1840–1920 in South Africa. During this time period there was also going on the hygienic revolution in Europe. This revolution also reached South Africa but it never succeeded there at the same level as in Europe, in North America or in Australia. Since South Africa is a part of the same cultural area as Great Britain where the revolution originated, it was thought important to research the reasons for this. In this study, the focus is the development in the four case cities, Cape Town, Grahamstown, Durban, and Johannesburg. The study is structured so that first the development of water supply and then the development of sanitation is described city by

³ Haarhoff & Tempelhoff 2004.

⁴ About the history of wells and toilets in South Africa, see Haarhoff, Juuti & Mäki 2006.

⁵ Department of Water Affairs and Forestry. Directorate: Geohydrology. [<http://www.dwaf.gov.za/Geohydrology/Databases/databases.htm>], visited 6 Feb. 2007.

⁶ Pocket Guide to South Africa 2005, 154–155. [<http://www.gcis.gov.za/docs/publications/pocketguide05.htm>], visited 6 Feb. 2007.

⁷ South Africa Yearbook 2005/2006, 639. [<http://www.gcis.gov.za/docs/publications/yearbook.htm>], visited 6 Feb. 2007.

city. After this, there is an examination of the public health issues at a more general level. This structure makes the study a somewhat repetitive but considering the scope of the research this was seen as the only reasonable way to write the study.

The term *governance*⁸ deals with the processes and systems by which an organization or society operates; the word comes from Latin and suggests the notion of steering. This steering of society can be compared with the traditional approach of the governments driving society. The term **good governance** defines an ideal, which is very difficult to achieve.

There are some principles that should be included in good governance.

- Institutions should work in an open and transparent manner.
- Institutions should be inclusive and communicative.
- Policies and action must be coherent.
- Governance systems must be equitable.
- Accountability is critical to good governance.
- Governance systems must be efficient.
- Governance systems must be responsive and sustainable.

The key elements of good governance are participatory democracy and transparency. The traditional top-down approach where initiatives come from up and go down in organizations is outdated; now the goal is a bottom-up approach where people and groups at “grass roots” level have a say in decision making. It means that results produced by institutions meet the needs of society while making the best use of available resources. The concept of efficiency in the context of good governance also encompasses the sustainable use of natural resources and the protection of the environment. Participation by all the stakeholders is the one of the cornerstones of good governance. Recent developments in the field of water supply and sanitation (WSS) management have had a profound impact on the development of the local government strategies in municipalities. It also had a marked effect on the transformation of the economy and society on the local, regional, and national levels.⁹

⁸ For a comprehensive discussion on all the aspects of governance, see Pierre 2000; about governance especially in connection with water and South Africa, see Turton e.a. 2007.

⁹ See Juuti e.a. 2007b.

1.2 Research Questions, Problem Setting, and Sources

Research Questions

The research objective of this study is to determine how water-related problems were solved and how the water management strategies evolved in four South African cities c. 1840–1920. The cities of Johannesburg, Cape Town, Grahamstown and Durban (see figure 1.1) were selected for the purposes of this investigation. Johannesburg is examined more thoroughly because attention is focused from an early period, when it was a ramshackle gold mining settlement. In other cases, the starting point is from the time when the local government structures (municipal government) were introduced. In Grahamstown, this happened in 1836, in Cape Town in 1840, and in Durban 1854. Particular attention is then given to the manner in which the local government took up the responsibility to provide water supply and sanitation services.¹⁰

In this research, I study the development of services relating to water supply and sanitation; the diverse patterns of governance; the access to clean drinking water in different parts of the cities; the different technological choices made by local authorities and their experts in the field of water supply and management; and the consequences of their choices. My purpose is to study the field of water supply and urbanization from the viewpoint of the environmental history at the same time trying to synthesise how the problems of water and the health were solved. Within this, I am also trying to illuminate the historical context of current ecological problems.

The main questions of this study will be: How were issues of water supply and sanitation (WSS) as well as that of governance addressed in these cities established in different times and in different environments? What were the effects of the decisions made on development and the environment? Wastewater management will be considered only when its decisions are essentially involved with decisions relating to the water supply. In the section on water management, I examine the question that is still today critical in many developing countries, namely: Should water supply and management be a private or public enterprise?¹¹ There are examples of both approaches in the four cities that form the focus of this study. Why, for example, did Johannesburg end up with a partially private company? What effect did these decisions have in later years?

¹⁰ The Cape Colony followed closely developments in Great Britain, where municipal services in water supply were started in the 1830s. Hassan 1985, 532.

¹¹ See for instance Hukka & Katko 2003.

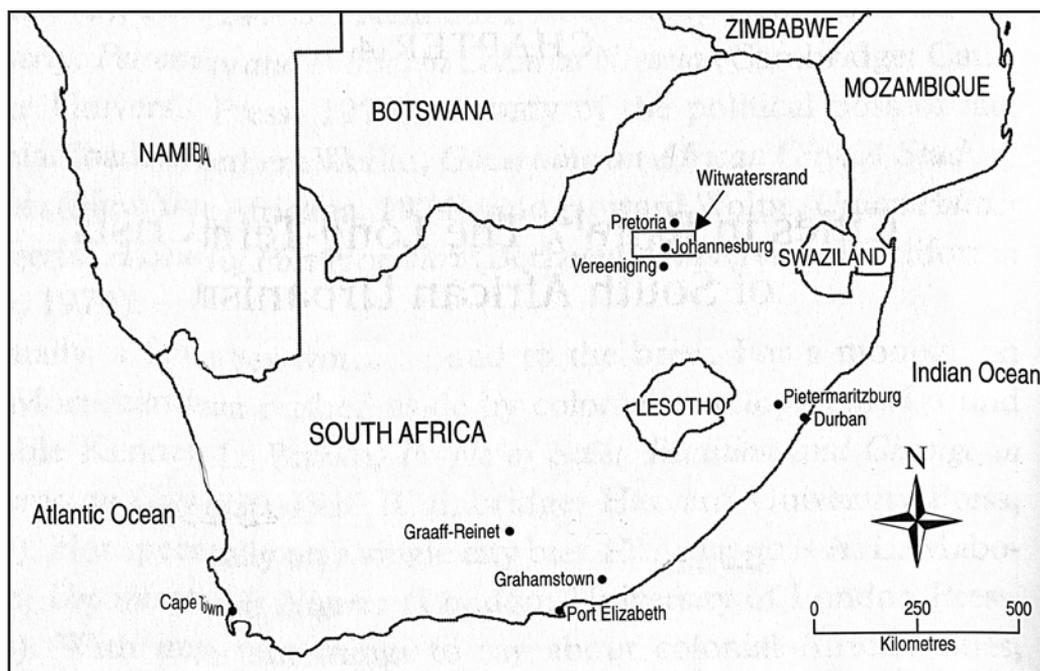


Figure 1.1. The case cities and some other cities mentioned in text.

What did urban administration as a whole try to achieve? Urban administrators attempted to reduce fire risks, improve health, supply clean water, and establish a financially effective administration. In conducting their work, local officials, together with their peers in the provincial and national government, sought to set up a framework for local administration. Amongst other things, they decided to delineate various groups within urban society. The objective was to segregate groups. These strategies were not an end in themselves, but should perhaps be seen as a means to simplify the task.

The examination of the race question and its effects would be a sub-field of its own. You cannot do this kind of research without dealing with racial issues. It, however, should be stressed that I am not researching the race question or the segregationist policies in these four urban settlements. I am more interested in examining the race as but one, although important, component in the process of planning and executing the introduction of water supply and sanitation services.¹² Black townships were not governed – they were administrated. This means that an administrator who was in charge of the location or township had no responsibility towards the inhabitants or their well-being. In such matters as water supply, sewerage disposal, and parks and recreation, the local authority, the Town Council, or the municipality administered the majority of the non-white South African town dwellers from the earliest years of the 20th century. Indeed the “sanitary”

¹² For views on the urbanization of Blacks in South Africa, see Hyman 1971.

theme in the growth of townships has always been present; more than one township was placed on the site of a sewerage farm, while one of the most frequently given reasons for the creation of townships was that of disease prevention and cleanliness. This element of “caste-ism” in the segregation of the non-whites and whites is reinforced by the absence of the answerability of the administering body to those it administers.¹³

The issue of race is the most visible in health questions. Local governments regularly encountered serious epidemics. Usually they were primarily concerned with the effects of epidemics on the White inhabitants. During the 19th and early 20th centuries, the Africans were considered the carriers of disease. This perception was then used as a major reason to justify the policy of segregation. Diseases, however, did not follow racial or class divisions. Because of this, the conclusion was that to protect Whites they also had to take, at least minimal, care of the health of the Africans. This required delivery of clean drinking water to all the inhabitants.¹⁴ This problem is still partly unsolved. There still are cholera outbreaks in South Africa; for instance 2000–2001 in Kwazulu-Natal and 2003–2004 in Mpumalanga.¹⁵ What was the impact of these problems on building the infrastructure for water distribution? What was the impact for the city infrastructure?

One key concept used is Maynard Swanson’s “sanitation syndrome”. It equates “black urban settlement, labour and living conditions with threats to public health and security” and “became fixed in the official mind, buttressed a desire to achieve positive social controls, and confirmed or rationalized white race prejudice with a popular imagery of medical menace”.¹⁶ This concept will help to understand the complex and biased state of affairs that prevailed in the towns studied.

Solutions to health problems were already available by the end of the 19th century. Technically, it was possible by 1900 for almost any town to be supplied with adequate quantities of clean, safe water. For some reason effective combative strategies were not implemented. Very little happened over several decades. It is important to consider why this happened. Was it because of the lack of resources? Was there some prohibiting factor in local conditions and environment? Were there perhaps some administrative reasons? Of course, the construction works required for building these utilities were very large and costly, requiring several years for planning and execution.

South African towns and cities had certain sanitary disadvantages when compared, for instance, with the English towns. The most critical issue is the low number of abundant water supplies. Great care was generally exercised in the selection of sites for towns. Meticulous attention was given to topography, soil and the availability of potential water

¹³ Bozzoli 1979, 8.

¹⁴ See for instance Vaughan 1991.

¹⁵ World Health Organization. [<http://www.who.int/csr/don/archive/country/zaf/en/>], visited 4 Sep. 2007.

¹⁶ Swanson 1977, 410.

supplies. Most founders of towns seem to have grasped the fact that water supply was important factor of town existence and growth. Good distribution, good terrain, ample water supply and convenient communication were four basic considerations in South African local and regional planning in the past. Johannesburg, of course, differs from other cases because of its birth as a mining camp. One peculiar aspect of South Africa is the importance of open reservoirs and dams for the water supply systems. The country is quite steep and the flow of the rivers intermittent, which means that if you are using surface waters you need storage space for water i.e. reservoirs and dams. Because of this importance, a considerable amount of space is given in this research to the development of these quite visible aspects of the supply system compared to some other aspects, like networks, pumps, water towers, filters, or water meters. Towns also experienced, with the growth of the African locations¹⁷, complexities and challenges to civic and public health issues. These were, as a rule, unique in comparison to other towns and cities in the British Empire.¹⁸

My hypothesis is that the answer for these questions would be found by examining a combination of the health, racial issues, and the local environment. The exact combination of these factors would vary according to the conditions in the different cities.

Case Cities

The case cities were selected because of their different spatial localities. If, for instance, average annual rainfall is considered, they fall in different categories, in order of descent: Durban, Johannesburg, Grahamstown and Cape Town.¹⁹ They also have diverse local ethnic compositions. Moreover, in historical terms they were subject to different systems of political governance in local, colonial, and national contexts. Cape Town is the oldest European-style urban node in South Africa. The first iron water pipes and taps were installed as early as 1811. Grahamstown was founded in 1812 as a military camp. Being situated inland, its problems with water differed from those in the Cape Town. Durban was established in 1824 as Port Natal in the eastern coast, where the acquisition of water was not a problem. Johannesburg is the youngest of the case cities. It suddenly sprung up in the South African Republic in the early 1880s. Its multi-cultural inhabitants and location, 70 kilometres, from the nearest major river, posed a unique challenge to water supply services. In three of these cities, population growth was remarkable. (See Figure 1.2) Cape Town had 28,400 inhabitants in 1865 and in 1920

¹⁷ In the Cape Colony, the term 'location' at first meant a rural settlement of Coloured or African people, situated on either Crown or private land.

¹⁸ See for instance Floyd 1960.

¹⁹ Lester e.a. 2000, 23, figure 2.5.

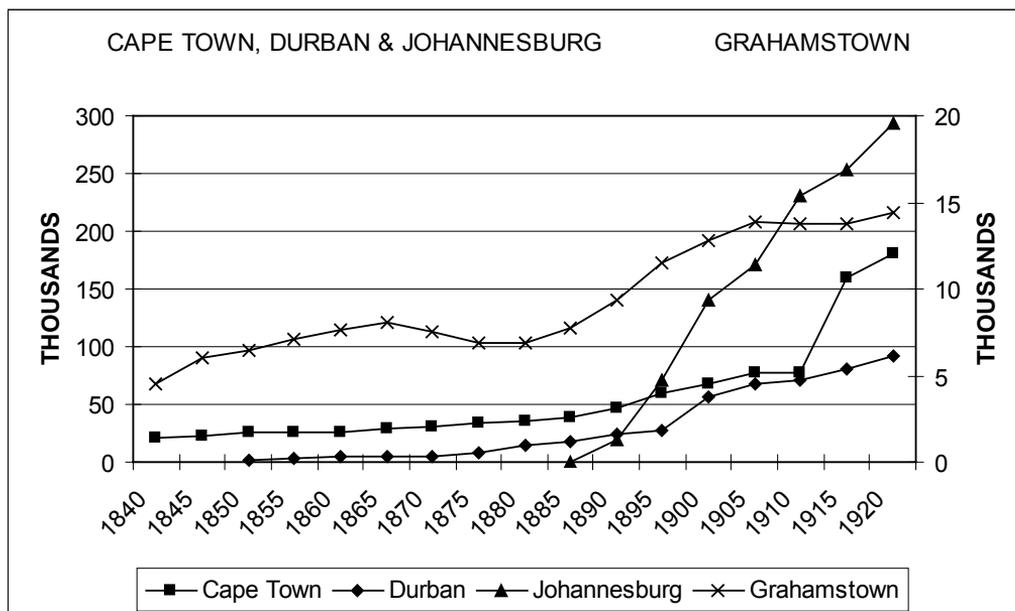


Figure 1.2. The populations of case cities from 1840–1920.

181,240.²⁰ Durban’s population in 1860 was c. 5,000, and by 1921, there were 146,300.²¹ Johannesburg had 15,000 inhabitants in 1889 and 288,100 in 1921.²² Grahamstown on the other hand remained a small town. It did not experience a rapid population growth like the other cities. In 1875, there were 6,900 inhabitants. By 1921, it had merely doubled to 14,900.²³ The level of racial segregation²⁴ also varied between the cities. Cape Town and Grahamstown were less rigidly segregated than the others; in Grahamstown, for instance there were no forced removals during the period of this research. In Durban, the Africans were from the early years placed under a form of control and supervision in barracks under a “togg” system.²⁵ It seems that Durban had the most developed form of administrative control over its African population. In Johannesburg from the early 20th century, black people were housed in town by their employers or in locations built outside town.²⁶ The plans for whites’ only zones in town centres were already being discussed in Durban in the 19th century and in Johannesburg the discussions started after the British takeover after the South African War.

²⁰ Worden e.a. 1998, 177; Bickford-Smith e.a. 1999, 71.

²¹ Kuper e.a. 1958, 53.

²² South Africa: Historical Demographical Data of the Urban Centers. [<http://www.library.uu.nl/wesp/populstat/Africa/safricat.htm>], visited 12 Jan. 2007.

²³ Ibid.

²⁴ With this, I mean the idea of keeping the town as Whites only zone.

²⁵ Under togg system, the Africans seeking day labour had to register and wear a badge. This was soon extended to include all the Africans present in Durban; On ‘togg’ system see Maharaj 1996, 592–593 and Popke 2003, 256–258.

²⁶ Lester 1996, 54–55; See also Maylam 1990.

This comparative study of how these cities solved their water supply and related environmental and health problems illustrates the working of municipal administrations and their abilities to respond to the needs of citizens in the battle against the problems of urbanization. In many Asian and African towns, they are still facing the same problems that the cities selected for this research experienced when they were building their water supply. Obviously today, South Africa is an advanced country when considering the effectiveness of water supply and the quality of water; you can drink tap water, which is not the case in most other countries.

Sources

The main sources for this research have been the materials produced by the municipal authorities of the selected urban centres, the provincial governments, and parliamentary reports. There is substantial information available in documents pertaining to various schemes, internal memoranda, council minutes, and annual reports. Published mayoral annual reports and council minutes contain the reports of the various municipal officers, such as the Town Engineer and the Medical Officer of Health. In these reports, there are numerous critical comments about the prevailing conditions. Another important source of information has been reports by various parliamentary committees. Committees had organized hearings about the matter in hand. Evidence given in these hearings, provides a clear impression of the contemporary public opinion on the state of, for instance, water supply, sanitation and public health. Obviously, it often is all too easy to make a connection between some committee report or scheme and the improvement of the situation happening at some later time. There might have been some other variables affecting the situation that need to be uncovered. Many of these sources may give a one-sided, particularly technical, description of the matter in hand, but they are still important for the creation of a general view. In some of them, you can hear the true contemporary voice. It is obvious that these documents were not meant to become public because so many unpleasant attitudes and viewpoints come clearly forward in them. This is not the case with memoirs and writings in newspapers. Although there are shortcomings, the available sources are sufficiently detailed for the purposes of the research in environmental history. There is ample information to construct a history of the development of environmental services and good governance in case cities.

To augment the available official sources I have used contemporary literature and newspapers. The newspapers were consulted, particularly for periods when conditions of crisis in the water supply were prevalent.

1.3 The Relevance of Environmental and Water History Research

Environmental and Water History

The core of environmental history could be said to be a deliberation on how people use and manage natural resources and the natural environment, at a specific time and place under specific circumstances. Methods, sources and focus may vary, but the essential element is the nexus between humanity and the environment interacting as partners in a distinctive historical context. Donald Worster, the influential proponent of environmental history, thinks that the “examination of changes in people’s attitudes towards the natural world have been amongst the most dramatic stories our field had described”.²⁷ William Beinart and Peter Coates call environmental history the series of “dialogues over time between people and the rest of nature, focusing on reciprocal impacts”.²⁸ Alfred Crosby, who argues that the natural world has to be included in historical explanation, underscores the thinking of nature as humanity’s collaborator in historical interaction.²⁹

Although environmental history is a relative newcomer to Southern African historiography, you could find some early references. P.J. van der Merwe examined in the 1930s and 1940s frontier subjects that are familiar to modern environmental historians.³⁰ Ahead of its time as an environmental history was *An Historical Geography of South Africa* by N.C. Pollock and Swanzie Agnew, dating back to the early 1960s.³¹ John D. Omer-Cooper used environmental issues as a factor in accounting for the Mfecane also during the 1960s.³² In the late 1970s and early 1980s, some social historians began to include environmental elements into their work. Jeff Guy used environmental arguments for the rise of the Zulu kingdom and Ian Phimister analysed the link between conservationism and development.³³ The works of Beinart, Peter Delius, Timothy Keegan, Jeff Peires and Kevin Shillington also include historical explorations of environmental issues.³⁴ During the 1990s and later, the most influential work has been published in specialist journals such as *Environmental History* and *Environment and History*. The *South African Historical Journal* and the *Journal of Southern African Studies* have published special

²⁷ Worster 1994, 2.

²⁸ Beinart & Coates 1995, 1.

²⁹ Crosby’s important works include *The Columbian Exchange: Biological and Cultural Consequences of 1492, 1972* and *Ecological Imperialism: The Biological Expansion of Europe, 900 to 1900, 1986*.

³⁰ Van der Merwe 1937, 1938 and 1945.

³¹ Pollock & Agnew 1963.

³² Omer-Cooper 1966.

³³ Guy 1980 and 1982; Phimister 1986.

³⁴ Beinart 1982; Beinart e.a. 1986; Delius 1983; Keegan 1986; Peires 1981; Shillington 1985.

issues and have regular environmental contributions.³⁵ There is also the *TD – The Journal for Transdisciplinary Research in South Africa*; a new journal that started in 2005 and has so far included environmentally related articles in every issue.³⁶ There have also been some influential article collections.³⁷

Detailed research concerning the history of water, or more specifically the history of water supply, is quite rare in South Africa. There is the history of Rand Water by Johann Tempelhoff³⁸; he has also published articles about the water supply of Witwatersrand area and the Vaal River.³⁹ W.N.K. Hickson has written a short book about history of water supply in Uitenhage.⁴⁰ Nancy Jacobs has done research about the history of Kuruman, in which both environmental issues and water are central.⁴¹ Besides these, there have been some articles in scientific journals.⁴² There is one doctoral thesis about the legal aspects of the history of the Rand Water Board and its predecessors in Johannesburg, one master's thesis about the early history of the water supply of Johannesburg, one master's thesis about the housing, water and sanitation in the lives of poor in Johannesburg, and one master's thesis about the history of the water supply of Cape Town.⁴³ There are, of course, other theses in which water and sanitation questions are given some prominence but are not the main field of research.⁴⁴

The general history of water supply and sanitation has been a widely published area of research in England and in the USA; books have been published since the 19th century.⁴⁵ The most prolific country in the research of specific issues about the history of water supply and sanitation has been the USA. Martin Melosi has researched the history of water supply, water protection and refuse disposal in society.⁴⁶ Joanne Goldman's subject was the development of New York's sewers.⁴⁷ In France Jean-Pierre Goubert examined the history of water and health.⁴⁸ In 1999, the researchers of water history established a society, the International Water History Association (IWHA).

³⁵ For instance *The Journal of Southern African Studies*, Vol. 26, 4/2000, Special Issue: African Environments: Past and Present.

³⁶ For instance Tempelhoff 2006, Tempelhoff, Munnik & Viljoen 2007, and Haarhoff, Juuti & Mäki 2006.

³⁷ For instance Dovers e.a. 2002 and Beinart & McGregor 2003.

³⁸ Tempelhoff 2003.

³⁹ For instance Tempelhoff 2000, 2001, 2006 and 2007.

⁴⁰ Hickson 1989.

⁴¹ Jacobs 2003.

⁴² For instance Bodill 1981–1982; Hunt 1976; Minnaar 1987; Wall 1983 and 1998.

⁴³ Ramsden 1985; Cosser 1990; Zangel 2004; Grant 1991.

⁴⁴ For instance Swanson 1964; Bjorvig 1979 and 1994; Gibbens 1982; Sellick 1983; Southey 1984; Torlesse 1993; Judges 1977; Whittingdale 1982; Appelgryn 1971; Potgieter 1975; Tankard 1990.

⁴⁵ For instance Cosgrove 1909; Draffin 1939; Robins 1946; Baker 1948; Blake 1956; Small 1974; Barty-King 1992; Trotter & Slack 2004.

⁴⁶ Melosi 2000 and 2005.

⁴⁷ Goldman 1997.

⁴⁸ Goubert 1989.

In Finland, quite a lot of research has been done over the last ten years. Tapio Katko from the Tampere University of Technology wrote in 1996 a study about the evolution of water supply and sanitation in Finland from the mid-1800s to 2000.⁴⁹ In 1999, a compilation of the research articles of the project dealing with the water history of Finnish towns was published.⁵⁰ Petri Juuti completed his doctoral thesis about the environmental history of the water supply of Tampere in 2001.⁵¹ In the same year, Simo Laakkonen's dissertation dealt with Helsinki and its marine environment.⁵² Rauno Lahtinen's doctoral thesis was published in 2005. It is an environmental history of Turku from 1890–1950.⁵³ In the same year, a research about the history of water supply in 13 countries and 29 cities in Europe was published.⁵⁴ In 2007, two article compilations about water and environmental history related to this research's thematic were published. *Environmental History of Water* was the result of co-operation between 33 researchers from 17 countries working on water histories in 23 different countries.⁵⁵ *Governance in Water Sector* was the result of a project funded by the Academy of Finland (project number 210816).⁵⁶ This thesis also forms a part of the last-mentioned multi-disciplinary Finnish project.

There has not been very much academic or scientific research on this subject area in South Africa.⁵⁷ I already mentioned few thesis and some research in previous page. Besides them there are many local histories of towns and cities in South Africa. Some are popular works, aimed at the lay reader.⁵⁸ Nevertheless, so far there are no scientific presentations about the history of a whole town. There is, however, very good research done according to the disciplinary tenets of historical studies about the various aspects of the city life, while water issues seldom form an integral part of these studies.⁵⁹ For example, on the history of Grahamstown there are a number of masters' theses done at Rhodes University between 1982 and 1993.⁶⁰ However, most histories are, in spite of their wealth of information, general presentations without any references.⁶¹

⁴⁹ Katko 1996.

⁵⁰ Laakkonen e.a. 1999.

⁵¹ Juuti 2001.

⁵² Laakkonen 2001.

⁵³ Lahtinen 2005.

⁵⁴ Juuti & Katko 2005.

⁵⁵ Juuti e.a. 2007a.

⁵⁶ Juuti e.a. 2007b.

⁵⁷ About urban history in South Africa, see Swanson 1969; Pirie 1985; Saunders 1992; Parnell & Mabin 1995; Maylam 1995; Parnell 1997; Freund 2005.

⁵⁸ For instance Shorten 1970; Shorten 1963; Slinger 1968.

⁵⁹ For instance Worden e.a. 1998; Bickford-Smith e.a. 1999; Van Onselen 2001; Smith 1976.

⁶⁰ Gibbens 1982; Sellick 1983; Southey 1984; Torlesse 1993; Also Hunt 1961.

⁶¹ For instance Leyds 1964; Shorten 1970; Shorten 1963; Slinger 1968; Thomson s.a.; Henderson 1904; Stark s.a.

Research Literature

In research literature, some works have been more important than the others. Considering Johannesburg the most important have been Johann Tempelhoff's *The Substance of Ubiquity* and John Shorten's *Johannesburg Saga*. Tempelhoff has meticulously researched the history of Rand Water (formerly Rand Water Board) and he also deals thoroughly with the early years of Johannesburg and the development of its water supply. From over 600 pages, around 100 are dealing with the same period as this research. This part is of course only a background for his main theme, the history of the Rand Water Board but it is still based on sound research and thorough knowledge of the subject. Shorten's book is a mine of information, some 400 pages cover the history of Johannesburg until 1966, there are a further 700 pages concerning various municipal departments and private companies. The drawback in this work is that there are no references and writer has only used second hand sources. There are also lots of mistakes in details.⁶² You should, however, not overlook this work when researching the early history of Johannesburg.

Concerning Cape Town, the main works have been an illustrated social history in two parts by Vivian Bickford-Smith, Elizabeth Van Heyningen and Nigel Worden and *Ethnic Pride and Racial Prejudice in Victorian Cape Town* by Vivian Bickford-Smith. *Illustrated Social History* is the best general level presentation on the history of Cape Town and is notable for its scientific standard. Nevertheless, it is a social history of Cape Town; it is not a comprehensive history or a history of Cape Town as a municipal entity. It concentrates on certain aspects of the history of Cape Town while only mentioning some others. In *Ethnic Pride* Bickford-Smith examines causes, contents and consequences of group identities and at the same time explores relationships between ethnicity and racism. The book is based on his doctoral thesis and is in my opinion the best research done concerning Cape Town. Bickford-Smith's arguments have had a deep influence on this work. Besides these, the various articles published in the seven-part *Studies in the History of Cape Town* have been central to my research. The articles in this series are based on the history workshops in the University of Cape Town and they include variety of topics. If read together with the previously mentioned books, a broad view about the Cape Town in the late 19th and early 20th centuries can be formed. In addition, concerning my research subject, I have to mention Duncan Grant's master's thesis *The Politics of Water Supply: the History of Cape Town's Water Supply 1840–1920*, which is so far the most comprehensive presentation on the subject. It deals with the role of water supply in municipal politics and the arguments presented are very convincing. Besides *Ethnic Pride*, it has been the most influential work contributing towards my arguments.

⁶² For critical estimates of Shorten's work see Appelgryn 1971, 2-3 and Potgieter 1975, ii.

For Grahamstown, I have relied mostly on a series of masters theses done at Rhodes University on the city's municipal history. Keith Hunt's, *The Development of Municipal Government in the Eastern Province of the Cape of Good Hope, with special reference to Grahamstown, 1827–1862*, was the first, completed in 1961. It was followed, two decades later by Melanie Gibbens' *Two Decades in the Life of a City: Grahamstown 1868–1882*, in 1982, Rose-Mary Sellick's *A Study in Local History: Grahamstown, 1883–1904*, in 1983 and Nicholas Southey's *A Period of Transition: a History of Grahamstown, 1902–1918*, in 1984. Finally, there is Ann Torlesse's *A History of Grahamstown, 1918–1945* completed in 1993. Each of these studies goes through the various aspects of the municipal history including water supply, sanitation and public health. They are notable for the fact that solid research is evident. Unfortunately, they are the only research there is considering the history of Grahamstown, especially from the municipal point of view.

The most detailed work on the municipal history of Durban is still W.P.M. Henderson's *Durban: Fifty Years' Municipal History*, dating back to 1904. Henderson was not a researcher but a Town Clerk at the time, however the work is based on original municipal sources and includes a lot of information that otherwise would have been probably lost. Besides this I have mostly relied on Rory Lynsky's *They Built a City: Durban City Engineer's Department 1882–1982*, published in 1982 and Anna Bjorvig's doctoral thesis *Durban 1824–1910: The Formation of a Settler Elite And Its Role in the Development of a Colonial City*, completed in 1994. As the name tells, Lynsky is relating the history of the municipal department that has dealt with many aspects of the city's engineering works including the water supply and sanitation. It again is not a historical research but a departmental history and Lynsky is relying on the same sources in early years as Henderson. The book contains, nevertheless, good information in easy reading format. Bjorvig researches the city rulers and their influence on the development of Durban. Already in her master's thesis, she was researching the development of the Town Council of Durban from 1854–1870. Together these two works give a comprehensive picture about the Durban in the late 19th century. Bjorvig also mentions the water supply and sanitary developments in these works.

2. South Africa's Early Cities

In the first part of this chapter, a brief overview of South African political history during the research period will be presented. Attention is also paid to three major themes, which are important to the research: urbanisation, the development of the local government, and the development of public health administration in South Africa. The main part of the section examines the development and the conditions of the four case cities before they achieved municipality status. Described are Cape Town's development from the beginning of the 19th century until 1840, and Grahamstown and Durban briefly from their establishment in 1812 and 1824 until the end 1830s and mid-1850s respectively. The early conditions of Johannesburg are explored more thoroughly from the discovery of the gold fields until the nomination of the Sanitary Board in 1887.

2.1 South Africa in the 19th Century¹

The British at the Cape

The British seized the Cape from the Dutch in 1795 to prevent it from falling into French hands, and then briefly relinquished it back to the Dutch during 1803–06. After seizing it again, the British attained the recognition of their sovereignty in 1815 at the Congress of Vienna. At that time, there was an established colony with 20,000 White colonists, 15,000 Khoisan, 25,000 slaves, and 1,000 freed Black slaves. Power resided with the White elite in Cape Town. Outside Cape Town and the immediate surroundings, isolated and nuclear communities of the Black and White pastoralists populated the hinterland.²

The British initially had little interest in the Cape Colony, other than it having a strategically located port – Cape Town. As one of their first tasks, they tried to resolve a border dispute between the Afrikaners and the Xhosa on the colony's eastern frontier. In 1820, the British authorities persuaded about 5,000 immigrants to leave England and

¹ For brief overview, see table 1 at the end of the sub-chapter.

² See for instance Freund 1979.

settle on land between the feuding communities. This plan was unsuccessful. Within three years, almost half of these 1820 settlers had retreated to the towns, notably the frontier military outpost, Grahamstown and the newly established port settlement of Port Elizabeth.³ While doing nothing to resolve the border dispute, this influx of settlers solidified the British presence in the area. Where the colonists of Dutch extraction together with their ideologies had before gone largely unchallenged, European Southern Africa now had two language groups and two cultures. A pattern soon emerged whereby English-speakers became highly urbanised while the majority of the Dutch were largely uneducated farmers. The gap between the British colonial government and these Dutch farmers further widened with the abolition of slavery in 1833.

The Voortrekkers and the Birth of Natal⁴

The Voortrekkers were a grouping of frontier farmers who had become increasingly dissatisfied with British rule in the Cape Colony. As of 1835, several trekking groups, together with the coloured servants, decided to trek into the interior in search of greater independence. North and East of the Orange River these Afrikaners, or Voortrekkers, found vast tracts of apparently uninhabited grazing lands. (See Figure 2.1) They had, it seemed to them, entered the Promised Land, with space enough for their sheep to graze and their culture of anti-urban independence to flourish. The Voortrekkers encountered little resistance from the scattered indigenous peoples who had no horses or firearms. This also reinforced their belief that European occupation meant the coming of civilisation to a savage land. However, the mountains where King Moshoeshe I had started to forge the Basotho nation and the wooded valleys of Zululand proved to be a more difficult proposition. Here the Voortrekkers met strong resistance, and their incursions set off a series of frontier wars and clashes. The historical landscape is littered with flimsy treaties that suggest attempts at increasing White domination.⁵

The trek of the Afrikaners first halted in the Highveld of the current Free State, where the trekkers established a republic. Following disagreements among their leadership, various groups split apart. While some headed north, most crossed the Drakensberg into Natal with the objective of establishing a republic. Since the Zulus controlled this territory, the Afrikaner leader, Piet Retief, paid a visit to King Dingane; the suspicious Zulu monarch had him, and a number of his followers killed. This killing triggered further attacks by Zulus on the Afrikaner population, and then revenge attack by the Afrikaners. The culmination came on the 16th December 1838, in the Battle of the Blood River.

³ See for instance Mostert 1992.

⁴ See for instance Walker 1948.

⁵ For a new interpretation of this time, see Etherington 2001.

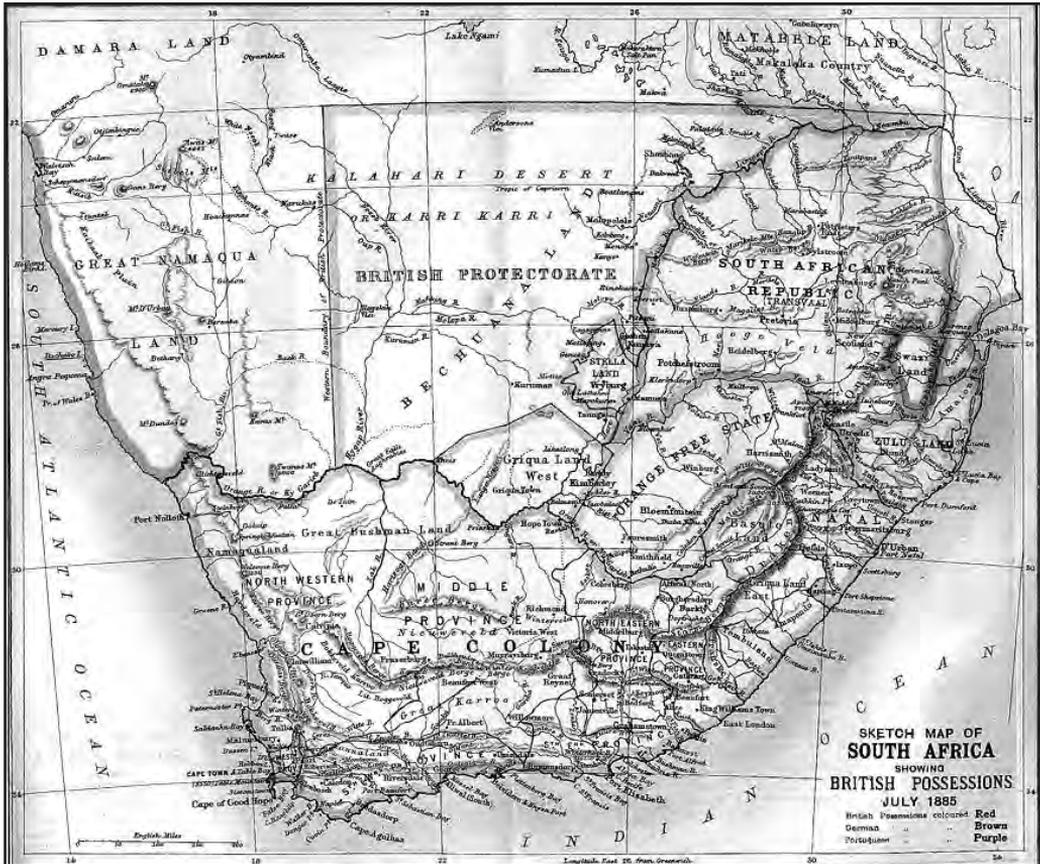


Figure 2.1. South Africa in 1885.

Although several Afrikaners suffered injuries, several thousand Zulus were killed. After this victory, which resulted from the possession of superior weapons, the Afrikaners felt that their expansion had the stamp of divine approval. Yet their hopes for establishing a Natal republic remained short-lived. The British annexed the area in 1843, and founded their new Natal colony at present-day Durban. Most of the Afrikaners, feeling increasingly squeezed between the British on one side and the Africans on the other, left the colony.

The British began establishing large sugar plantations in Natal, but found only a few inhabitants of the neighbouring Zulu areas willing to provide labour. The British turned to India to resolve their labour shortage, as Zulu men refused to adopt the servile position of labourers and in 1860, the first group of 300 people arrived. Over the next 50 years, 150,000 more indentured Indians arrived. They built the base for what became the largest Indian community outside of India. As early as 1893, when Mohandas Gandhi⁶ arrived in Durban, Indians outnumbered Whites in Natal. The British faced stiff resistance to their

⁶ 1869–1948. Indian leader. Worked in South Africa 1893–1914.

encroachments into the territories of the Zulus, a nation with well-established traditions of waging war, who inflicted a humiliating defeat on the British army at the Battle of Isandhlwana in 1879 by killing over 1,400 British soldiers.⁷

The Afrikaner Republics

The Afrikaners meanwhile persevered with their search for land and freedom, ultimately establishing themselves in the Transvaal and in the Orange Free State. (See Figure 2.1) For a while, it seemed that these republics would develop into stable states, despite having thinly spread populations, no industry, and minimal agriculture. The discovery of diamonds near Kimberley in 1867 turned the Afrikaners' world on its head. The first diamonds came from land belonging to the Griqua, but to which both the Transvaal and Orange Free State laid claim. Britain quickly stepped in and resolved the issue by annexing the area for itself. It was called Griqualand West. This discovery also stabilized the economy of the Cape Colony, which consequently achieved responsible government in 1872. Natal followed only in 1893. The sudden development of the Kimberley diamond fields unleashed a flood of European and Black labourers moving into the region. Towns and their inherent problems mushroomed. Their inhabitants were blind to what was popularly considered to be the "proper" separation between Whites and the non-Whites. The republican Afrikaners, particularly, expressed anger. They were aware that they had lost out on the economic benefits of the newly-formed mining industrial settlements.⁸

The Afrikaner resentment towards British, who had taken control in Transvaal in 1877, turned into a full-blown rebellion and the first Anglo-Boer War, known to the Afrikaners as the "War of Independence", broke out in 1880. The conflict ended almost as soon as it began with a crushing Afrikaner victory at the Battle of Majuba Hill. The republic regained its independence as the *Zuid-Afrikaansche Republiek* (South African Republic), or ZAR. Paul Kruger⁹, one of the leaders of the uprising, became the President of the ZAR in 1883. The war also sparked off a rapid awakening of Afrikaner nationalism in all the parts of what was later to become known as South Africa. Meanwhile, the British had to shelve their plans to federate Southern African colonies and republics. They had seen these plans as the best means of coming to terms with a white Afrikaner majority, as well as to promote their more ambitious strategic interests in the area.¹⁰

⁷ See for instance Brookes & Webb 1987 and Pachai 1979.

⁸ See for instance Worger 1987 and Turrell 1987.

⁹ 1825–1904. The President of the South African Republic 1883–1902.

¹⁰ See Schreuder 1980.

Inter-war Period

In 1879, Zululand came under British control. (See Figure 2.1) Then, in 1886, gold was discovered in the Witwatersrand, accelerating the federation process and in the process dealing the Afrikaners yet another blow. Johannesburg's population expanded to about 100,000 by the mid-1890s, and the ZAR suddenly found itself hosting thousands of *uitlanders*¹¹, both Black and White, with the Afrikaners squeezed to the sidelines. The influx of black labour in particular worried the Afrikaners, many of whom suffered economic hardship and resented the black wage earners. Farmers were also unable to compete effectively with the mines for labour they needed.

The enormous wealth of the mines, largely controlled by European "Randlords"¹², soon became irresistible for the British imperialists. In 1895, a group of renegades led by Dr. Leander Starr Jameson entered the ZAR with the intention of sparking an uprising on the Witwatersrand and installing a British government in the Transvaal Republic. This incursion became known as the Jameson Raid. The scheme ended in a fiasco, but it seemed obvious to Paul Kruger that it had at least the tacit approval of the Cape Colony government, and that his republic faced danger. He reacted by forming a formal alliance with the Orange Free State.¹³

South African War (1899–1902) and the Union in 1910

The situation reached boiling point in 1899, when the British government demanded voting rights in *Volksraad*¹⁴ elections for all the *uitlanders* that had been living in the Transvaal for five years. Up to that point, eligibility for voting rights came only after 14 years. There was a Second *Volksraad*, which empowered Uitlanders, especially in the issues of civic governance in the urban areas. The Government of Transvaal offered voting rights after seven years but this proved to be unacceptable to most of the British inhabitants in the mining industrial towns of the Transvaal. President Paul Kruger now called for the withdrawal of the British troops from the republic's borders. When the British refused, Kruger declared war. This South African War (1899–1902) lasted longer, and the British preparedness surpassed that of Majuba Hill. By June 1900, Pretoria, the last of the major Afrikaner towns, had surrendered. Yet resistance continued for two more years with guerrilla-style battles, which the British met in turn with scorched earth tactics. By 1902, almost 33,000 civilians, mostly Afrikaners, had died, primarily of

¹¹ Afrikaans "foreigner". The term used of all the foreign people coming to goldfields.

¹² The term used of the wealthiest mine owners.

¹³ See Pakenham 1960.

¹⁴ Literally 'Council of the Nation.' The name of the legislatures of the South African Republic and Orange Free State.

disease and neglect in concentration camps set up by the British to shorten the war. On 31st May 1902, a peace came with the signing of the Treaty of Vereeniging. Under its terms, the Afrikaner republics acknowledged the British sovereignty, while the British in turn committed themselves to the reconstruction of the areas under their control.¹⁵

During the immediate post-war years, the British focussed their attention on rebuilding the country, in particular the mining industry. By 1907, the mines of the Witwatersrand produced almost one-third of the world's annual gold production. However, the peace brought by the treaty remained fragile and was challenged from all sides. The Afrikaners found themselves in the ignominious position of poor farmers in a country where big mining ventures and foreign capital rendered them insignificant. Britain's unsuccessful attempts to anglicise them, and to impose English as the official language in schools and the workplace, particularly incensed them. Partly as a backlash to this, the Afrikaners came to see Dutch as a symbol of the Afrikaner nation. The system left Blacks, Coloureds, and Indians largely marginalised. The authorities imposed harsh taxes and reduced wages, while the British caretaker administration encouraged the immigration of thousands of Chinese workers to undermine any resistance.

The British meanwhile moved ahead with their plans for union. After several years of negotiations, the *Union South Africa Act* 1909 brought the colonies and former republics — Cape Colony, Natal, Transvaal, and Orange Free State — together as the Union of South Africa. Under the provisions of the act, the Union remained part of the British Empire. The British High Commission territories of Basutoland, Bechuanaland, Swaziland, and Rhodesia continued under direct rule from Britain.¹⁶ English and Dutch became the official languages. Despite a major campaign by Blacks and Coloureds, the franchise remained, as it had been in the pre-Union republics and colonies, Coloureds in Cape and Natal still had their limited franchise rights. However, only Whites could gain election to parliament.

¹⁵ See for instance Pakenham 1979 and Smith 1996.

¹⁶ See Thompson 1960.

Table 1. The brief overview of historical events, 1795–1910.

1795–1803	First British occupation of the Cape
1803–1806	Dutch Interregnum
1812	Establishment of Grahamstown
1820	Settlers come from England to the Eastern Cape
1824	Establishment of Port Natal/Durban
1833	Abolition of slavery
1835	Voortrekkers leave the Cape Colony
1836	Cape Municipal Ordinance
1838	Establishment of the Republic of Natal
1843	British annexation of Natal
1852	Independence of Transvaal recognized
1854	Independence of Orange Free State recognized; Natal Municipal Ordinance
1860	First Indians arrive to Natal
1867	Discovery of diamonds in Kimberley
1872	Responsible Government for the Cape Colony
1877	British took over Transvaal
1879	Zululand comes under the British control
1880-1881	Transvaal War of Independence
1883	Paul Kruger becomes the President of the ZAR
1886	Gold found in Witwatersrand; the establishment of Johannesburg
1893	Responsible Government for Natal
1895	The Jameson Raid
1899–1902	South African War
1910	Union of South Africa

2.2 Urbanization, Local Government, and Public Health

Urbanization and Water Supply

In South Africa, the growth of towns was a significant process during the late 19th century. When the British took over the Cape, only 14 urban centres existed -ten of them within 80 kilometres of Cape Town. By 1870, the number of urban centres in the Cape Colony had increased to 103. In Natal, there were 22 towns, villages and hamlets. This growth is mostly attributed to the establishment of service and administrative centres in the areas annexed. In the Orange Free State and the South African Republic, according to Fair and Browett, there were only few places that could be labelled as towns in the 1870s, as many administrative centres contained only half a dozen houses.¹⁷ In 1870, there were probably only three towns with populations over 10,000. By 1911, the number of such towns had increased to 21, ten of them in southern Transvaal. By 1911, the number of all towns had risen to 336. These towns housed a population of 1.5 million out of c. 6 million living in the area in 1911.¹⁸ By 1870 perhaps 30 per cent of the White population was urbanised, and c. 16 per cent of the total population. In 1904, 28 per cent of urban population lived in either Cape Town or Johannesburg.¹⁹ (See Figure 2.2) This kind of rapid population growth has also been causing problems in other parts of the world in the past as well as today.²⁰

Early water supplies to municipalities usually were taken from springs and boreholes. Some of the sources were large, like the springs in the Fountain Valley in Pretoria. When the population and industry grew, it became gradually necessary to embark on larger schemes and to go further to get more water. With the varying range of natural characteristics throughout the area, the problems of bulk supply were very different, and town engineers faced many difficulties in this respect.²¹

The Development of Local Government

In the 18th century, the local government outside Cape Town comprised of *Landdrosts* and *Heemraaden*. The *Landdrost* was a full-time salaried representative of the central government and a chairman of the College comprised by the *Heemraaden*. The

¹⁷ Fair & Browett 1979, 264–269.

¹⁸ Christopher 1982, 135–138.

¹⁹ Davies 1972, 28, 43.

²⁰ For instance Europe in the 19th century or any modern metropolis in Asia, Latin America or Africa.

²¹ Fulton 1983, 457.

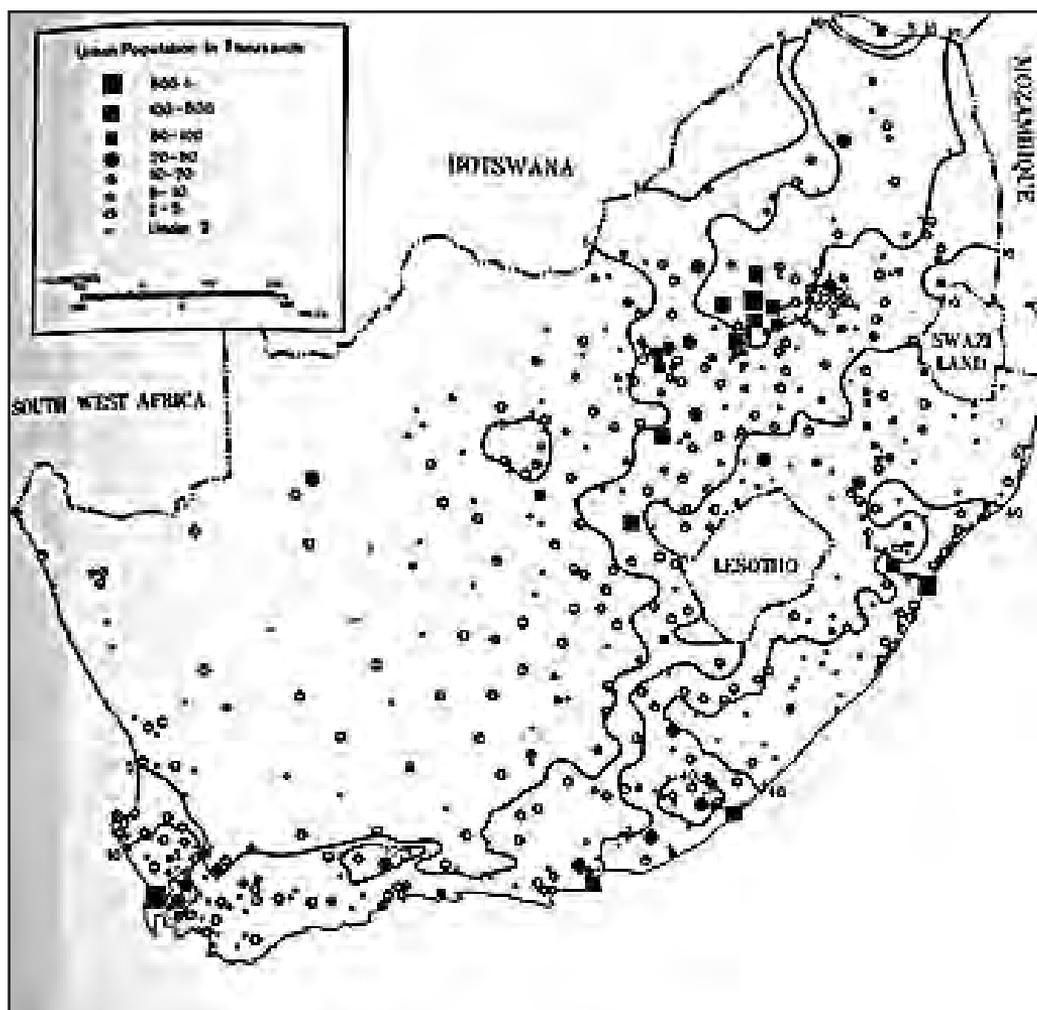


Figure 2.2. The distribution of urban population in 1904. (Davies 1972, 45)

Heemraaden were advisers representing local interests. They were free burghers and received no payment. The College had both the judicial and administrative functions. This system was abolished in 1827, and replaced by a district magistrate system. This system separated judicial from other functions. Each district was given a resident-magistrate to try all the cases and the justices of the peace to ensure the proper execution of laws. Each division was also placed in the charge of a civil commissioner, who performed the non-judicial duties of the *Landdrost*. The *Heemraaden* system re-emerged in the Cape Colony in 1855 in the shape of a divisional council.²²

²² Ismail e.a. 1998, 39-40, 42; Cloete 1983, 5-6; Green 1957, 1-4.

In Cape Town, the local government could be said to have begun in 1786 when a Committee of the High Court was created. Its duties included the fixing of the price of bread and meat, and controlling public works. In 1793, these powers were extended and at the same time, the town was divided into 23 wards and two wardmasters were appointed to each ward. The British occupation changed the Committee into a burgher senate of six appointed members. The burgher senate was dissolved in 1827 and the town government was taken over by the Colonial Administration. The Cape Municipal Ordinance of 1836 created municipal councils. In practice, this meant the creation of Boards of Commissioners and Wardmasters in towns. Beaufort (now Beaufort West), Somerset, George, Grahamstown, and Cradock were the first towns in the Cape Colony to publish their municipal regulations.²³

This Cape Ordinance also formed the basic pattern for the Natal Municipal Ordinance of 1847 and the Orange Free State and Transvaal adapted it with minor modifications respectively in 1856 and 1877. In Natal, only Pietermaritzburg adopted the Ordinance and established a municipal board in 1848. The new Ordinance was published in 1854. Under this Ordinance, inhabitants were constituted into a regular corporate body with a Mayor and Councillors. The two boroughs of Pietermaritzburg and Durban were accordingly proclaimed on 15th May 1854.²⁴

The *Landdrost* and *Heemraaden* system was revived in the Orange Free State and Transvaal, where these bodies acted primarily as district courts. They also simultaneously performed the functions of local authorities where there was no town council. In Transvaal, the land was divided in districts administered by a *Landdrost* and six *Heemraaden* in 1858. Under the Village Regulations of the same year, the *Landdrost* was instructed amongst other things to manage the water supply. The first municipal board in Transvaal was chosen in Potchefstroom in 1868. It also took over the responsibility of overseeing the water supply. During the next ten years, the councils were also established in Pretoria, Lydenburg, Zeerust, Lichtenburg and Rustenburg. The situation where the local inhabitants were initiators for the establishment of the councils was ratified in the first general municipal law of Transvaal in 1877, at the time of the British annexation of the republic (1877-1881). This system continued until the South African War in 1899–1902 after which sound municipal governance was established.²⁵

The outbreaks of smallpox²⁶ and the discoveries of gold in the 1880s caused a new phenomenon in the local government. Smallpox or health committees began to emerge in parallel with sanitary committees, or boards, in the new mining towns. Smallpox

²³ Green 1957, 8–14, 16–21; Cloete 1983, 7–10; Ismail e.a. 1998, 42.

²⁴ Green 1957, 27–37.

²⁵ Ismail e.a. 1983, 42–43; Green 1957, 44–55.

²⁶ Disease caused by Variola virus. It had been a greatly feared disease, responsible for huge, worldwide epidemics. It was strictly an infection of humans. It is now eradicated from the world.

committees were appointed for two years, depending on the need for them to function in the interest of public health. In mining towns, the sanitary boards developed into permanent administrative organs that took over some of the duties of the *Landdrost*. Because they were originally health organs, it was logical that they also took the responsibility in sanitation matters.²⁷

The Development of Public Health²⁸

The Cape Colony reaped the benefits of the experience of the English cities in its campaign against filth and disease. Edwin Chadwick²⁹ had initiated a major battle against illness and inadequate sanitation provision in the 19th century Britain. The Chadwick Report of 1842 had broad application: it urged the need for national action, the centralised control of public health, and drew attention to the connection between slum conditions and disease.³⁰ Some people still in the early 19th century did not consider, for instance, muddy water as dangerous. In 1835 a contemporary writer objected to the idea that muddy water was unhealthy and supported his claim by writing that “when cattle go to a clear stream to allay their thirst, they often abstain from drinking until they have rendered the water turbid by stirring up the sediment with their feet”.³¹ The miasmatic theory of the origin of diseases also had strong support still in the middle of the 19th century. According to this theory, diseases were born in wet and dirty soil when organic material rots and were transmitted through air.³²

The first general Public Health Bill was introduced into the parliament of Cape Colony in 1878. It was debated and reported upon by a Select Committee, but was withdrawn at the end of the following parliamentary session. The provision of this Bill was for the local government bodies, such as Municipalities and Divisional Councils, to have increased powers for sanitary improvement, and to enable them to appoint Sanitary Inspectors with powers to search and eradicate all the public health nuisances. These provisions were very similar to Grahamstown Town Council’s existing powers under the 1873 Municipal Regulations. This illustrates how efficient local government bodies were taking the lead in public health matters. The first Public Health Act of the Cape Colony was finally passed in 1883. This happened in response to a smallpox epidemic that raged on the diamond fields for ten months without check because of the pressure from the mine-magnates to deny its existence, in case the news adversely affected their labour supply. This legislation formed the basis for subsequent South African public health legislation.

²⁷ Green 1957, 60–62.

²⁸ See Table 2 for the overview of the main events.

²⁹ 1800–90. English social reformer. The Commissioner of the General Board of Health 1848–54.

³⁰ Flinn 1965; for a re-evaluation of Chadwick’s work see Hamlin 1998.

³¹ Draffin 1939, 33.

³² On miasmatic theory, see for instance Porter 1999, 82.

An immediate result of the passing of the Act was the appointment in Cape Town of a part-time medical Sanitary Inspector, a designation later changed to the Medical Officer of Health. Dr. G.H. Fisk³³ was the incumbent of the post and he ranks accordingly as the first qualified medical practitioner to serve a municipality in the Cape Colony.³⁴

In 1892, health officials in the Cape Colony were paying close attention to the water supply. An annual report stated that piped water supply systems were already in use in at least 23 towns, wells were in use in 24 villages or towns. If the wells were deep ones and carefully protected they could be used as a source of drinking water. Unfortunately, many were shallow ones and situated close to cesspools³⁵, “and the result is that liquid filth is only poured into the one to be pumped up again from the other as drinking water. Such cess-pools are in great favour with many householders as they rarely, or never require emptying, the well at the same time yielding a constant supply.”³⁶ In December 1893, the first colonial Medical Officer of Health, Dr. Alexander Edington³⁷, was appointed in the Cape Colony. Although Edington’s role was limited, his appointment was an indication of the willingness of the colonial government to implement a degree of health reform. Dr. A. John Gregory³⁸, the Medical Inspector of Health and Local Government Branch since 1891, remained the dominant figure in the Office and his influence led to the Public Health Bill in 1894 and the passing of the Births and Deaths Registration Act, No. 7 of 1894.³⁹ There was some resistance against the Public Health Bill, for instance the Grahamstown Town Council took the view that the Bill was limiting the powers and freedom of the local government too much.⁴⁰

In 1894, the provision of health services was considered important also in Johannesburg and Dr. T.C. Visser⁴¹ was appointed as the town’s first Medical Officer of Health. Some formidable problems existed, such as the provision of a reliable water supply and adequate sanitation to avoid the periodic epidemics of typhoid⁴² like the one that ravaged the town in 1895.⁴³

³³ The Police surgeon of Cape Town. The part-time Medical Officer of Health 1883–93.

³⁴ Gibbens 1982, 346; WHO 1981, 34; Shorten 1963, 272.

³⁵ A lined and covered excavation in the ground which receives the discharge of domestic sewage or other organic wastes, designed to retain the organic matter and solids, but permitting the liquids to seep through the bottom and sides.

³⁶ Reports on Public Health, 1892, v.

³⁷ 1860–1928. Colonial Bacteriologist 1891–1904. Colonial Medical Officer of Health 1893–95.

³⁸ 1851–1927. Assistant Medical Officer of Health for the Cape Colony 1896–1901, Medical Officer of Health for the Cape Colony 1901–10, Census Director of the Union 1910–11. Member of the Tuberculosis Commission 1912–14.

³⁹ Simkins & van Heyningen 1989, 81.

⁴⁰ Protest of Graham’s Town Town Council, 6 June 1894. In CCP, A3-1894, 147.

⁴¹ 1871–1943. Medical Officer of Health 1894–1899. One of the founders of the National Party. Later the member of the Union House of Assembly and Senate.

⁴² A severe infection caused by a bacterium, *Salmonella typhi*. It is passed from person to person through poor hygiene, such as incomplete or no hand washing after using the toilet. It is still a difficult problem in parts of the world with poor sanitation practices.

⁴³ Unterhalter 1982, 618.

In 1895, the new Medical Officer of Health for the Cape Colony, Dr. George Turner⁴⁴, pointed to a problem, which was increasingly to preoccupy health reformers. In the principal towns of the colony, the total number of the White deaths per thousand was 21.53; had the age-specific mortality rates in England and Wales from 1871 to 1881 applied, this figure would have been 18.82. He concluded, “preventable diseases are far too prevalent and prevail chiefly in the towns, and unless Municipalities are granted and exercise proper powers over the water supply, drainage, and building, the mortality from these causes continue to increase with the growth of the towns”.⁴⁵ From the beginning, then, health reformers were keenly aware of the unduly high urban mortality rate, especially among children. At this stage, the blame was placed firmly on the local authorities and their poor sanitary services. The effects of poverty and the need for health education became more recognised in the early 20th century only after basic sanitary improvements had become more common.

The Public Health Amendment Act of 1897 created a public health department in the Cape Colony. The Act constituted the Colonial Medical Council as an advisory board of health. Local authorities could now appoint the Medical Officers of Health as well. The public health powers and duties of local authorities were defined concerning water supply, buildings, the prevention and spread of contagious disease, abattoirs, the African locations and offensive trades. Another section entitled “Prevention of Infectious Disease” dealt with dairies, sewage, disposal works, burial grounds, etc., and the following diseases were declared notifiable: smallpox, cholera⁴⁶, diphtheria⁴⁷, scarlet fever⁴⁸, typhus⁴⁹, typhoid, relapsing⁵⁰, yellow⁵¹ and puerperal⁵² fevers, and leprosy⁵³. In the Transvaal, public health was organized only after the South African War. By 1910, most towns had municipal medical officers and hospitals for diseases.⁵⁴

⁴⁴ 1848–1915. Medical Officer of Health for the Cape Colony 1895–1901. Medical Officer of Health for Transvaal 1901–08.

⁴⁵ CCP, G74-1896, 7.

⁴⁶ An acute illness characterized by watery diarrhea caused by the bacterium *Vibrio cholerae*. It is spread by using contaminated food or water. Modern sanitation and the treatment of drinking water have virtually eliminated the disease in developed countries. In third world countries, however, it is still common.

⁴⁷ A potentially fatal disease that usually involves the nose, throat, and air passages, but may also infect the skin. At one time, it was a major childhood killer, but it is now rare in developed countries because of widespread immunization.

⁴⁸ An infection that is caused by a bacterium called streptococcus. This disease primarily affects children age’s two to ten. It is highly contagious and is spread by sneezing, coughing, or direct contact. Today, the disease is rare.

⁴⁹ Several different illnesses called “typhus” exist, all of them caused by one of the bacteria in the family Rickettsiae. Each illness occurs when the bacteria is passed to a human through contact with an infected insect.

⁵⁰ Refers to two illnesses, both of which cause high fevers. The fevers resolve, only to recur within about a week.

⁵¹ Yellow fever is a severe infectious disease, caused by a virus called a “flavivirus.” This flavivirus can cause outbreaks of epidemic proportions throughout Africa and tropical America.

⁵² Infection of the female reproductive system after childbirth or abortion, with fever over 38 °C in the first 10 days. It has become very rare in developed countries but it is still seen after abortions performed in unhygienic surroundings.

⁵³ A slowly progressing bacterial infection that affects the skin, peripheral nerves in the hands and feet, and mucous membranes of the nose, throat, and eyes. Destruction of the nerve endings causes the affected areas to lose sensation. Occasionally, the fingers and toes become mutilated and fall off, causing the deformities.

⁵⁴ Burrows 1958, 333; Marks & Andersson 1988, 260.

The first full-time Medical Officer of Health of Johannesburg, Dr. Charles Porter⁵⁵, was appointed in 1901. (see picture 5.3) He became an influential person in the whole of South Africa in campaigning for public health and town-planning legislation.⁵⁶ In the day-to-day handling of sanitary problems in Johannesburg, Porter seemingly had two main objectives. On the one hand, to inculcate hygienic habits in the White working class, on the other hand his office had to deal with insanitary properties both to avoid infectious diseases and to get rid of dilapidated buildings and dwellings considered unfit for human habitation. Porter is interesting in the sense that he believed that all the poor, including Whites, were incapable of cleanliness. He did not see the Africans constituting any greater sanitary threat than the poor Whites.⁵⁷ A Public Health Committee, comprising a handful of sanitary inspectors, was created under Dr. Porter's chairmanship in 1901. The committee depended on the municipal council both administratively and financially. It was responsible for most aspects of the health of the citizens' of Johannesburg: the quality of their food and water, the disposal of waste, the sanitary conditions of dwellings and shops, and the control and prevention of infectious diseases. Public health by-laws were passed establishing the powers of the sanitary inspectors, the police and any authorized servant of the Council to act in this regard.⁵⁸

The Public Health Act of Natal in 1901 was a comprehensive and consolidating measure introducing new principles into the relationships between the central and local authorities. It authorized the Governor-in-Council to issue detailed regulations concerning sanitation, nuisances and public health. The new colonial health officer, Dr. Ernest Hill⁵⁹, was empowered to inspect local health services. In Durban, the first full-time Medical Officer of Health, Dr. Patrick Murison,⁶⁰ was appointed the next year.⁶¹

The experience of Cape Town and the rest of South Africa during the Spanish flu⁶² epidemic prompted important changes in the Public Health Bill which came before Parliament in 1919 but which had been drafted before the flu. This milestone in South African medical history created an autonomous Department of Public Health with its own Minister and for the first time put public health on a well-organized footing in the Union. The law itself did not address the racial character of disease directly. There was,

⁵⁵ 1864–1934. Medical Officer of Health of Stockport 1893–98. Medical Officer of Health of Johannesburg 1901–25. Professor of Public Health at the University of Witwatersrand 1923–32.

⁵⁶ About Porter's role, see Parnell 1993b, *passim*.

⁵⁷ Parnell 1993a, 476–78; Lange 2003, 86; Parnell 1993b, 24.

⁵⁸ Minutes of the Johannesburg Town Council, February 1902. MJB, 1/1/3, TAB.

⁵⁹ Health Officer for the Colony 1901–11. After that Medical Officer of Health of East London.

⁶⁰ Medical Officer of Health 1902–1922.

⁶¹ Green 1957, 40; Wright 2006–2007.

⁶² The 1918 flu pandemic, commonly referred to as the Spanish flu, was a category 5 influenza pandemic between 1918 and 1920 caused by an unusually severe and deadly Influenza A virus strain. By far the most destructive pandemic in history, it killed some 50 million to 100 million people worldwide in just 18 months. Many of its victims were healthy young adults, in contrast to most influenza outbreaks, which predominantly affect juvenile, elderly, or otherwise weakened patients.

however, an unspoken consensus that territorial segregation was the solution to the problem of disease among the Africans in urban areas. Dr. James Alexander Mitchell⁶³, the acting Medical Officer of Health for the Union, had made it clear in the Public Health Conference in Bloemfontein in 1918 that whereas tuberculosis⁶⁴ and venereal diseases were primarily affecting African people, their occurrence in mainly rural areas meant that treatment was of little concern to local authorities. He, however, recognized that territorial segregation was incomplete and that a big proportion of infected people lived in towns. Built into his funding formula for urban tuberculosis care was the hospitalisation of Whites, Coloureds and the better class of the Africans.⁶⁵

Table 2. Public health officials and laws in the case cities, 1874–1919.

	Cape Town	Grahamstown	Durban	Johannesburg	Other
1874			First Medical Officer of Health		
1878					First Public Health Bill withdrawn in the Cape Colony
1883	First Medical Officer of Health				Public Health Act of the Cape Colony
1887				District surgeon appointed	
1893					First Medical Officer of Health for the Cape Colony
1894				First Medical Officer of Health	Public Health Bill of the Cape Colony
1897					Public Health Amendment Act of the Cape Colony; colonial public health department created
1898		First Medical Officer of Health			
1901	First full-time Medical Officer of Health			First full-time Medical Officer of Health	Public Health Act of Natal; first Health Officer for the Natal
1902			First full-time Medical Officer of Health		
1919					Public Health Bill of Union

⁶³ Chief health officer of the Union 1919–1923.

⁶⁴ A potentially fatal contagious disease that can affect almost any part of the body but is mainly an infection of the lungs. It is caused by the tubercle bacillus or *Mycobacterium tuberculosis*. Although it can be treated, cured, and it can be prevented if persons at risk take certain drugs, scientists have never come close to wiping it out. Few diseases have caused so much distressing illness for centuries and claimed so many lives.

⁶⁵ Phillips 1979, 99; Parnell 1993b, 28.

2.3 Case Cities

2.3.1 Early Cape Town⁶⁶

The Beginning of the 19th Century

Cape Town is the oldest European-style town in South Africa. Grant suggests that the original wooden water pipes were replaced by lead in 1799.⁶⁷ Burman states that lead pipes were “in general use by 1750”.⁶⁸ Laidler states that lead was used for selected pipes (for example to the jetty from which ships drew their supply) from early in the 18th century.⁶⁹ In another book Laidler says that lead pipes came into use in 1779 though bored teak ones continued in use up to 1812.⁷⁰ Altogether, the transfer from wooden to lead pipes could be said to have started early in the 18th century and continued until the early 19th century.

After the Cape was handed back to the Dutch in 1803, the new Governor Jan Willem Janssens⁷¹ and Commissioner Jacob Abraham de Mist⁷² updated the water system. The town was growing and when the existing water supply proved inadequate, pumps were installed to pump from a cistern in the Platteklip Gorge. A pump on the Parade and one in Greenmarket Square continually delivered water to the townspeople. The chief ornament of Cape Town was its fountain, which was situated at the top of the parade, an elegant structure decorated with statues executed in a very masterly style. Civil engineer Louis Michel Thibault⁷³ drew the plan and all the surplus water was carried into reservoirs around the stables of the cavalry or other horses, without any hindrance to the slaves who were constantly coming to the fountain. The building of a piped water supply system, however, made the fountain unnecessary and it was demolished before the end of 1816.⁷⁴

⁶⁶ For the brief overview of the 17th and 18th centuries, see for instance Juuti, Mäki & Wall 2007.

⁶⁷ Grant 1991, 29.

⁶⁸ Burman 1969, 98.

⁶⁹ Laidler 1952, 99.

⁷⁰ Laidler & Gelfand 1971, 60.

⁷¹ 1762–1838. Governor 1803–1806. Later Minister of Defence in Holland 1807–09 and Governor of Dutch East Indies 1811.

⁷² 1749–1823.

⁷³ 1750–1815. Government Architect 1785–1803. Inspector of Public Buildings 1803–1807. Government Surveyor 1811–15.

⁷⁴ Collier 1961, 58; Shell 1993, 136; Lewcock 1963, 69.

Up to that time, privileged houses had their own supply of water from wooden pipes, constantly in a need of repair. Other houses used the wells of brackish water. Lead piping was gradually installed and the waterworks were in 1806 placed under an overseer of pipes and town canals who also had to ensure that pipes were not pierced or water withdrawn in dry weather. As the *grachts*⁷⁵ were polluted, water had to be collected at the bottom of Platteklip Gorge. Householders used slave labour to do nothing but fetch and carry water; a cobbled path led up to the Platteklip known as “Slaves Walk”. Nevertheless, the British took the first steps towards ensuring an adequate permanent supply for Cape Town after conquering it again in 1806. Plans for a waterhouse were prepared by the engineer John Rennie⁷⁶ and in 1811, it was built in Hof Street. Holding 1,300 cubic metres, this reservoir was still in use in 1905, and was demolished only in 1909.⁷⁷

Iron Water Pipes and Early Sanitation

In 1810, John Rennie drew up plans for a cast-iron main down Long Street from a tank constructed below a spring in one Mr. Hentwig’s garden. It formed a line 1.5 kilometres long, with service pipes along the cross streets that led to the Heerengracht⁷⁸ and cost nearly 20,000 pounds. Water was made available through lead pipes to private houses. As taps were placed in the streets at convenient intervals, many did not deem it necessary to pay more for having the water brought into their houses. In London, according to an estimate made in 1850, as many as 80,000 houses were still without a water supply, the inhabitants drawing water as required from standpipes in courts or at street corners. It seems that they did likewise in Cape Town. The authorities complained that taps were often left running, and that boys damaged the water pipes.⁷⁹

All these new pipes and the provision of water to town’s inhabitants involved considerable expense. In 1812, the Burgher Senate levied a water tax to recoup the expenditure that had been incurred by laying the iron water pipes along the main streets. Despite this, in 1814, the Government had no money to spare, and the erection of an English Church at Simonstown was postponed until more money became available. Many homes had storage tanks made of lead-lined wood and which had lead-soldered joints to make them watertight. This system was in use for over a century until the 1930s

⁷⁵ Canals running in the middle of the street, Dutch-style.

⁷⁶ 1761–1821. One of the greatest civil engineers of his era.

⁷⁷ City of Cape Town water-works 1921; Collier 1961, 58; Burman 1991, 33; Handbook 1905, 52; Burman 1969, 98.

⁷⁸ Modern Adderley Street.

⁷⁹ Hattersley 1973, 76; Laidler 1952, 142.

when the discovery of lead leaching into domestic water supplies made it necessary to treat water better. At the same time, the replacement of lead pipes with copper in all the plumbing systems was initiated.⁸⁰

During the laying of more water pipes in October 1813 idle, disorderly persons and mischievously inclined boys vandalised them, defacing and damaging the street standpipes provided for the poorer quarters, whilst slaves and others let the cocks stand open after filling their buckets. The proclamation of the 28th January 1814 placed the responsibility of closing taps on their masters and mistresses.⁸¹

The first reference to water closets in Cape Town is from the year 1814 when the Governor ordered four patented water closets for the Government House. They, however, were considered as just another form of furniture; one was in the Governor's dining room and another in the aide-de-camp's dressing room. It was not until 1828, that they were moved into separate rooms specially made for them. Water closets did not become general, even in the larger residences, until the second half of the century. In 1816, the installation of water closets in houses was recommended in the *Cape Town Gazette*. The system of sewers was, however, wholly undeveloped. Rickets Cottage near Newmarket, advertised for sale in 1820, possessed a patent steam kitchen, a steam mangle and a chamber water closet. Even in 1860, the presence of a water closet on a property was a matter worth mentioning in an advertisement.⁸²

Town in the 1820s

In 1822, John Chisholm⁸³ became the town's Superintendent of Waterworks. He was the driving force behind the numerous regulations concerning the corrosion of water pipes, additional fountains, and other items of John Rennie's waterworks.⁸⁴

Artist Samuel Eusebius Hudson⁸⁵ could write in 1824, with little fear of contradiction, that "the streets of Cape Town are infamously dirty". What householders usually did was to sweep up the dust into heaps for the one-horse Scotch carts employed by the contractor for scavenging the streets. When a gale wind intervened, the confusion would be beyond control. At night, Coloured labourers called to remove a household's refuse barrels slung on a pole carried across the shoulders of two bearers.⁸⁶

⁸⁰ Grobler, Theunissen & Maresky 1996, 170–171; Shorten 1963, 97; Burman 1969, 98; more about the use of lead in water pipes see Troesken 2006.

⁸¹ Laidler & Gelfand 1971, 122.

⁸² Hattersley 1973, 147; Lewcock 1963, 82–83; Laidler & Gelfand 1971, 144.

⁸³ 1777–1856. Waterworks Engineer in Londonderry, Ireland 1807–12. Inspector of Waterworks 1812–22, Superintendent 1822–56.

⁸⁴ Picard 1968, 82.

⁸⁵ 1764–1828. A novelist, playwright, artist, historian, teacher and customs officer.

⁸⁶ Hattersley 1973, 75–76.

In 1825 printer, William Bridekirk⁸⁷ made a poem about Cape Town. Here is an extract from that poem describing the sanitary situation in town⁸⁸:

*The streets all at right angles lay,
And gutters cross them every way,
Which to the B[urghe]r S[enate]'s shame,
For 'pon them I throw all the blame,
Remain, I'm very sorry to say,
Beastly dirty every day:
In fact, thanks to these lazy dogs,
The streets are just like sties of hogs.
I greatly fear, these great receivers
Are a set of sad deceivers;
And want a smart chap to set 'em right
And bring their dirty tricks to light,
Or, rather, – put them all to flight.
Canals, thro' some of the streets flow,
Which stink confoundedly you must know;
And serve so handy for lazy wenches,
To cast therein their sloppail stenches,
Some sluts, besides th' above nam'd slop,
Other burdens have been known to drop
Into these reservoirs of pollution,
And thus, give their character ablution,
At the expense of their immortal part,
For which deeds by and bye they'll richly smart.*

In 1825, the state of the iron pipes and water works of Cape Town was investigated. The report concluded that the spring in Oranjezicht, which supplied the town with water, was fine and wholesome and did not contain more saline than should exist. The rusting of the water pipes was attributed to the combined action of humid air and water applied in a closed space of pipe, supported by the minute extra proportion of the oxygen gas of the air which the water contained as well as the electro-chemical reaction between the different metals. The soft and apparent dark composition of the water pipes also tended to favour those agents, contributed to by the habit of turning off the cork at the reservoir in the evening during summer months and cutting off the water supply to the town's pipes. Experiments proved that the damage was not as bad as feared. The habit of emptying the water pipes ceased and recommendation was made that more pumps be erected in town to satisfy the demand for water. To a certain extent, the new system of fountains increased the headaches of the authorities: the citizens regularly misused the fountains. Accustomed to their "freedom of the canals", they now transferred their loose water morals to the fountains. A notice in 1826 warned against committing any damage to the

⁸⁷ 1796–1843. Printer and publisher of the South African Chronicle and Mercantile Advertiser 1824–26.

⁸⁸ Poem in Picard 1968, 166.

waterworks, on the pain of a fine or imprisonment. Also fined were those Capetonians who left the cocks open, in addition washing under the pumps was altogether prohibited. Both these offences were punished with a fine or imprisonment.⁸⁹

In 1827, the Governor recommended that the *grachts* should be filled in and replaced with brick sewers. His main motivation was that the canals interfered with traffic. They had also become a grave source of danger to public health. Household refuse of every description including dead dogs and cats were thrown into the *grachts*. According to Governor, the slothful slaves tipped night soil tubs into the canals instead of conveying the waste to the sea as intended. Smelly, often filled with refuse, spanned by shaky and dilapidated bridges, they had become a permanent source of discontent and complaint in the community. Many streets still lacked sewers. Town cleaning, under the control of the Superintendent of the Police from 1827, was rudimentary to say the least; night soil was collected only on certain days of the week and fresh water was available solely from the fountains or pumps dotted around the town. Although forbidden to do so, people washed meat, fish, clothes, themselves, kitchen utensils and even soil-tubs at these. By 1844 most of the *gracht* of Gentleman's Walk⁹⁰ was covered, but the last one was not roofed until 1863.⁹¹

The Superintendent of Waterworks made his report directly to the Colonial Secretary. By 1827, Cape Town had 63 water cocks for regulating the flow of water. The stream from Table Mountain was closed to all use and reserved entirely for domestic purposes. The Superintendent's staff included an artificer, a blacksmith, two plumbers, a book keeper, and a storekeeper. Application for a private water connection had to be made to the Colonial Secretary, who conveyed his consent to the Superintendent. The Superintendent repaired private leadings until 1840 when his staff was reduced to an artificer and a bookkeeper. The maintenance of the town supply was now the matter of paramount importance and the resource problem was at times serious. The quantity of water used in many households and in the hospital, increased with the use of baths, now a daily practice.⁹²

Pumps and Fountains

An inescapable fact in Cape Town throughout the 1830s and early 1840s was that the town was filthy. Life for those Capetonians of all colours at the bottom end of the social scale was hard. Often living in dank and unhealthy squalor, many dwelt in cramped

⁸⁹ Laidler & Gelfand 1971, 199; Picard 1968, 82–83.

⁹⁰ A name by which Heerengracht, modern Adderley Street, was called.

⁹¹ Phillips 1980, 1, 9; Picard 1968, 79, 84; Tait 1947, 150; Burman 1991, 33.

⁹² Laidler & Gelfand 1971, 264.

and overcrowded conditions. Evidence at a trial in 1830 of five to six people to a room elicited not a word of comment. The death of several poor people from exposure in the back streets of Cape Town during the winter of 1829 was considered unremarkable. The Shambles was a particular sanitary problem. The butchers working there disposed of unwanted offal and other materials by throwing them into the sea from where it was washed onto the shore. The problem was aggravated by the poor buying this refuse and then dumping the remains wherever they could.⁹³

As time went on, more and more fountains were erected, and by 1834, there were 36 free-flowing fountains in the town. This waste of continuously flowing water left the inhabitants short of water. In that year, following John Chisholm's proposal, the fountains were replaced with hand-pumps, operated by "swaying" a lever back and forth "so that each person would have to labour for his supply". At the corner of Prince Street and Sir George Grey Street the last of these pumps, the "Hurling Swaai" pump, can still be seen.⁹⁴ (See pictures 2.1 and 2.2)

In 1840, the water supply consisted of the 63 pumps in the different parts of the town. These pumps were the centres of social life for the poor, as hours were spent collecting water. The management of the sources of water was regulated by many municipal regulations, for instance, concerning the size of the vessels, which could be used, and about the opening hours of the pumps. There was no sanitation. In the absence of means of disposing of human waste, it was often left to putrify in a yard or allowed to trickle across the street. Inspectors reported several cases where rotting fish and human excrement existed in the sleeping apartments. Such examples may have been extreme, but in general, it was difficult for people to keep clean without sufficient water supply.⁹⁵

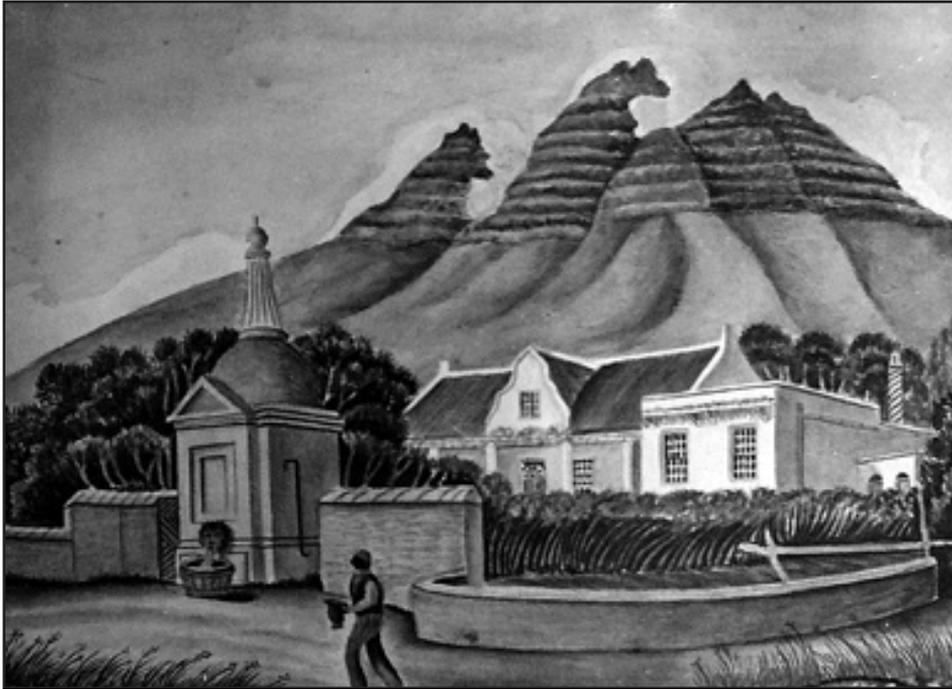
As the town grew, its water supply became insufficient and garden wells throughout the town became restricted to garden use, or so the authorities hoped. The number of service pipes increased slowly, but they needed raising and cleaning periodically.⁹⁶

⁹³ Phillips 1980, 8; Judges 1977, 59.

⁹⁴ Handbook 1905, 52; Burman 1969, 98.

⁹⁵ Worden e.a. 1998, 120.

⁹⁶ Laidler 1939, 289.



Picture 2.1. Hurling Swaai Pump. (Source: KAB, E5353)



Picture 2.2. Hurling Swaai Pump in 2007. (Photo: Petri Juuti)

2.3.2 The Birth of Grahamstown Municipality

Grahamstown was established in 1812 as a military camp. Its commanding position and the availability of water from streams determined the location. Situated inland its problems with the water management differed from those in Cape Town. It was, unfortunately, situated on a high watershed with all the rivers flowing away from it. In the 1820s, Grahamstown was supplying various agricultural products to Cape Town and, during the decade, it grew from a military post to a place with about 3,000 inhabitants including the soldiers. While the distance from Cape Town hindered communication and integration, it on the other hand encouraged the growth and development of Grahamstown as a rival centre of trade and administration. Until 1840, it remained militarily, administratively, commercially, and culturally the principal centre of Eastern Cape Province. After 1840, its dominant role, especially as a commercial centre, was taken over by Port Elizabeth.⁹⁷

At first sluices were built across the neighbouring watercourses. The first of these seems to have been built on the same watercourse on which the Grey Reservoir was later built. From there water was led in a wooden trough into a stone watercourse in the Drostdy ground. (See Figure 2.3) Eventually a tank was built near the Drostdy gate.⁹⁸ (See Picture 2.3)

Thomas Sheffield⁹⁹ remembered it later:

The town was at that time supplied with water brought by furrows round the back of the Botanic Gardens to the tank at the Drostdy Gate, which was provided with a pump, and from there the surplus water was led by primitive open furrows down the principal streets [...] Many a Settlers' son now living remembers but too well the tank at the top of High Street, from whence it was their duty to carry the day's supply before going to school.¹⁰⁰

According to him, other sources of water supply also existed. Opposite the “Masonic”, there was a well in the middle of High Street. Another was facing Wood's Corner and Mr. Kennelly's store. They were still there in the 1880s, only covered over. According to Sheffield, these wells were landmarks in the town and when old Grahamstown was spoken of, they were always referred to.¹⁰¹ Carrying water home was a time consuming duty and according to one old timer remembering the old days, “it was a happy day for

⁹⁷ Scott 1987, 139; Neumark 1957, 142–43; Davies 1972, 21–22.

⁹⁸ Grahamstown Journal, 4 Mar. 1868.

⁹⁹ 1847–1904. Printer and newspaper publisher. Editor of the Eastern Star 1887–89.

¹⁰⁰ Sheffield 1884, 218–19.

¹⁰¹ Ibid., 220.

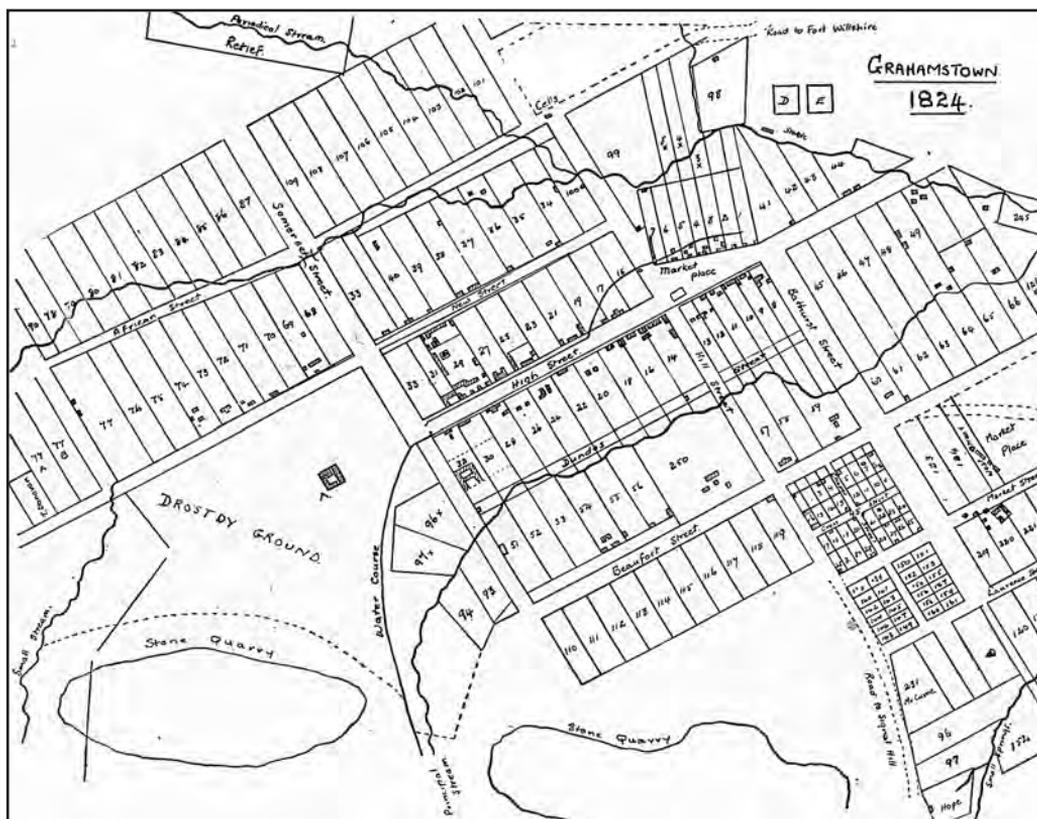


Figure 2.3. The plan of Grahamstown in 1824. (Daniel 1974, 7)

working men and their wives when the Fingoes¹⁰² arrived in town. (This occurred in the middle of May, 1835.)” The Mfengu women soon saw the opportunity for getting money by carrying water for the White townspeople.¹⁰³

When the General Municipal Ordinance was passed in August 1836, Grahamstown was a town with many problems. Aggravated slum conditions in the non-European village increased the chances of disease. In addition to this an insufficient water supply, and unhygienic butcheries, were a threat to public health. Wells appear to have been sunk wherever there was a probability of finding water. The streets were only tracks worn by the ox-wagons. There were also waterless streams, which were dangerous to cross.¹⁰⁴

¹⁰² Mfengu were a native tribe in the Eastern Cape that wandered across the area and were regarded with contempt by the other inhabitants. In 1835, they were given a permission to settle in the British controlled area.

¹⁰³ Grahamstown Journal, 6 Mar. 1868.

¹⁰⁴ Hunt 1961, 155; Hunt 1976, 9; Cory 1919, 426–427.



Picture 2.3. Tank and pump by the Drostdy Gate. (Photo: Petri Juuti)

Charles Bunbury described Grahamstown in 1838 as “an ugly ill-built place, very inferior in appearance to Uitenhage and Zwellendam, and in fact a bad imitation of an English country town”.¹⁰⁵ According to Hunt, the Minute Books and Letter Books reveal the conscientiousness with which the new Municipal Commissioners tackled their duties. Their most successful venture was to secure for Grahamstown an adequate supply of pure water. Grahamstown seems to have been the first town in the Cape Colony outside Cape Town to attempt to provide a hygienic supply of water; at a time, when even in Great Britain only a few towns could boast of hygienic water schemes.¹⁰⁶

¹⁰⁵ Bunbury 1969, 130.

¹⁰⁶ Hunt 1961, 189.

2.3.3 Early Durban

Durban was established in 1824 as Port Natal on the eastern coast of South Africa, where there was plenty of water, but not of the best quality. (See Figure 2.4) The pre-urban trading post settlement of 1831 gave rise to scattered grass hut and “wattle and daub” encampments around the bay. These were focused upon Lieutenant Farewell’s camp located upon the relatively dry sand flats on the northern shores of the bay and near a swamp “pond” which provided a source of fresh water. Congella, a secondary Afrikaner settlement, on the western shores of the bay near a strong spring, was established in 1838. The water of old Durban did not have a very agreeable taste but was better than rainwater off dusty tarred or thatched roofs which was collected in wine or spirit hogsheads or barrels used as water-butts. As can be imagined, an unpleasant spirit flavour from the wood tainted the drinking water. When the original butts or casks had collapsed or become contaminated, brick wells were constructed in the backyards. These brick wells were then lined with wooden casks inserted one on top of the other, the top one being protected by a lid. The water was lifted by hand using a rope and bucket.¹⁰⁷

Newly arrived Bishop John William Colenso¹⁰⁸ described Durban in the early 1850s: *A greater evil in Durban is the water, which is taken usually from wells that are not sunk deep enough, and, consequently, abounds with decaying vegetable, if not animal, matter, and innumerable animalcules and worms. The effect is by no means favourable to the health of the residents, more especially that of the children, who have no refuge, I suppose, as their parents have, in stronger beverages. Some wells have been sunk deeper, and the water has been found to be brackish. Deeper still, no doubt, it would be pure enough. At present, the remedy is to drink rain water, or the water of the Umgeni¹⁰⁹ River, which is brought by carriers a distance of four miles [6.4 km], and is excellent. Indeed, had the Dutch founded the town of Durban, as they did that of Maritzburg, they would long ago have had the Umgeni pouring its beneficent streams through every street, and bringing health and cleanliness to every door. How long will it be before the public spirit of Englishmen will achieve this?*¹¹⁰

¹⁰⁷ Davies 1963, 30; Tait s.a., 120.

¹⁰⁸ 1814–83. First Anglican Bishop of Natal 1853–83. Charged with heresy and excommunicated for some time.

¹⁰⁹ Nowadays called Mgeni.

¹¹⁰ Colenso 1855, 14.

2.3.4 The Birth of Johannesburg in 1886

Founding of the Settlement and Early Conditions

The Witwatersrand is located in the northern portion of the Highveld about 1,300 kilometres northeast of Cape Town. The gently rolling surrounding country varies in elevation from 1,200 to 1,800 metres above sea level. At the northern edge of the Highveld is the Witwatersrand, extending like an inverted “S” for about 100 kilometres from west to east. Towards the south of the Witwatersrand, the streams drain into the Atlantic Ocean via the Vaal and Orange Rivers, while to the north streams empty into the Indian Ocean by the way of the Crocodile and Limpopo Rivers. Most of the streams immediately adjacent to the Witwatersrand are intermittent (dry during the winter) making them poor sources of water.¹¹⁴

The founding of Johannesburg in 1886 placed a high demands on human ingenuity. It was located in the sparsely populated interior, and provision had to be made for urban society that was soon to set the pace for industrial development in Southern Africa. The fact that Johannesburg was not located on a major river presented a major engineering challenge. The engineers originally hoped to capture the water of the Witwatersrand before it flowed into the Vaal River. At first, water was needed to satisfy the mining industry’s needs. In the mining fields, water was needed for both the household purposes and in the mining process. Water was not a problem when only a few people lived in the area. Gold diggers took their own water from shallow wells, whilst convict labour was utilized in the formation of sanitary gangs. In 1886, when the camps were arranged, water was drawn from the Fordsburg Creek, which flowed across the road, that is now Commissioner Street. Natal Spruit near Jeppestown, springs near Joubert Park, and the wetlands of Bertrams and Fordsburg provided for the domestic and industrial needs of Johannesburg. Resident’s in Ferreira’s Camp (See Picture 2.4) obtained water from an area in Braamfontein, which lay outside the boundaries of the proclaimed farms. (See Figure 2.5) Rainwater was also stored in barrels. There was neither sanitation nor street lighting. Covered by lakes and deluged by heavy rains, the plateau often became a swamp in summer. Diggers also found the red-brown dust more trying than anything they had experienced in the Kimberley diamond fields. Many died from pneumonia in their first bitterly cold winter.¹¹⁵

¹¹⁴ Petterson 1951, 209–10.

¹¹⁵ Zangel 2004, 11; Hattersley 1973, 238; Gray 1937, 201; Leyds 1964, 52; Tempelhoff 2003, 28; Jackson 1970, 94.



Picture 2.4. Ferreira's Camp in 1886. (Source: Palestrant 1986, 12)

An anonymous poem about the conditions of early Johannesburg describes the place very appropriately:¹¹⁶

*If you vant to see a vonder
To South Africa you'll go,
And travel to Johannesburg
To see the last d..... show.*

*De Strazen ungeplastert
Vill fill you mit amaze,
And you'll soon begin to vonder
Vy dey do not mend their vays.*

*Und ach de awful tust clouds
Dat blow mit every vind,
Und choke you zum or sticken
Und nearly make you blind.*

*Den you greet de Deutsche Kneipe
By Frau Witte mit a cheer
Till you find it costs a dollar
For every schoppen beer.*

*And den de little bedroom
Dat measures eight by ten,
Vot dey tell you you must occupy
Mit several oder men.*

*And den dose dreadful gold mines
Vot has more shares dan gold
And ach de awful prices
At which de shares are sold.*

*And ven you've lost your money
Clear out so quick you can,
And leave the Rand a viser,
But ach – a sadder man.*

*But if you just are lucky,
I tell you alleweil,
Make tracks so snell as blitzen
And sit upon your pile.*

¹¹⁶ Zeederberg s.a., 1.



Figure 2.5. Farms, streams and mining camps of the Witwatersrand area. (Manoim 2003)

Because of the circumstances under which Johannesburg had been established, the Transvaal government was unable to provide the traditional excavated *leivoor* (irrigation furrow) for the water needs of Johannesburg. Republican politicians were also negative towards the mining community in Johannesburg. For them these *uitlanders* meant trouble. Still on the 4th October 1886, Randjeslaagte was proclaimed as a village (See Figure 2.5); the name of Johannesburg was used for the first time the previous day. Public health was subject on which the Rand pioneers were doubly sensitive. Here, under the sunny skies and amid the clear streams of the Witwatersrand where disease had been almost unknown, an entirely new town was starting in a crisp climate. However, there was no sanitation, no health services of any kind, and prior to the election of the Digger's Committee they did not even have any health regulations. Soon the streams, with the exception of a strong spring, which flowed from the ridge a little to the west of the present-day Harrow Road viaduct, were contaminated by filth and every dam and well was a potential menace. So, too, were the pools of stagnant water that collected in

the open mine workings. Typhoid was rife and remained endemic for practically the next 20 years, venereal disease was rampant and alcoholism and smallpox contributed to a death rate that, for Whites, was about four times higher than the average for the past half-century in South Africa. In Johannesburg, with either the bucket system of toilets or pit latrines, the deterioration of food was probably a lesser cause of disease than the flies that clustered round the unsanitary lavatories.¹¹⁷

As temperatures rose early in November 1886, it was felt that something would have to be done with regard to sanitation both in the camp itself and at nearby Randjeslaagte, where claims had been opened and conditions were described as abominable. At this time, there was a local saying that “the scavenging is done by the wind and the rain”. The public apprehension at the state of affairs was reflected in the fear that the exhalations from stagnant water in opened claims would produce fever or other diseases unless steps were taken for the implementation of basic public health measures.¹¹⁸

Digger’s Committee

A Digger’s Committee of nine members was elected on the 8th November 1886 to give the inhabitants a share in the management of the town. The Committee had no significant powers, however. It acted as a court of appeal and allocated water rights. Real power was vested in the Mining Commissioner who was appointed by the government and was the *ex officio* chairman of the Committee. The function of the Committee was to advise the Commissioner on the regulation of water rights, public safety, health and other amenities. This subordinate position of the Committee was compounded by a lack of independent funding, and soon these men became as frustrated as they were powerless. Most of their time and energy was devoted to representations to have the status of Johannesburg elevated to that of a municipality. Nevertheless, their contribution was significant: they helped to improve health and sanitary conditions and maintain the roads.¹¹⁹

The spectacular increase in the goldfield’s population meant that effective sanitary arrangements were an urgent necessity, and this became one of the first tasks of the Digger’s Committee. At their very first meeting, a sub-committee was constituted, charged with drawing up a report on sanitary arrangements for the community. The government was subsequently requested to appoint a health inspector and to build a hospital as speedily as possible. Other urgent necessities were the provision of a suitable cemetery,

¹¹⁷ Tempelhoff 2003, 28–29; Frescura & Radford 1982, Appendix B; Shorten 1970, 95; Robertson & Diamond 1991, 138.

¹¹⁸ Filmer & Parry 1954, 15; Shorten 1970, 488.

¹¹⁹ Johannesburg 1986, 20; Mandy 1984, 8.

water, telegraphs and improved roads and bridges. The necessary proclamation of Johannesburg as a town would have to be done as quickly as possible. The Executive Council considered the request on the 27th December 1886, and on the 12th January 1887, the Special *Landdrost* Carl von Brandis¹²⁰ was able to inform the Digger's Committee that the government had approved the appointment of a medical practitioner and a health inspector, and that two contributions for the erection of a hospital and the improvement of roads had been voted. In addition, a cemetery would be laid out as soon as a suitable site could be found, telegraphic communication with the Witwatersrand goldfields would be undertaken as soon as possible, the proclamation of Johannesburg as a town would be laid before the *Volksraad*, and the Special *Landdrost* was requested to consult with the government concerning the improvement of the community's water supply.¹²¹

In January 1887 Charles Shaw¹²² was appointed as a Sanitary Inspector, in March Dr. Hans Sauer¹²³ as a District Surgeon, and in June Charles Pietersen as a full-time Secretary for the Digger's Committee. Shaw carried out the pioneer work of sanitation in young Johannesburg. After his appointment, Shaw began sending notices to the inhabitants ordering them to keep their premises clean. The Special *Landdrost* supported him in his efforts for keeping the town area clean. On the 25th February 1887, Special *Landdrost* sent a request to the government for permission to buy material for the erection of five public latrines, and a "scotch cart", with the necessary draught animals, for the health inspector's use. As an interim measure, von Brandis undertook to be personally responsible for organizing refuse removal. Before long, Shaw had a small fleet of scotch carts and mules manned by prisoners under the guard of six Black constables. With these vehicles, he was able to start a sanitary removal scheme and was permitted to charge the public for his services.¹²⁴

It is quite interesting to see that some early visitors to Johannesburg, like Edward P. Mathers¹²⁵, were of the opinion that the sanitary arrangements were good considering the number of inhabitants in the town. He was giving credit for this to von Brandis. "Ample public conveniences have been placed in various parts of the town, and rigid regulations are enforced in respect to these." According to him there was no doubt that, Johannesburg would be the one of the healthiest places in South Africa, "if measures are taken to carry out on a large scale the good work which the *Landdrost* had begun. How easily it might have been otherwise is self-apparent."¹²⁶

¹²⁰ 1827–1903. First Mining Commissioner and then Special Landdrost of Johannesburg 1886–95.

¹²¹ Appelgryn 1984, 44.

¹²² Sanitary Inspector 1887–88; Shaw was dismissed when it was realised that he was incompetent and did not even speak Dutch.

¹²³ 1857–1939. Medical Officer of Health of Kimberley 1881–86, District Surgeon of Johannesburg 1887–90. Managing Director of the Rhodesia Exploration and Development Company 1893–96.

¹²⁴ Shorten 1970, 489; Mandy 1984, 8; Appelgryn 1984, 45.

¹²⁵ 1850–1924. Journalist and author.

¹²⁶ Mathers 1887, 251–52.

The First Water and Sanitary Schemes

The year 1886 was very dry, and the rapid increase in population made the water problem a difficult one. By September, water was scarce on all the farms except Langlaagte. There was not a single stamp¹²⁷ in the area, but by 1887, there were nearly 500. This development caused an enormous demand for water with each stamp requiring 1.3 cubic metres of water per hour. Groundwater sources had to be relied upon by the stamps and by settlers. Even within this first year, the struggle to find sufficient water took its toll on the community and life was difficult for all. The explosive pace of urbanization in Johannesburg already left the evolution of public services such as water provision far behind.¹²⁸

E. Bierman applied in October 1886 for permission to construct a dam in the dry stream on his farm. His motivation stemmed not from the need of water for domestic purposes, but rather from a view that a dam would improve the value of the ground in the neighbourhood, as a supply of water was necessary for gold recovery. The consent for the building was delayed somewhat, only at the 20th January 1887 the conditions under which Bierman was authorized to construct a dam were published. The concession was granted for 15 years to commence with the completion of the dam, which had to be finished within one year. The proposal to build the dam caused a very strong protest to the Mining Commissioner by a syndicate of 50 claimholders who had pegged claims on the farm. Some of them had taken out prospecting licences on the 25th October 1886, and had then pegged the ground on which the water right had been granted. Because the proposed position of the dam would interfere with six mining claims, Bierman was forced to construct the dam to the north of where the claims had been pegged.¹²⁹ This was not the ideal location for the dam. This is an early example of the need for water being placed in a secondary position *vis-à-vis* mining rights.

At a very early stage, the Digger's Committee was aware of the fact that the disposal of bath water which had been used for washing purposes (so-called "slops") onto the streets and on the grounds would soon create environmental degradation and lead to disease. Byelaws were implemented prohibiting the practice, and the Committee assumed responsibility for the collection and removal of wastewater. The members of the Digger's Committee began to liaise with President Paul Kruger regarding the needs of the community, including the increasingly serious water situation. The *Volksraad* had little experience in dealing with such problems, and although Kruger was sympathetic, he did not have the means to do much. Besides, the life expectancy of Johannesburg

¹²⁷ Stamp is a type of mill that crushes material by pounding either for further processing or for the extraction of metallic ores.

¹²⁸ Mathers 1887; Filmer & Parry 1958.

¹²⁹ Zangel 2004, 34–35.

did not exceed 25 years at that time. The *Volksraad*, however, did purchase in January 1887 some land on the farm Braamfontein as commonage for Johannesburg. The spring on the land was then cleared by the order of the *Landdrost* and the water was made available. This spring was all the state offered and it became evident that, by default, public services would have to be brought to Johannesburg by other means.¹³⁰

Among the early problems was the question of drainage, concerning both the surface water and sewerage. The flow of storm-water over the surfaces of the streets caused great damage by erosion and plans were prepared for a storm-water drainage system in the main streets. The ground in the town did not lend itself to the disposal of wastewater in French drains, and a slop-water removal service was provided in addition to the night soil service. Simultaneously with official efforts to improve the water situation, a group of businessmen had become involved in initiating a water supply based on the area known as Old Doornfontein. They began their work independently and formed an unregistered syndicate. The syndicate received its overall direction from the mining magnates in Kimberley, and it appears to have been purposefully established in order to pave the way for a larger concern. The creation of the syndicate demonstrated that, from their inception, waterworks were viewed as a profitable enterprise in association with mining endeavours. Soon after the formation of the group, negotiations began with Cecil Rhodes¹³¹ for the floating of a formal company, which would take over all the stocks and operations of the syndicate. At this initial stage in the development of a formal water supply system, there was a conflict between the public and private interests. Because the private concern occupied a more commanding financial and managerial position than the *Volksraad*, the private initiative succeeded.¹³²

Report on the plans of the syndicate from the engineering perspective stated that Johannesburg derived its water supply from wells sunk in different parts of the township, in addition to a small stream that passed through a furrow, full of decomposed matter, situated below the level of the town on the north-west side. A number of brickmakers on the side of the stream were responsible for pollution. Another source was the filth from the streets washing into the stream after each rain. The source for the waterworks was a spring rising at the northern boundary of the farm Doornfontein, and flowing at the rate of c. 18 cubic metres per hour. As the elevation of the spring was 17 metres above Market Square, no engineering difficulties were anticipated, and the works could be constructed for a comparatively small outlay. Dr. Hans Sauer inspected the quality of water and said that no better could be found for household purposes.¹³³

¹³⁰ Ibid., 30; Cosser 1990, 17–18; Frescura & Radford 1982, 5.

¹³¹ 1853–1902. Political leader and Empire-builder. Founder of the De Beers Diamond Mining Company. Treasurer of the Cape Colony 1884, Prime Minister 1890–96.

¹³² Zangel 2004, 32; Cosser 1990, 20; Neame s.a., 64.

¹³³ Gray 1937, 203; Andrews 1892, 120–21.

2.4 The Early Development of South African Cities

During the 19th century, two power struggles were taking place in South Africa. There was a struggle between Whites and Blacks, and a struggle between the British and the Afrikaners. Both ended up in military victories for Whites and the British. Only later, after the South African War and the Union in 1910, did the Afrikaners win the political battle.

Another obvious process during this period in South Africa was urbanization. At the beginning of the 19th century 14 urban centres, at least what the Europeans considered as urban centres, existed in South Africa; by 1911, there were 336 towns. The local government developed from a colony controlled system towards a more democratic and locally controlled system during the 19th century. The public health legislation was started in late 19th century and it gave municipalities and local medical officers' powers to deal with the health and sanitary problems.

Cape Town is the only case city established earlier than the 19th century. As early as the 18th century, it had lead pipes and, at the beginning of the 19th century, pumps were installed in the town centre. In 1811, the waterhouse was built for storing the water and iron water pipes were installed in the main streets. The first water closets were installed in the 1810s. More fountains and pumps were erected around the town during the next decades to improve the water supply. By the time of the creation of the municipality, the town had 63 pumps besides public fountains for water supply. This, nevertheless, was insufficient and the sanitary conditions were not good.

Grahamstown was established in 1812 and the availability of water was one of the determining factors in deciding its location. At first water was taken from sluices and a few wells. Before the creation of the municipality in 1836 water supply was, however, insufficient and there were many problems with sanitation.

Durban was established in 1824. There was an abundance of water in the area, but not of good quality. From the beginning, better quality water was brought from the Umgeni River some six kilometres from the town centre.

Johannesburg was born following gold discoveries in Witwatersrand in the 1880s. Many small streams flowed in the area and at first, there was enough water. However, when the mining and the population in the area increased these were soon polluted and the water supply became a problem. Some attempts were made to solve the problem but none of them was particularly successful. The rapid growth of the population also made the sanitary situation untenable and an early effort to solve the problem was the use of the sanitary gangs of convicts.

3. Water Supply

3.1 Cape Town

3.1.1 The Situation in Cape Town from the 1840s to the 1870s

In this chapter, the main developments of Cape Town's water supply from the establishment of the municipality until the end of the 1870s will be presented. At first, the municipal development is briefly described. This is followed with a description of the water situation in the 1840s, the building of the first reservoirs in the 1850s and the developments in the 1860s. After that, the effects of the shortage of water on the poor of the town and how the water supply deteriorated from the 1840s to 1870s will be described.

The Development of Municipal Powers in 1840–1867

The Municipality of Cape Town was established on the 3rd March 1840 and was given powers to look after the certain aspects of the material welfare of the town. It was granted a system of elected commissioners and wardmasters. The Board of Commissioners was required to collect proper rates, provide adequate water for its citizens, ensure that the streets were clean, make provision for lighting, maintain fire control, set up public markets, and maintain the law and order. From this date, revenue was raised through a rate on immovable property, thus laying the foundation of the municipal rating system. In 1854, the first Town Engineer was appointed and two years later, the post was combined with that of the Water Superintendent. The street-cleaning contract was divided and separate tenders were called for the different areas.¹

In 1861, Parliament passed an Act whereby the regulations made provisions for a new Municipal Board of eighteen members; the city was divided into six districts of which each elected three members. The Board had to appoint committees for public works,

¹ Morris 1970, 4; Wall 1998, 1; Bickford-Smith 1983, 191; Dewar e.a. 1990, 14; Shorten 1963, 131.

general matters, health, fire fighting, finances, office establishments and markets, and it was given a full responsibility to decide on vital matters such as gutter sweeping and garbage removal. The Municipality also got the power to borrow money, up to 20,000 pounds, for permanent improvements without the consent of the householders. A Superintendent of Public Works would assist the Board. This Act did not radically alter the powers of the Municipal Board, but did specify that a minimum of 227.5 litres of water per day should be supplied to each household as soon and as far as practicable. Under the Cape Town Municipality Amendment Act of 1867, Cape Town at last achieved the fully-fledged municipal government, wardmasters were abolished², 18 town councillors were elected, and the chairman of the Council became the Mayor of Cape Town.³

Water Supply from the 1840s to 1870s

In the early 1840s, the old waterhouse was dilapidated, the mains corroded, and the water supply quite inadequate in dry weather. In February 1840, the Water Superintendent advised wine merchants and coopers to draw their requirements from the stream in Caledon Square. John Fairbairn⁴, the editor of *The South African Commercial Advertiser*, suggested the advisability of procuring further springs for the supply of water to Cape Town by establishing a private company because the existing supply was inadequate. The Water Company was formed in 1847 and a committee elected to collect information and commission surveys. Thirteen hundred shares were taken out in a few weeks; however, the company proved to be a failure. Residents were afraid that it would interfere with a cheap supply.⁵

In the meantime, the commissioners had gone ahead with plans to “save” water. A new reservoir was built in Caledon Square in 1842 to distribute water to the Fish Market and other places to clean gutters. (See Figure 3.1) Water from this source was also used in the town prison, in order to save drinking water from the main spring in the gardens.⁶ The Good Hope Mill Estate was purchased to obtain the water rights, which rendered an increased supply from the Waterhof Spring and Platteklip Stream for the town’s requirements, the additional water being diverted into the Hof Street waterhouse.⁷ At this time, the older houses had their own wells, but the water in them was brackish. Water became so scarce that a proclamation was published offering rewards for the

² The abolishment of the Board of Wardmasters had already been discussed in 1858 but its role in controlling the Board of Commissioners was thought to be too important. CCP, SC2-1858.

³ Picard 1969, 34–35, 44; Bickford-Smith 1983, 191; Wall 1998, 1.

⁴ 1794–1864. Editor of *Commercial Advertiser* 1824–59. Member of Legislative Assembly 1850–59.

⁵ Burman 1969, 98–99; Laidler & Gelfand 1971, 264–65.

⁶ Warren 1992, 59–60.

⁷ Barlow, Chas. R., Report on Cape Town’s Water Supply, October 1914, 3. 3/CT, 4/1/4/298, F134/4. KAB; Shorten 1963, 122.

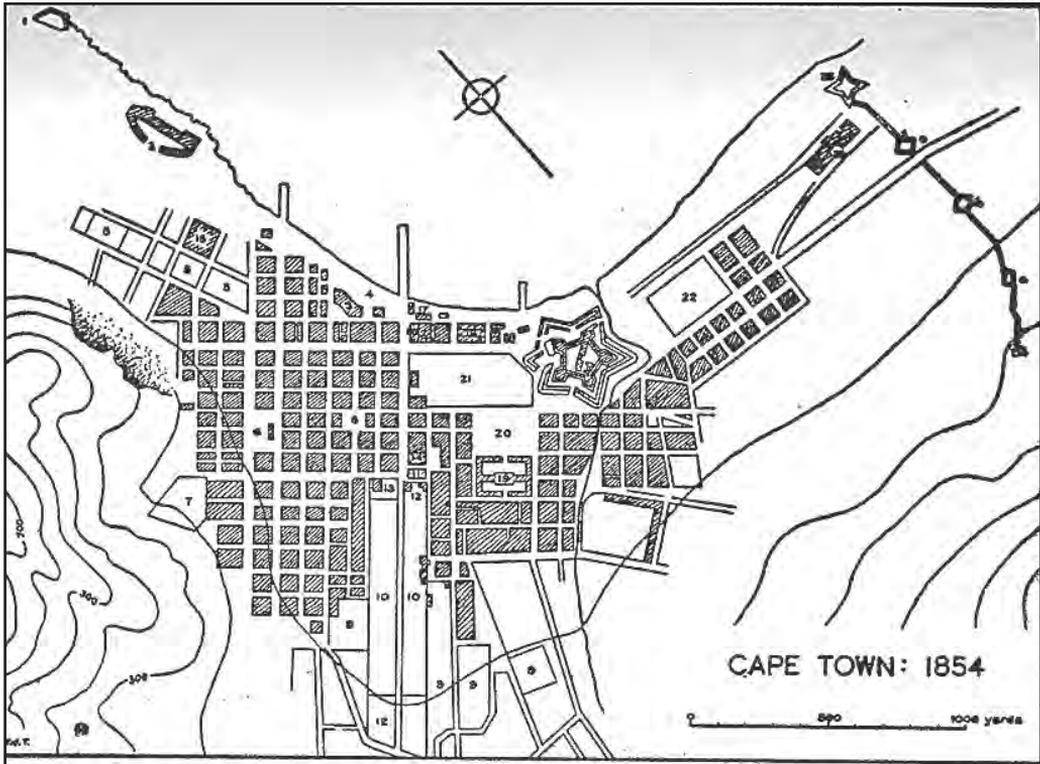


Fig. 15.—Cape Town: 1854. (Redrawn from a map in the Cape Archives.)
 1, Chavonnes Battery; 2, Amsterdam Battery; 3, Rogge Bay Battery; 4, Fish market; 5, Cemeteries; 6, *De Boeren Plein*; 7, *Schotsche Kloof*; 8, Greenmarket Square; 9, Private gardens; 10, Public gardens; 11, Public offices; 12, Colonial Office; 13, St. George's Cathedral; 14, *Groote Kerk*; 15, Somerset Hospital; 16, Shambles; 17, Post Office; 18, Prison; 19, Great Barracks; 20, Caledon Square; 21, Grand Parade; 22, New Market; 23, Military Hospital; 24, Remains of the "French Lines" (a) Burgher Redoubt, (b) Centre Redoubt, (c) *Hollands Redoubt*; 25, Fort Knokke.

Figure 3.1. The plan of Cape Town in 1854. (Mabbutt 1957, 163)

discovery of springs on Government land. In an effort to improve the position, the Board bought up more private springs and water rights. Nevertheless, in February 1849, the Superintendent reported that the scarcity of water was so great that he had stopped street services, to keep a reserve for fire fighting. The flow in *Platteklip* stream, the main source, was down to nine litres per minute. During March, the waterworks buildings and other property of the municipality was sold by public auction.⁸

Only about one-fifth of the houses in city had water on the premises, the remainder relying on public fountains. The Board of Commissioners now decided to build a reservoir with a capacity of 11,000 cubic metres. This reservoir (No. 1) was completed in 1852, between *Hof* and *Orange* Streets, at a cost of 2,700 pounds. A pipeline was laid from the *Stadsfontein* and the *Platteklip* Stream to this reservoir. Cape Town, however, was now

⁸ Laidler 1952, 179; Laidler 1939, 295.

expanding at such a pace that the Board in 1856 embarked on a larger reservoir (No. 2), which cost 8,100 pounds, on a site that adjoined the first. The new reservoir had a capacity of 55,000 cubic metres and it was completed in 1860.⁹ (See Figure 3.2)

In 1858 Patrick Fletcher¹⁰, the Colonial Surveyor, spent time on the top of Table Mountain and made several recommendations. Among them was a scheme to drive a tunnel through the Twelve Apostles Range from the foot of Lower Disa Gorge and to lead water by pipeline to Cape Town. He also recommended the construction of a storage dam in a hollow immediately northeast of Maclear's Beacon, the highest point of the mountain, but this was not considered.¹¹ In the previous year James Cameron¹², the Town Engineer, and Hercules C. Jarvis¹³, the Chairman of the Board of Commissioners, both had also been on the opinion that enough water for the needs of Cape Town could be found on Table Mountain.¹⁴ Cameron said that the existing water supply was insufficient to allow every house to take a private water leading.¹⁵ He presented in 1859 a proposal to supply water from two streams in the western side of Table Mountain, but this was impossible to realise because of the high cost. Cameron's estimates of the available quantity of water also raised suspicions.¹⁶

Although new reservoirs had helped, they did not solve the water problem. In the 1860s, Cape Town used new municipal powers and bought out water rights in the town area to improve water supply. In 1862, a part of the Waterhof Estate was bought and in 1865, "Kotze's Spring" on the Leeuwenhof Estate was acquired. In 1868, all the watermills were bought up along the Platteklip to obtain their water rights. After these purchases, water pipes could be spread over the whole city, extending from the military lines at the Toll Bar to Sea Point. During 1861-1864, three plans for a reservoir in Platteklip were made by Town Engineer Peter Penketh and two independent engineers. These were never constructed, partially for financial reasons, but in 1869 two weirs, filter beds and a pipeline were built in the gorge of Platteklip. (See Picture 3.1) They served as the main water supply until the close of the 19th century when they were superseded by the reservoirs on Table Mountain.¹⁷ The *Cape Monthly Magazine* described these waterworks in 1873:

A filtering dam has been constructed in the garden attached to the old water mill, and the water is conveyed down to it by pipes from a pond formed by a wall built across the ravine at the junction of the two streams [...] From the filtering dam a pipe conveys the water direct to

⁹ Hattersley 1973, 179; Burman 1969, 99; Shorten 1963, 122; Timoney 1993, 11.

¹⁰ About Fletcher, see Ross and Murray 2008.

¹¹ Gamble 1875, 1-4; Crump 1966, 103.

¹² Town Engineer 1856-57.

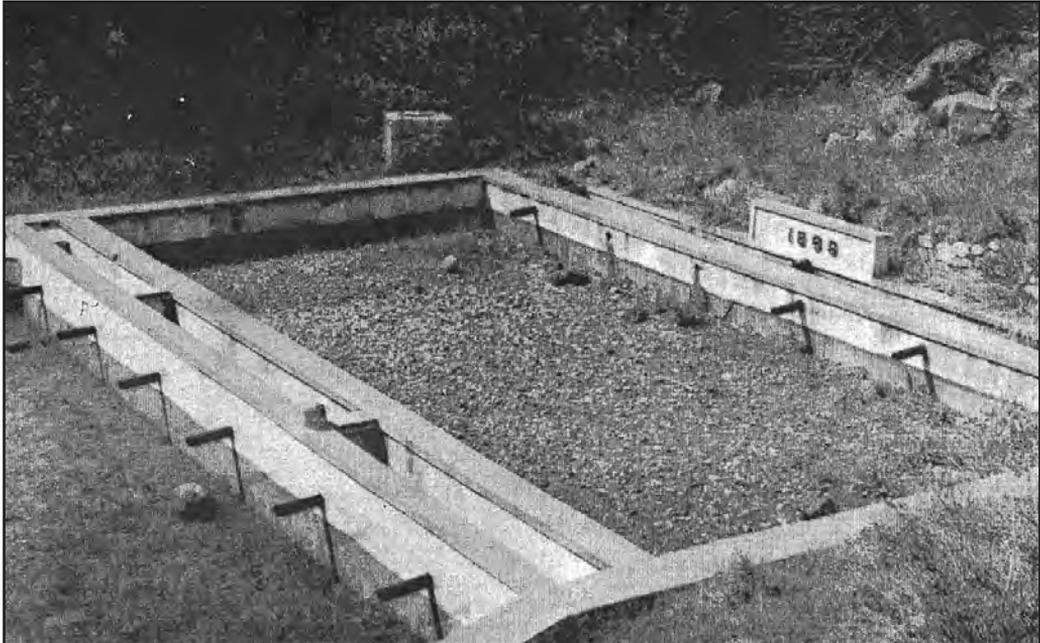
¹³ 1803-89. Commercial magnate and legislator. Chairman of the Board of Commissioners 1848-60.

¹⁴ CCP, SC7-1857, 68-70, 114-115.

¹⁵ Ibid., 14.

¹⁶ CCP, A15-1879, 16-17.

¹⁷ Mayor's Minute, Cape Town, 1881, 3; Gamble 1875, 9-11; Burman 1969, 99; Luckhoff 1951, 14-15.



Picture 3.1. Platteklip filter bed. (Source: Luckhoff 1951)

the water-house which encloses the grand old spring on Breda's estate. This spring originally, I believe, was the exclusive source of supply when Mr. Chisholm first carried the waterworks of Cape Town into execution.¹⁸

The Effects of the Lack of Water

Worst affected by water shortages were the city's poor and the working classes, who relied on the public pumps and fountains, which were shut off at night to conserve water.

Dr. John Laing described the consequence of this:

many [of the working class] being employed until late every day, have no time for carrying it. They used to carry water at night when they came back from their work, but the pumps are now locked up at night.¹⁹

Consequently, those who could afford it had to employ others to carry their water.²⁰ Alternatively, they could rush to the pumps after work where "sometimes twenty or thirty buckets [are] waiting to be filled. There is also very often a row there, through the people quarrelling about the water".²¹ Laing was of the opinion that every private dwelling should have a water leading. In this way, there would be no need for public fountains and

¹⁸ On the sources 1873, 368, 370.

¹⁹ CCP, A1-1859, 11.

²⁰ Ibid., 16, 28.

²¹ Ibid., 28.

consequently water would be saved.²² If we compare this with the situation, for instance, in London, we find similarities. In 1850, 80,000 houses were without water supply and in 1856 whole streets were without supply pipes. People living in these houses and streets obtained water from standpipes but the supply was available only on alternate days and not at all on Sundays.²³

In later District Six, the condition of roads in the early 1860s was poor and there was the lack of proper drinking water, drainage, and sewerage facilities. A French observer described the area in *Cape Monthly Magazine*:

*It is a rambling, untidy locality. The houses and streets have a newly settled appearance; and the prevailing idea suggested is that of a busy, striving, energetic population having thrown themselves upon the soil, converted into bricks all but a small portion of it, and built houses of every shape and kind on the narrow remainder. Of streets there cannot be accurately said to be any; drains there are positively none, unless it be allowable to regard the whole surface of the earth in that light.*²⁴

In a memorandum to the municipal commissioners, the inhabitants had already requested in 1842 more fountains, because of the increasing number of houses being built and of inhabitants residing at the entrance of the town.²⁵

The first water restrictions had to be enforced in the 1870s. This was because the Town Council's conservative policy towards improvements had caused the deterioration of the condition of the water supply compared with the 1840s. In 1872, according to the City Water Works Committee, the water supply was not able to meet the demand and the supply had to be cut off at night.²⁶ While the average daily consumption had risen, the population had doubled in the same period, this reduced water consumption from 52 to 41 litres per person.²⁷

The city lived on the edge of disaster. The task of reporting on the water supply was given to John G. Gamble²⁸, the Hydraulic Engineer to the Cape Colony. He researched the surroundings of Cape Town and recommended the building of a new, bigger reservoir above the older ones because the storage space for water in older reservoirs was quite insufficient; the reservoirs could hold only 38 days supply when in England requirement was 200 days. He also recommended that all the water rights in the town area that were still in private hands should be acquired.²⁹

The poorest classes were as usual worst affected by the situation and bore the real cost of the unsanitary conditions, suffering high mortality rates. Most of the city, and especially the poor, were still dependent on the public fountains for water. During the periods of

²² Ibid., 14.

²³ Draffin 1939, 34.

²⁴ Quoted in Schoeman 1994, 18.

²⁵ Warren 1985, 15.

²⁶ Barlow, 4/1/4/298, F134/4, 3/CT, 4.

²⁷ CCP, A15-1879, 59.

²⁸ 1842–1889. Hydraulic Engineer to the Cape Colony 1875–1886. Chief Hydraulic Engineer of Ireland 1887–1889.

²⁹ Gamble 1875; CCP, A15-1879, 4, 31, 77–78, 80–81.

drought, or in the dry summer months, water was shut off at night, and sometimes the public water pumps were chained up during the day. During one particularly dry spell, the *Cape Times* described the effect of the water restrictions on the city's poor:

*(T)he suffering from want of water is intense among the poorer class of people [...] when the pump handles are free so fierce is the competition for the use of them that weak folks have no chance in the struggle, and are compelled to go away empty.*³⁰

3.1.2 More and More Water from Table Mountain

In this chapter, the new legislation in the early 1880s concerning Cape Town is first described. This was the part of the sanitary reform that will be dealt more thoroughly in Chapter 4.1.2 in connection with the sanitary development. The 1880s and 1890s were a time of big water supply projects in Cape Town; the building of Molteno Reservoir, Woodhead³¹ Tunnel and two Table Mountain Reservoirs and their effect on Cape Town's water supply are considered. Lastly, the development in the small suburban municipalities in the Cape Peninsula from the 1880s to early 1900s is described.

New Legislation and the Need for More Capacity in the 1880s

The lack of water affected two areas of Cape Town's life. Firstly, water was essential for trade and the supply of shipping and industry. Secondly, the lack of it was the central problem of sanitary reform. While these were the motivation for improving supply, the inherent reason for water being a reason for conflict was that it represented an enormous drain on expenditure.³² In 1875 a series of articles were published in the *Cape Monthly Magazine* in which the need for street improvements and an increased water supply was reported. It sparked off a campaign, between 1875 and 1882, to improve the sanitation and infrastructure of the city; this campaign was also a part of the promotion of Englishness in the city. The English-language press stigmatised the opponents of reform as obstructionist, often in most virulently racist terms.³³

In 1882, the Cape Parliament passed legislation that gave municipalities the control of water supplies and sewage disposal. The Municipality of Cape Town was allowed to abandon the free supply of 114 to 227 litres of water per day to every dwelling house. It now got the power to supply 454 litres of water daily to each house, for which the

³⁰ Cape Times, 28 Jan. 1881.

³¹ Named after Mayor John Woodhead.

³² See for instance Juuti, Mäki & Wall 2007.

³³ Bickford-Smith 1995a, 45; Worden e.a. 1998, 223.

residents had to pay.³⁴ This amendment had produced some opposition during the Committee hearings in 1881. Those opposing said that the amendment was unworkable because the City could not at that time supply even the minimum free amounts to every household. What also provoked opposition was that now residents could not anymore refuse to take water from the City.³⁵

In his minute in 1881, Mayor William Fleming³⁶ argued that in the Cape Colony they should also have the same kind of legislation as in Great Britain considering the duties of the Officers of Health in municipalities. He was despairing if they in Cape Town could ever reach the situation where they could appoint a duly qualified officer.³⁷ In 1883, the Public Health Act of the Cape Colony empowered the Council to levy a special rate to cover the cost of health services and to control epidemics through the construction of isolation hospitals. As a result of the Act, a part-time medical Sanitary Inspector was appointed in Cape Town. Dr. G.H. Fisk, new Sanitary Inspector, recommended, in an early report, that the “street keepers” be placed under his jurisdiction to broaden their activities relative to the control of insanitary conditions prevalent within the city limits. This recommendation, however, was not acted upon.³⁸ In 1882, Thomas W. Cairncross³⁹ was appointed as the City Engineer and Superintendent of Waterworks in succession to J.S. Swallow⁴⁰. The other important posts in the Department at that time were Assistant City Engineer, “Clerk, Draughtsman and Storekeeper”, Chief Artificer, and Superintendent of Fire Engines.⁴¹ A Sanitary Engineer was appointed in 1887.

In the 1880s and early 1890s, the reformers sought to increase municipal borrowing powers and to narrow the municipal franchise by excluding the working class. A series of three municipal amendment acts, passed in 1885, 1890 and 1893, among other things, restricted municipal franchise by narrowing the definition of occupiers to those who were liable for tenant’s rate, by raising the property qualification for the franchise to 100 pounds, and by introducing a system of plural voting designed to favour businessmen and property owners.⁴²

³⁴ Wall 1998, 1; Bickford-Smith 1995a, 58.

³⁵ CCP, A13-1881, 31, 50–51, 76.

³⁶ Mayor 1881–83.

³⁷ Mayor’s Minute, Cape Town, 1881, 2.

³⁸ Shorten 1963, 144, 272.

³⁹ 1845–1918. City Engineer 1882–1894, 1897–98. Engineer for the Waterworks 1894–96.

⁴⁰ 1849–1890. City Engineer ?–1882.

⁴¹ Taylor 1984, 24.

⁴² Those owning property valued between 500 and 999 pounds qualified for two votes, those with a value of more than 1,000 pounds got a maximum of three votes.

More Capacity with the Molteno Reservoir

In 1877, a decision was made to build a storage reservoir big enough to cope with the water problem, and work commenced on the Molteno Reservoir⁴³. It was built above the two existing reservoirs so that it could also supply the higher parts of the town. (See Figure 3.2) It took four years to build this earthen reservoir, partly by excavation and partly by raising embankments on three sides. When finished in 1881, it was 12 metres deep, and could hold 186,000 cubic metres. However, the filling of the reservoir was still unfinished when on the 27th August 1882, the outlet tunnel collapsed and a great body of water rolled down upon the city. The rush of water caused substantial damage to the roads but, fortunately, no lives were lost. The repairing works started only in January 1884, because people living in the neighbourhood complained that the whole reservoir leaked and managed to delay the Town Council for a year. The damage, however, was repaired and the reservoir was completed in 1886.⁴⁴

“Whom to hang?” inquired the *Cape Argus* in a leading article a day after the disaster. “No doubt this is the first question that everyone asks when there is a calamity such as yesterday, when Orange Street was converted into a roaring African river, bearing away to the sea the water for which we might well give gold in a few months’ time.”⁴⁵ The Colonial Hydraulic Engineer, John G. Gamble, put the blame on the Town Council. The Council had insisted on the Town Engineer, James Tennant⁴⁶, taking the sole charge of building the reservoir as well as of his regular work, and then refused to follow his advice.⁴⁷ According to historian, G.M. Theal the reservoir never fulfilled original expectations.⁴⁸

Though the Molteno Reservoir gave the city sufficient storage space, the drought of 1880 focussed attention on another problem. Storage space was useless if the flow of water to fill the reservoir was insufficient. Gamble was asked for his opinion in 1881.⁴⁹ He researched Table Mountain and, in his report, pressed for the construction of a tunnel through the Twelve Apostles range. Reviving an idea first mooted in 1858 by Patrick Fletcher, the purpose was to tap the largest single catchment area of the Backwater Stream, running into the sea at Hout Bay. Besides the tunnel, a pipeline from the tunnel down to a reservoir was also envisaged. Gamble saw that Cape Town would have to look further a field for its supplies of water. The Berg River was suggested as a solution

⁴³ Named after Sir John Charles Molteno, first Premier of the Cape Colony 1872–78.

⁴⁴ Wood 1887; see also Lison 1978.

⁴⁵ Quoted in Green 1951, 166.

⁴⁶ Tennant was town engineer during the building of the Molteno Reservoir until 1879 or 1880. He was still titled as town engineer whereas J.S. Swallow was titled as city engineer.

⁴⁷ Gamble 1887, 28.

⁴⁸ Theal 1919, 204–05.

⁴⁹ Gamble was very active around this time. In 1878, he had made a water supply scheme for King William’s Town and in 1880, he made schemes for East London and Graaff-Reinet. Later he made also scheme for Port Elizabeth.

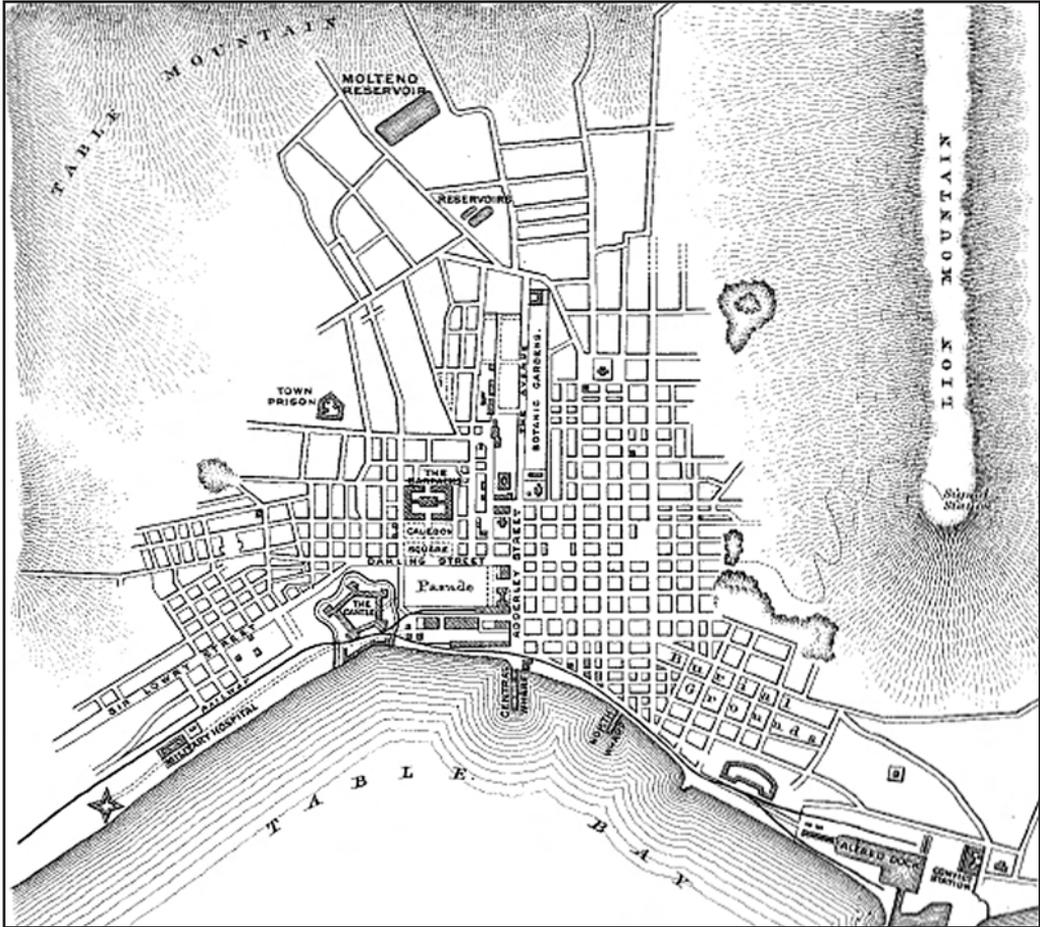


Figure 3.2. Plan of Cape Town in 1881. (Wood 1887, Appendix)

to the problem, but he felt the great distance, water rights, and vested interests that lay between the river itself and Cape Town, made any plans to harness the source impracticable.⁵⁰

The municipality delayed the works Gamble suggested until 1887. Some of the delay was the result of the sale of the plans and the development rights to a private enterprise, the Table Mountain Water Supply Company. The company proved incapable of action for mainly financial reasons and in the end profited only by selling the original plans and rights back to Cape Town.⁵¹ The company had first been negotiating with the Liesbeek Municipality about selling rights to it but this plan went wrong when the municipality was split in 1886.⁵² The Mayor of Rondebosch was of the opinion that the company failed because it was not thought desirable that the company should have the power to

⁵⁰ Hodson 1980, 349; Burman 1969, 101; Shorten 1963, 336.

⁵¹ Hodson 1980, 349.

⁵² CCP, A10-1886.

collect rates from the inhabitants for the supply of water.⁵³ It is also noteworthy that the main object of the company was to supply water to the suburbs of Cape Town and only supplement Cape Town's water supply.⁵⁴ The Company planned to use the second best option recommended by Gamble and build a pipeline starting from the southern plateau of Table Mountain and then continuing along the eastern slopes to Wynberg.⁵⁵

Even when the Town Council finally moved on the matter of getting water from Table Mountain and introduced into Parliament a Bill that would authorize the Council to carry out the scheme, they still had to fight against the opposition of the Suburban Municipality. This caused some extra expenses for Cape Town but Parliament eventually passed the Bill in 1887.⁵⁶ The next year Mayor T.J. O'Reilly predicted that after the tunnel had been completed "there will be an abundant supply of water for all Cape Town purposes".⁵⁷ The delay in doing what Gamble had suggested proved to be critical. Water consumption increased unabated. The construction of the pipe track (see picture 3.2) and the building of the dams on Table Mountain, however, provided new employment for migrant workers entering the city in increasing numbers.⁵⁸ In the building of the tunnel, there were some unforeseen problems. According to the contracts, work should have been completed on May 1889. The excavation progress was found to be so slow that the contractor could not carry out the contract, so in the early 1889 the work was continued departmentally. The assistance of experienced miners also improved the pace of digging work.⁵⁹

It was a proud day when the Woodhead Tunnel was opened in 1891. When construction work started, the Town Council had thought that the tunnel would solve water problems. The realisation, however, had dawned that, without a reservoir on Table Mountain the tunnel would be restricted to the low summer flow on the Disa stream. The Woodhead Tunnel was a necessary facility, but it was only a one step in a more comprehensive development programme. Now for the first time, the Town Council realised that expensive schemes would have to be undertaken. In 1892, a start was made on the building of a reservoir on the Lower Plateau of Table Mountain.⁶⁰ The Tunnel still proved its worth during the dry summer of 1892–93. The Mayor wrote in his minutes that "this [...] is the first occasion in the history of the municipal administration of Cape Town, that the dry season has not entailed the putting the city on short supply of water".⁶¹

⁵³ CCP, A9-1887, 50.

⁵⁴ CCP, A25-1882, 1.

⁵⁵ Gamble 1881–83, 5–6.

⁵⁶ Mayor's Minute, Cape Town, 1887, 2.

⁵⁷ Mayor's Minute, Cape Town, 1888, 4.

⁵⁸ Worden e.a. 1998, 227.

⁵⁹ Mayor's Minute, Cape Town, 1889, 7–8; Mayor's Minute, Cape Town, 1890, 6.

⁶⁰ Hodson 1980, 349; Burman 1969, 103.

⁶¹ Mayor's Minute, Cape Town, 1893, 4.



Picture 3.2. Labourers laying pipe-line on Table Mountain. (Source: KAB, AG 13847)

Table Mountain Reservoirs

The excavation work for the reservoir in Table Mountain started in January 1893, after a further year's delay. The Town Council had insisted that other more remote sources, namely the Breede River at Mitchell's Pass and the Witte River above Wellington, were considered. Even so, the ratepayers limited Thomas Stewart⁶², the engineer appointed to design the new works, to a total expenditure not exceeding 50,000 pounds. This was sufficient only for a 21 metres high dam impounding about 137,000 cubic metres. The severe drought at the beginning of 1894, however, apparently stimulated the Council into deciding to build the dam 3 metres above the originally proposed 34 metres, affording gross storage for 955,000 cubic metres.⁶³ The drought also forced Cape Town to negotiate

⁶² 1857–1942. Assistant of Colonial Hydraulic Engineer 1882–86. After this, as a private engineer, designed Wynberg waterworks, all the Table Mountain reservoirs, Muizenberg reservoir, Steenbras waterworks as joint engineer, the Zuurbekom waterworks for Johannesburg, and water supply and sewage works for many other towns in the Cape Colony and Rhodesia. In 1914, he designed a water supply scheme for Beira, in Portuguese East Africa. Stewart was also in 1898 the first council member of the British Institute of Civil Engineers to represent South Africa.

⁶³ Hodson 1980, 349.

with the Cape Town District Water Works Company in order to obtain an additional supply of water. The result was that on the 10th March 1894, the supply was augmented by 910 cubic metres per day. This supply was continued until the 2nd April, when the rains came.⁶⁴ The summer drought in 1895 necessitated the Council again to place the greater part of the city upon short supply from the 30th January to the 8th April, and, on the 14th February, negotiations were again started with the Cape Town District Water Works Company about providing water. The company agreed to supply the Council with a minimum quantity of 800 cubic metres per day. The supply was continued until the commencement of the winter rains on the 16th April.⁶⁵

The catchment area of Woodhead Reservoir was capable of yielding over two million cubic metres of water per year. Mocke Reservoir⁶⁶, the storage reservoir at the foot of Table Mountain, was finished as a part of this scheme. Work on the next Table Mountain reservoir started in 1898 immediately above the Woodhead, on the original place suggested by John G. Gamble.⁶⁷ The Governor, Sir Walter Hely-Hutchinson⁶⁸, officially opened this reservoir, named after him on the 5th March 1904.⁶⁹ The water surface covered 162,000 square metres, and the reservoir had a capacity of c. one million cubic metres.⁷⁰ (See Figure 3.3)

In the late 1890s, two offers were made concerning selling the water rights of two rivers to the Town Council. First, in 1897, rights over Buffels Stream were offered and then in 1898 a proposal was made about the rights over the Sir Lowry Pass River. After close examination, both schemes were considered too expensive in comparison with the advantages gained.⁷¹ In 1900, proposed alterations to Nos. 1 and 2 Reservoirs in order to augment their storage capacity were discussed. Stewart was asked for his opinion concerning the advisability of this. He did not think it worthwhile to extend or repair them principally because Molteno Reservoir had sufficient capacity for a service reservoir. The only future use he could suggest for them was for using the site for filter beds.⁷²

⁶⁴ Mayor's Minute, Cape Town, 1894, 20–21.

⁶⁵ Mayor's Minute, Cape Town, 1895, 26.

⁶⁶ Named after Mayor J.G. Mocke.

⁶⁷ Mayor's Minute, Cape Town, 1897, 43–47.

⁶⁸ 1849–1913. Governor of the Windward Islands, West Indies 1889–93. Governor of Natal 1893–1901 and the Cape Colony 1901–10.

⁶⁹ The first proposal for the name was Victoria made by Mayor Thomas Ball in stone-laying ceremony at 29 March 1900. Mayor's Minute, Cape Town, 1900, 81.

⁷⁰ Burman 1969, 106.

⁷¹ Mayor's Minute, Cape Town, 1898, 73–75; Annual report of the City Engineer and Surveyor, for the year ended 30th June, 1898. In Mayor's Minute, Cape Town, 1898, xxi–xxii.

⁷² Thomas Stewart to the Town Clerk, Capetown 18 June 1900. 3/CT, 4/1/1/91, E41/1. KAB.

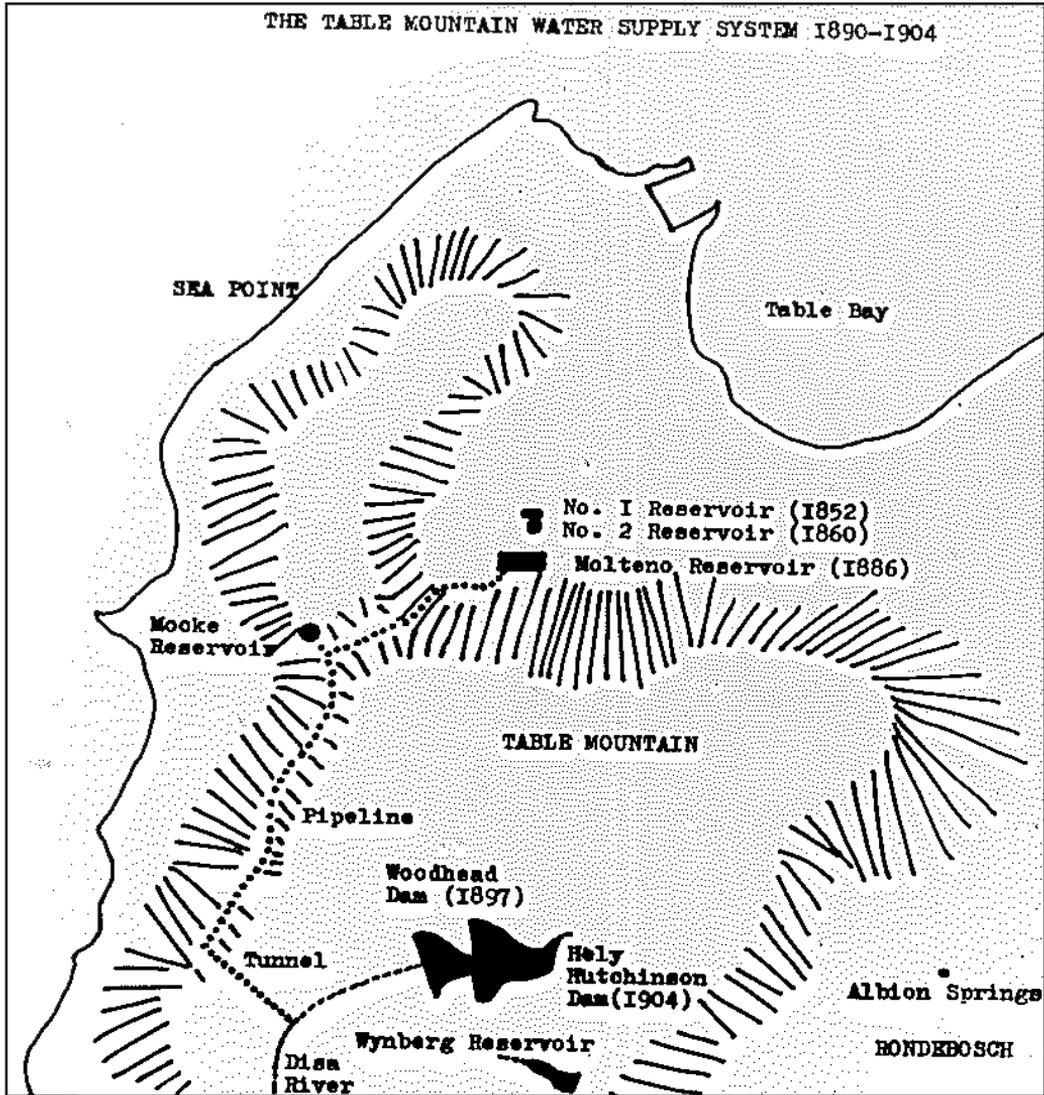


Figure 3.3. Table Mountain water supply system in 1890–1904. (Grant 1991, facing page 93)

Suburban Developments⁷³

Green Point and Sea Point was granted municipality status in 1839 and Woodstock in 1881. In 1883, the existing villages of Mowbray, Rondebosch, Newlands, Claremont, and Wynberg were combined under the title of the Liesbeek Municipality. The main idea behind the union was that the bigger group could possibly improve the water supply and the drainage system more effectively than smaller units could. In 1886, however,

⁷³ See Figure 3.7.

Wynberg withdrew from membership, and Claremont followed its example shortly afterwards. In 1890, Mowbray and Rondebosch also parted company. The scattered dispersion of population was the main reason for the split.⁷⁴

In his report for year 1884, the District Surgeon wrote that the water supply in Wynberg District was inadequate in proportion to the population. Most houses were supplied by wells and cesspools existed, usually in close proximity. They posed an obvious danger to public health. The conservation of the Liesbeek River also caused problems. The members of poorer classes in Rondebosch and Mowbray were using water from it for drinking purposes. The next year he commented that regarding the sanitary condition, there was not much to say in the favour of the district. Many parts were overcrowded and sanitary arrangements were much neglected. In his opinion, it was "very desirable that a scheme for the better supply of water for the villages should be adopted".⁷⁵ In 1887, three public wells existed in Wynberg and some private houses were totally dependent on their own wells. Some people also had wells but had to rely on rainwater because the water in the wells tasted bad and smelled abominably. In Claremont, a great number of inhabitants were using water from the Lekkerwater stream. Many cesspools also existed, but most had been closed up. In Mowbray, a large portion of the population got their water from the Liesbeek River, which was polluted by local breweries.⁷⁶

In early 1887, a conference between the representatives of Cape Town and the suburbs discussed the water supply in the area. The conference broke up after it was considered impracticable to carry out a combined scheme because of the insurmountable difficulties.⁷⁷ In 1889, the Cape Town District Waterworks Company was established for the building and maintaining of reservoirs and related installations for the supply of water to some of the smaller peninsular municipalities. The municipalities of Woodstock and Claremont, however, had the right to acquire the undertaking after ten years at the current valuation of its assets. The company set about purchasing of properties that contained strong springs of water. As an example, the springs at Rondebosch-Newlands were bought, pumping stations erected at the Albion and Kommetje springs, and a serving reservoir built at Newlands.⁷⁸ Before this, Woodstock had been entirely dependent on well water.⁷⁹ Increased water supply in the area led, however, to another problem, what to do with all the dirty water.⁸⁰

⁷⁴ Rosenthal 1957, 33; Murray 1958, 46; Wall 1998, 1.

⁷⁵ District Surgeon, 1884, 11; District Surgeon, 1885, 9.

⁷⁶ CCP, A10-1886, 15–16, 19, 21; CCP, A9-1887, 1, 5.

⁷⁷ CCP, A9-1887, 14.

⁷⁸ Barlow, 4/1/4/298, F134/4, 3/CT, 4; Slinger 1968, 13; Shorten 1963, 149.

⁷⁹ CCP, A2-1889, 1.

⁸⁰ CCP, A20-1892, 67. More about this in Chapter 4.1.

When the Municipality of Green Point and Sea Point was created, the Municipality of Cape Town was put under obligation to provide it with water. This was found to be inadequate and in 1861, the private Sea Point Waterworks Company was formed. It was not a success and was liquidated by 1880. A new company was formed in 1884. The difficulty of providing a supply of water from the Molteno Reservoir to the higher levels of Green point and Sea Point, owing to the insufficient pressure in the mains, was the subject of much consideration; the supply was utterly inadequate for the needs of the local residents. The private Sea Point Water Works Company had a limited and unreliable supply, because of defects in the piping. When Cape Town opened negotiations with this company for the purchase of all its rights and interests, it was felt that this would not only remove the difficulty in question but that the additional supply of water would materially augment the supply available from the Molteno Reservoir. These negotiations, nevertheless, achieved no result. Consequently, the Town Council of Cape Town proceeded with steps to provide an independent supply of water from Kloof Nek. The Water Works and Fire Brigade Committee recommended that a break pressure tank and distribution reservoir should be constructed above Botany Bay. These were completed in 1896. The Sea Point Water Works Company opened negotiations again during the same year but these also ended unsuccessfully. After that, in 1898 the company transferred its property to the Green Point and Sea Point Municipality, which subsequently used its water sources for watering roads and trees and flushing drains. By 1902, only two houses in the municipality were not supplied with water by Cape Town.⁸¹

Whilst Cape Town was busy with the Woodhead and Hely-Hutchinson Reservoirs, neighbouring Wynberg decided to build its own reservoirs. Thomas Stewart was consulted, and in due course, work was commenced on the two reservoirs. The upper one had a capacity of 1.285 million cubic metres, whilst the lower one immediately below it had a capacity of 123,000 cubic metres and cost three times more. (See Figure 3.6) They were in 1903 named as Victoria and Alexandra Reservoirs. The disparity in cost was probably due to the fact that Victoria Reservoir was completed in 1896, whilst work on Alexandra did not end until 1903; the price, therefore, was influenced by the increase in the cost of living brought about by the South African War. Connected to these building projects the first Town Engineer was also appointed in 1900. By 1902, Wynberg had improved its water supply and the combination of the reservoirs with the catchment source at the Orange Kloof farm made Wynberg self sufficient in its water supply needs. People living in Wynberg, however, were disappointed in their expectation

⁸¹ Reports by Local Authorities, 1894. In Reports on the Public Health, 1894, 216; Mayor's Minute, Cape Town, 1895, 27; Mayor's Minute, Cape Town, 1896, 29–30; Reports by Local Authorities. In Reports on the Public Health, 1898, 190; Kagan 1975, 42–47; see also CCP, A3-1893.

of getting sufficient water, and Wynberg suffered the same experience as Cape Town, where demand always exceeded supply. Accordingly, in 1907, Wynberg was forced to construct yet another reservoir, the De Villiers, below the other two.⁸²

In Kalk Bay, the most important municipal services inaugurated by the Town Council were those of water, electricity, and drainage. The municipality's storage dam on the Silvermine River, the Hansen Reservoir, was inaugurated on the 17th April 1903. Work on the reservoir itself had already been completed and water supplied to a limited number of houses in April 1900. Prior to the construction of the reservoir, water was drawn from streams and springs in the area. A number of residents also had wells. In 1901 and 1902, it was revealed that water from a number of these wells was polluted and this had resulted in several cases of typhoid fever.⁸³

3.1.3 The Search for New Solutions

In this Chapter, political conflicts in Cape Town in the 1890s are described. Then there is a description of the developments in the City Engineer's Department during the early part of the 20th century and a reference is made concerning comments made about the experiences of colonial municipal engineers. After that, there is a description of Cape Town at the turn of the century and how the bad water supply situation for the first time brought up the question of Peninsular co-operation or even municipal unification. Finally, the water supply schemes proposed in Cape Town during 1902–1904 are examined.

Political Conflicts

In the 1890s, the reforming clique acquired a fresh countenance. It included two politically influential Afrikaner Bond members, David Pieter de Villiers Graaff⁸⁴ and David Christiaan De Waal⁸⁵. Another active member of the Council was the department-store retailer John Garlick⁸⁶. A changing power base and improved prosperity contributed to a sense of civic responsibility in the 1890s. The notion of a "civic gospel" as it was understood in Britain, however, was only dimly grasped in Cape Town. Nevertheless, in the 1890s the

⁸² Burman 1969, 107; Robinson 1998, 183; Buirski 1983, 130–31; for more specific information about Wynberg see Robinson 1998.

⁸³ Kirkaldy 1996, 48.

⁸⁴ 1859–1931. Mayor 1890–92. Member of the Legislative Assembly 1891–97, 1908–10, in Union Parliament 1910–20. Minister without Portfolio in the Cape Colony 1908–10, in Union 1912–13. Minister of Public Works, Posts and Telegraphs 1911–12. Minister of Finance 1915–16.

⁸⁵ 1845–1909. Member of the Town Council 1877–95, Mayor 1889–90. Member of the Legislative Assembly 1884–1903; about his role in Cape Town municipal politics, see Orman 1983.

⁸⁶ 1852–1931. First one to introduce safety bicycles, motor cars and typewriters to South Africa. Member of the Legislative Assembly 1903–10.

members of the Clean Party were willing and able to spend large sums on municipal improvements. This did not mean that the lot of the poor was improved. On the contrary, the difference between Whites and other residents increased as the former began to benefit from the improvements.⁸⁷ Despite a temporary triumph of the Clean Party in the 1880s, effective victory came only after the franchise had been restructured in 1893. In 1897, the Town Clerk was defending the multiple vote system introduced in 1893 quite explicitly:

*If you were to revert to the system of a single vote [...] it would tend to bring about [...] a condition of things which actually exists in some districts of England, where there is a great socialistic element [...] Assuming that such a condition of things with a thoroughly socialistic Town Council existed in Cape Town, these socialistic people would have the power [...] of taxing the very people who find the money.*⁸⁸

There arose a dissension in 1897 and in some aspects, it echoed the earlier conflicts of 1861 and 1882, in as much as it represented a division of interests between the reformist businessmen who now dominated the Council, and the old rentier classes and their tenants. The influence of this latter group had diminished considerably since the 1880s, not only due to change in a municipal franchise, but also because of their declining economic position within the city's economy. The increasing importance of commerce in the economy and the growth of the suburbs saw a relative decline in investment in cheap housing and rent based income. Nevertheless, those opposed to further municipal expenditure continued to draw on the support of the working classes and small householders who perceived these reforms as serving the interests of the city's dominant class. Indeed, the charges of municipal corruption also formed a large part in the mobilisation of ratepayers against the Council.⁸⁹ Similarly, reformists continued to label their opponents as "dirty" and used racial criteria to explain the conflict, which was used to mobilise the English-speaking middle classes to bolster their control of the Town House.⁹⁰

Two polls were held about taking a municipal loan for improvements in water supply. In the second, the reformers managed to gain support. Those opposing the loan seemed to resemble the "dirty party" of the 1850s and 1880s, although now dubbed the "wreckers" by the press.⁹¹ The "clean party" of the "progressives" were perceived by their opponents to represent the interests of the city's businessmen forming a clique within the Council, "the members of which make things comfortable for one another".⁹² The "wreckers" on

⁸⁷ Worden e.a. 1998, 226.

⁸⁸ CCP, A8A-1897, 4–5.

⁸⁹ Cape Times, 13 Feb. 1897.

⁹⁰ Grant 1991, 96–97.

⁹¹ Cape Times, 29 July 1897.

⁹² Cape Times, 29 Jan. 1897.

the other hand were a disparate group of householders, large property owners, and the working classes, united by the issue of municipal debt, who questioned the necessity of a further reservoir, who feared a rise in property rates, and were concerned about the allegations of municipal corruption. The *Cape Times* had feared that this combination had the potential to defeat the reformers, particularly the “voting Malays” which it continued to stereotype as a “large class of small householders and occupiers which loves filth and cannot be expected to pay willingly for cleanliness”.⁹³ Furthermore, the working class householders were seen to be deceived and influenced by the “wreckers”:

*the language habitually used by Mr Hofmeyer and those who sorts with him is calculated to convey to those small property owners, slum owners many of them, that a raising of the rates is really at issue; and the waving of that red flag suffices to send them headlong to the poll to vote “Nay” to anything and every thing.*⁹⁴

City Engineer’s Department

City Engineer W.T. Olive⁹⁵ paid attention to the water distribution system of the city in his annual report in 1896. He said that he could not too strongly deprecate the “dribble” system⁹⁶. This system was according to him unsanitary, led to many complaints, and was generally most unsatisfactory. He was suggesting that the Council should adopt a system of constant flow throughout the city. This was a proposal also heeded by his successors, for example in the following year T.W. Cairncross commented that you just needed to examine various water containers for domestic use to find out how dangerous they were to health.⁹⁷

In 1901, the offices of the City Engineer and the Waterworks Engineer were separated. Robert O. Wynne-Roberts⁹⁸, at that time the City Engineer, was of the same opinion as the Electric and Waterworks and Fire Brigade Committee that the enormous increase on

⁹³ *Cape Times*, 21 July 1897.

⁹⁴ *Ibid.*

⁹⁵ City Engineer 1895–96. Olive was apparently appointed as City Engineer mainly to design a sewerage scheme and consequently resigned after one year in office. He, however, continued as Consulting Engineer for drainage and sewerage work after this. Before coming to Cape Town he had assisted in designing and carrying out the sewerage of Manchester.

⁹⁶ In dribble system a valve is inserted into the supply pipe. This valve allows only a certain amount of water to flow through it during a certain time period. This could have been anything from 40 litres to 400 litres per hour.

⁹⁷ Annual Report of City Engineer and Surveyor, for the year ended 30th June, 1896, in Mayor’s Minute, Cape Town, 1896, Appendix 3, xv; Appendix No. 3. Water Works. In Mayor’s Minute Cape Town, 1897, xv; the first criticizer against this system appears to have been the town engineer, Peter Penketh, already in 1868. He said that the system wasted rather than conserved supplies. History of the Molteno Reservoir 1984, 555; also the Hydraulic Engineers of the Colony, J.G. Gamble in 1875 and W.M. Grier in 1887 criticized the system. For Gamble, the biggest problem in the system were cisterns for collecting water and their unhealthiness. Gamble 1875, 7-8; According to Grier, the system led to a large waste of water. CCP, A9-1887, 42; this system was also criticized by workers of waterworks in 1879. CCP, A15-1879, 107–08, 111–12.

⁹⁸ City Engineer 1898–1902. Water Engineer 1901–06.

the duties of the City Engineer made it impossible for one person to cope with the work. Wynne-Roberts was appointed as the Water Engineer responsible for the administration of the waterworks and the search for a new City Engineer was started.⁹⁹ After over one year of searching, John Cook¹⁰⁰ was elected as the new City Engineer.¹⁰¹ This separation lasted until 1906 when the Water Works Department was amalgamated back with the City Engineer's Department. At that time Wynne-Roberts, still the Water Engineer, retired from the service of the Municipality and returned to England.¹⁰²

Two years later Wynne-Roberts gave, in the Royal Sanitary Institute, an interesting presentation about his experiences as colonial municipal engineer.¹⁰³ According to him the healthy climate, the dry atmosphere, and the character of the people were reasons why many necessary public health works were delayed in South Africa. The very important part of the engineer's work was to carry out his own surveys, and make his own maps and plans. This took a lot of effort and entailed many difficulties. After all this, the ratepayers objected to any proposal that meant expenditure and increase in the annual rates. The main difficulties to be overcome in municipal works were those associated with droughts, floods, and cost. Droughts were sometimes extending so long that they rendered the water supply very precarious so affecting, for instance, the flushing of sewers. Abnormal rainfalls causing floods affected the drainage creating problems for water engineers and people connected with railways, roads, and irrigation. The question of the cost of these works was also important since almost all the materials had to be imported. Wages and the cost of supervision were high. In addition, it was not easy to obtain municipally trained and qualified assistants. Competent engineers often lacked municipal experience. The engineers in leading towns also had to design and execute a great variety of difficult schemes, such as artisan dwellings, African locations, electric light stations, waterworks, and street improvements. In the colonies, the distances between principal towns were great and the cost of travelling expensive, so, as a consequence, municipal engineers had very few opportunities to meet and discuss subjects of mutual interest. In many places, Councillors also had short terms of service, which had a detrimental effect on the general policy implementation. For example, a scheme is advocated one year, but then when new members are elected to the council, the policy is changed and the scheme dropped. To summarise Wynne-Roberts said that in the new countries, the engineer finds that the field for development is large, and that he has many opportunities to demonstrate his value, power, and independence. It is an excellent school for the development of the qualities of self-confidence and tact.

⁹⁹ Mayor's Minute, Cape Town, 1901, 181–82.

¹⁰⁰ City Engineer 1902–07.

¹⁰¹ Mayor's Minute, Cape Town, 1902, 119–20.

¹⁰² Mayor's Minute, Cape Town, 1907, 57.

¹⁰³ Wynne-Roberts 1908.

The Early 20th Century Cape Town

*It has an excellent water-supply derived from Table Mountain, but its drainage is bad and the death-rate excessively high for a position of such natural advantage [...] There is a large native quarter where the Malays congregate. It is overcrowded and insanitary to a degree, and contributes conspicuously to the high death-rate.*¹⁰⁴

The Woodhead Dam in Table Mountain and the pipe track to carry water from there to the city were ready in 1902. At the same time, most stone and brick houses also had water laid on and the pumps had practically disappeared.¹⁰⁵ Why did it take nearly 50 years to solve problems of water supply when they were already clearly identified in the middle of the 19th century? One answer for this question could be purely economic; the identification of the water question amongst the working classes as a matter that was put forward by house-owners and middle classes. Tenants were afraid that the building of better water supply would mean higher rents and so the poorer inhabitants of the city opposed these reforms.¹⁰⁶

In 1902, Cape Town had c. 64,000 inhabitants and in summer, there was a severe water shortage. This shortage forced the Electric and Water Works and Fire Brigade Committee to open various wells so that citizens could get water. The City Engineer was also directed to arrange the supply of salt water to offices, warehouses and other premises for flushing and other sanitary purposes, free of cost.¹⁰⁷ The population growth had been considerable in the preceding years; in 1891, the population had been only 48,000.¹⁰⁸ Partly because of these reasons, the Water Engineer presented a plan to provide salt water from Camps Bay in 1902 to use it for watering streets.¹⁰⁹ It was first used for this purpose in 1861. The Water Engineer and later the City Engineer presented this plan several times over the next years but it was never realized, firstly because of the Franschhoek scheme¹¹⁰ and later because city councillors thought the plan too expensive.¹¹¹

¹⁰⁴ Little 1903, 162–63.

¹⁰⁵ Hattersley 1973, 179; Worden e.a. 1998, 226–27; Simkins & van Heyningen 1989, 99–100.

¹⁰⁶ Grant 1991, 198–205.

¹⁰⁷ Mayor's Minute, Cape Town, 1902, 163–64.

¹⁰⁸ CCP, G21-1903, Volume 1, 3.

¹⁰⁹ The first plan for extending the salt water supply system for the higher levels of the city was made in 1900 after problems with the system in 1899. Mayor's Minute, Cape Town, 1899, 68; Annual Report of the City Engineer and Surveyor, for the year ended 30th June, 1900, in Mayor's Minute, Cape Town, 1900, Appendix 3, xlv; In Durban the use of sea water for street watering was abandoned with the completion of the Umlaas Water Scheme. Borough Engineer's Official Report for the Year 1889–90. In Mayor's Minute, Durban, 1890, 19.

¹¹⁰ More about this later.

¹¹¹ Memorandum of Cape Town water engineer to the Electric and Water Works and Fire Brigade Committee in 2 Aug. 1902, 26 Sep. 1902, 3 Nov. 1902, 31 Oct. 1904, 8 May 1905, 30 May 1905, 13 June 1905, 6 July 1905, 17 Sep. 1906, 1 Nov. 1906, 6 Nov. 1906, and 15 Nov. 1906, Memorandum of Cape Town city engineer to the Electric and Water Works and Fire Brigade Committee in 3 June 1908, and 19 Dec. 1911. 3/CT, 4/1/1/90, E37/1. KAB.

The Cape Peninsula Commission of 1902

At the beginning of the 20th century, the Municipality of Cape Town again became concerned about its water supply and requested a government commission to enquire into the matter. The Cape Peninsula Commission was appointed in February 1902 and instructed to cover, in addition to water supply, the whole question of the local government in the Peninsula. After more than one year and 98 meetings, the majority report recommended that the eight municipalities, which made up “greater Cape Town”, be amalgamated into “one unified body”. The issues identified as requiring attention at this early metropolitan scale included sanitation, water supply and other services and “all other municipal matters”. In his minority report Dr. A. John Gregory, the Medical Officer of Health for the Cape Colony, recommended the amalgamation of the southern suburbs as one municipality, the inclusion of Green Point and Sea Point to Cape Town and leaving Maitland outside. The report, however, was not acted upon. Green Point and Sea Point, Woodstock, and Wynberg wanted to be left alone; Cape Town’s wish was to be constituted as a kind of water board for the Peninsula; Mowbray, Rondebosch, and Claremont did not object to amalgamation, but preferred a Board of Works to carry out water and sewerage schemes. There was still in 1905 an attempt at a smaller amalgamation, when the Municipal Combination Bill was presented to Parliament. The sole purpose behind the Bill was that Woodstock, Mowbray, Rondebosch, and Claremont could be united. The Bill was accepted but the unification never happened.¹¹²

The situation in the suburbs was by no means hopeful. In 1902, the other southern suburbs besides Wynberg had no water storage system at all and relied wholly on wells and springs for drinking water. According to the Peninsula Commission, the suburban water supply system provided an average daily supply of 64 litres per head when the minimum desired was 136.5 litres per head per day.¹¹³ In 1902, the Suburban Municipal Waterworks Board¹¹⁴ approached Cape Town with a proposal to set up a central body that would embark on a large-scale scheme to alleviate the position. A joint committee was set up consisting of the representatives of the municipalities in October 1903 with a view to submitting a draft proposal for amalgamation upon a water supply scheme, but by 1904 Cape Town was so short of water that, in summer, supplies had to be cut off during the day.¹¹⁵

¹¹² Mayor’s Minute, Cape Town, 1902, 110–111; Mayor’s Minute, Cape Town, 1903, 35–39; Mayor’s Minute, Cape Town, 1904, 19–20; Parker & Beck 1910, 3; Van Heyningen 1981b, 5–8; Wall 1998, 2; Parnell & Mabin 1995, 50; CCP, A24-1905.

¹¹³ CCP, G21-1903, 6.

¹¹⁴ A venture of Woodstock, Mowbray, Rondebosch, and Claremont established after they took over the Cape Town Districts Water Works Company in 1899. CCP, A24-1898.

¹¹⁵ Barlow, 4/1/4/298, F134/4, 3/CT, 7; Shorten 1963, 152.

New Water Schemes

Cape Town decided in 1903 not to proceed with any additional water schemes on Table Mountain, as suggested by Thomas Stewart the previous year. Stewart had told the Parliamentary Committee that he did not know of any suitable water sources in the Cape Division. The nearest suitable source was, according to him, in the Steenbras area. He also suggested that steps should be taken as early as possible to investigate additional sources so that the town would be ready with a scheme when the existing sources were being used to capacity.¹¹⁶ Cape Town started to look for a large scale project and examined a number of alternatives. (See Figures 3.4 and 3.5)

1. Du Toits Kloof had been offered in 1902, but Stewart reported that no good site existed for a reservoir and that not enough water could be taken from it.¹¹⁷
2. Palmiet River was considered by Stewart capable of yielding 77,000 cubic metres per day. Unfortunately, the pipeline would have been enormously expensive.¹¹⁸
3. The Witte River scheme had been offered to Cape Town in 1892. However, the reported flow was only 11,000 cubic metres per day, no site existed for a reservoir, and it was 77 kilometres from Cape Town.¹¹⁹
4. Twenty-four Rivers, which was recommended by Thomas Bain¹²⁰ in 1888, was over one hundred kilometres from the city, and would have needed a large and expensive main due to the very gradual slope.¹²¹
5. Steenbras had been acquired by the Mowbray and Rondebosch municipalities but it was found that more money would have to be spent on buying further farms that would be submerged.¹²² Nevertheless, Stewart viewed it favourably, as it was only 63 kilometres from Cape Town, and a dam could be built to store c. 27 million cubic metres.
6. Two schemes were situated on the Wemmers River, one at Oliphantshoek and the other at Zachariashoek. The Oliphantshoek scheme was regarded as too small and the Zachariashoek as too expensive.¹²³

In July 1903, the Council formally adopted the Berg River Hoek Scheme.¹²⁴ The Water Engineer R.O. Wynne-Roberts wrote in his report about the comparison between the Berg River Hoek and Wemmershoek Schemes:

¹¹⁶ CCP, A13-1902, 79–80.

¹¹⁷ Thomas Stewart to the Town Clerk, Capetown, 25 Apr. 1902. 3/CT, 4/1/2/65, E186/2. KAB.

¹¹⁸ Parker 1904, 18–20.

¹¹⁹ Report of the City Engineer 5 Nov. 1892 and Report of Mr. Thomas Stewart 4 Nov. 1892. 3/CT, 4/1/1/91, E41/1. KAB.

¹²⁰ 1830–1893. Engineer and Road Inspector of the Cape Colony. Built 24 mountain passes in Cape Colony.

¹²¹ Thom. Bain to H.H. McNaughton, Assistant Commissioner of Crown Lands, 14 Apr. 1888. In CCP, A9-1888, Appendix C.

¹²² CCP, A24-1898.

¹²³ Parker 1904, 17, 23–24.

¹²⁴ Mayor's Minute, Cape Town, 1903, 73–75.

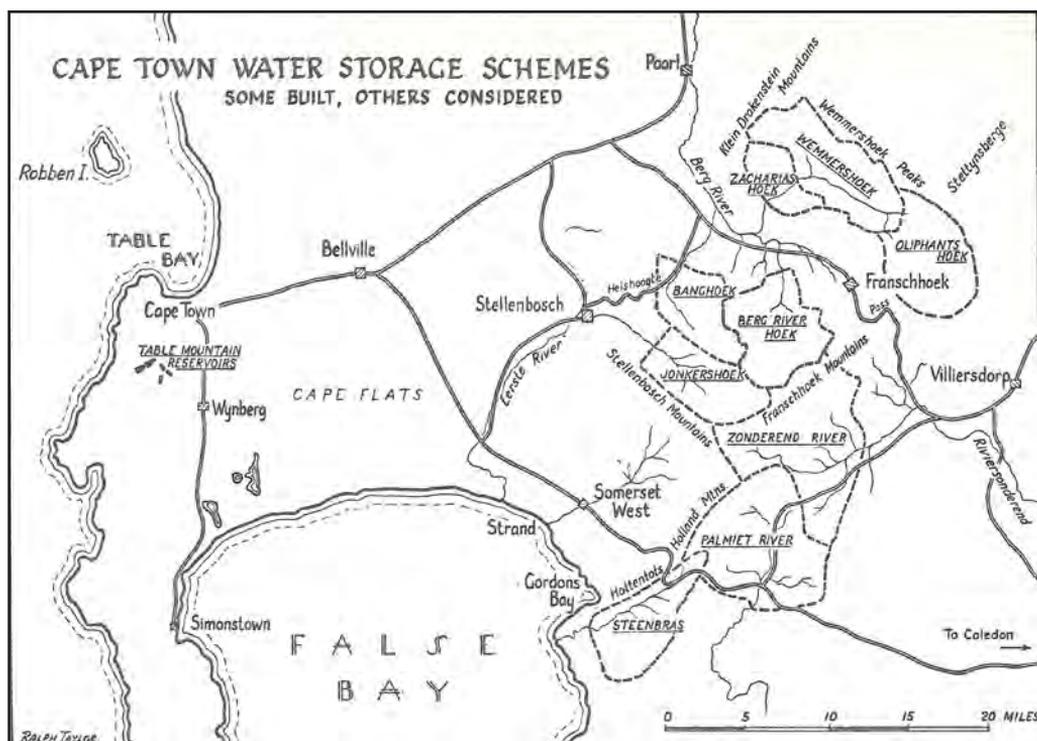


Figure 3.4. Cape Town water storage schemes in the early 20th century. (Burman 1969)

*After considering these schemes in all their bearings, weighing their advantages and otherwise, I think it will be generally accepted that, of the two, Berg River Hoek Scheme is the one best suited to the requirements of the City and Suburbs [...] As this scheme will suffice to meet all present and near future requirements, there is no need for tapping any other sources.*¹²⁵

He, however, had already earlier recommended that Cape Town should acquire the properties in Wemmershoek considering the possible future need to build a reservoir there.¹²⁶

In 1904, the Joint Water Committee obtained a sanction from the constituent authorities to continue investigations in the Franschhoek & Zachariashoek Valleys and the Palmiet & Steenbras River Schemes. As a result of this, the City Engineer of Cape Town, John Cook, submitted in 1904 a report on various water supply schemes, amongst which were Steenbras, Palmiet, Zachariashoek, Berg River Hoek, Wahmbers, Wemmershoek, Muizenberg, the Twenty-four Rivers, and Franschhoek. The Cape Town Council favoured the Franschhoek Reservoir. This was to be on the headwaters of the Berg River. The

¹²⁵ Report on the two water schemes, in Mayor's Minute, Cape Town, 1903, Appendix 4, Annual Report of the Water Engineer, for the year ended 30th June, 1903, 16.

¹²⁶ R.O. Wynne Roberts, Water Engineer to the Electric, Waterworks & Fire Brigade Committee 20 Mar. 1903. 3/CT, 4/1/190, E37/1. KAB.

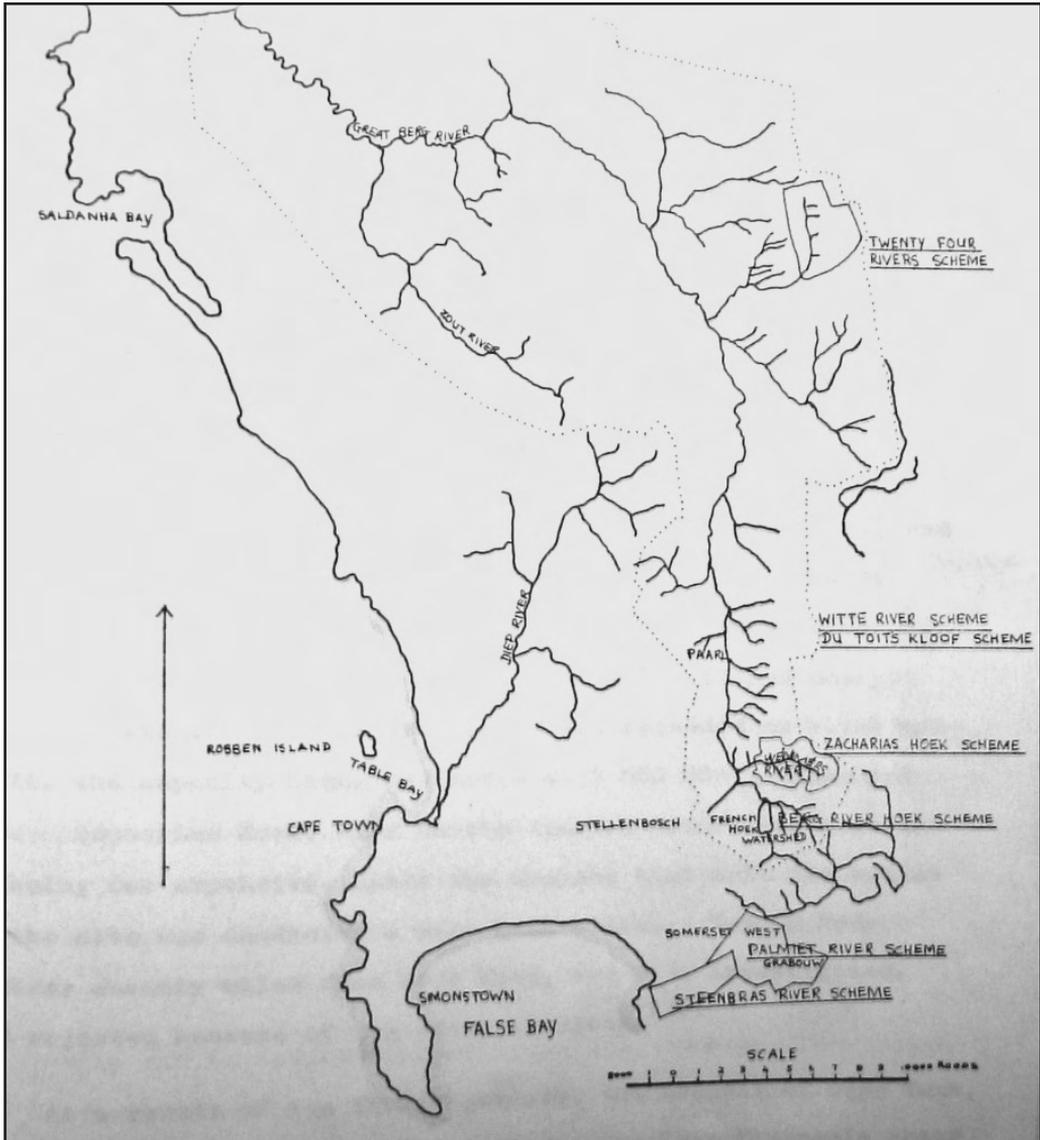


Figure 3.5. Suggested schemes for the Cape Peninsula water supply. (Kagan 1975, 92)

Council proposed building a dam with a capacity of c. 36 million cubic metres and capable of supplying 182,000 cubic metres per day. This would have necessitated a pipeline 72 kilometres long. The municipality bought most of the ground and then, with the support of the southern municipalities, introduced a bill into parliament. The Bill, however, was postponed by parliament to the next session and the support of the southern suburbs faded away.¹²⁷

¹²⁷ Mayor's Minute, Cape Town, 1904, 42–44; Joint Water Committee 1904; Parker 1904, 7; Wall 1998, 5; Burman 1969, 111.

3.1.4 Towards Municipal Unification

In this Chapter the municipal elections of 1904 in which water supply was a big issue is firstly examined. The later schemes for augmenting the supply from Table Mountain and the differences existing between Cape Town and the eastern suburban municipalities concerning possible sources for water supply are also considered. A further examination is made about the second Peninsula Water Commission of 1906–1907, which again recommended the unification of municipalities. The developments in the late 1900s and early 1910s before the unification finally occurred in 1913 will also be examined.

Developments in 1904–1905

Both the Water Engineer and the Medical Officer of Health began to campaign against the “dribble system” of water supply in the early 20th century. In his report in 1904, the Medical Officer of Health described the system:

*As far as possible each house has a covered galvanised iron tank for the storage of water, and in order to prevent waste the system known as the “dribble system” is in use. This consists of placing on the supply pipe to the cistern a pipe with a small orifice which can be regulated so as to deliver a certain amount of water during the twenty-four hours, thus 100, 200 or 400 gallons as the case may be. The dangers and inconveniences of this system have been repeatedly pointed out by others as well as myself, and in fact are admitted by anyone capable of forming an opinion so that I do not consider it necessary to repeat them.*¹²⁸

R.O. Wynne-Roberts supported in his report a change to a “full bore” system, in which the water would flow continuously. This was under discussion from January to September 1905 but the Council could not reach agreement on the matter.¹²⁹

William Duncan Baxter¹³⁰ stood in the municipal election of 1904 as one of a group of five candidates, their leader being John Parker¹³¹, afterwards the first Mayor of the unified peninsula. Their manifesto dealt with subjects such as street-paving, street-lighting, fire brigade, the need for public baths and industrial dwellings, and the water supply. The *Cape Times* threw its weight behind this group of reformers. Maitland Park¹³², the Editor of the *Cape Times*, felt that a new regime was needed at the City Hall.¹³³ For

¹²⁸ Annual Report of Medical Officer of Health, for the year ended 30th June, 1904, in Mayor’s Minute, Cape Town, 1904, Appendix 11, xxvii. This criticism continued year after year in the Medical Officer’s reports until 1913; See also Reports of Local Authorities. In Reports on the Public Health, 1901, 185.

¹²⁹ Annual Report of the Water Engineer, for the year ended 30th June, 1904, in Mayor’s Minute, Cape Town, 1904, Appendix 4, xv; Mayor’s Minute, Cape Town, 1905, 88–90.

¹³⁰ 1868–1960. Mayor 1907–08. Member of Cape Parliament 1908–10, Union Parliament 1910–20. President of the Cape Town Chamber of Commerce 1916–18 and 1926–28.

¹³¹ 1866–1921. Architect. Member of the City Council 1900–04, 1905–08 and 1913–17. Mayor 1913–15; about Parker see Pryce-Lewis 1995.

¹³² 1862–1921. Editor of *Cape Times* 1902–21.

¹³³ Shaw 1975, 135.

the next ten years, the water question excited lively debate in all of the civic circles. The various municipalities had their own schemes. Woodstock favoured Wemmershoek, Rondebosch and Mowbray Steenbras, whereas Cape Town wanted Berg River Hoek. One very vocal section of the public argued that no need for any water conservation scheme outside the Peninsula existed because all the water required could be supplied from Table Mountain.¹³⁴ The relations between different parties and municipalities were not very good as Baxter remembered:

*It is amusing to look back on the strong feeling aroused between the different municipalities and their councillors of the various suburbs. I remember going with John Parker to inspect the 'Berg River Hoek' site [in 1904], and after doing so, he suggested that we have a look at 'Wemmer's Hoek', not many miles distant. We arrived to find several of the councillors of Woodstock on the site and our reception was chilly in the extreme. We seemed to be regarded as spies.*¹³⁵

The municipal election in 1904 was fought mainly on the issue: "Should Cape Town embark on a large water scheme". Moreover, if so, should it be the Berg River Hoek project? Parker, who had been a member of the Council for some years, was the recognized advocate of Berg River Hoek and of the need for a large enough water supply to meet the requirements of Cape Town and the suburbs for many years ahead. Cape Town, however, would not agree and Baxter and one other (not Parker) were the only ones elected of the group of five.¹³⁶ In his report during the same year, Wynne-Roberts paid attention to the need for additional water supply:

*It is with no idea of creating anxiety that I draw attention to this matter, but rather to urge the desirability of avoiding the City's commercial loss, public inconvenience, insanitary risks, diminished reputation, etc., due to shortage of water, by adopting such measures as will ensure an abundant supply.*¹³⁷

In 1905, the Cape Town Municipality received another shock, when the daily water consumption rose to between 10,500 and 13,500 cubic metres per day. Thomas Stewart had already reported in 1901 that the Table Mountain reservoirs could only provide 13,500 cubic metres per day, so Cape Town was once more in trouble.¹³⁸ Several Table Mountain schemes were now put forward. (See figure 3.6) A dam was proposed in the Waai Vlei; another reservoir was suggested in Disa Gorge.¹³⁹ A third scheme was the

¹³⁴ Baxter 1954, 37.

¹³⁵ Ibid., 37-38.

¹³⁶ Ibid., 38.

¹³⁷ Annual Report of the Water Engineer, for the year ended 30th June, 1904, in Mayor's Minute, Cape Town, 1904, Appendix 4, xxv.

¹³⁸ Burman 1969, 108.

¹³⁹ R.O. Wynne-Roberts to the Chairman & Members, Electric, Waterworks & Fire Brigade Committee, 3 Sep. 1906. 3/CT, 4/1/1/97, E83/1. KAB.

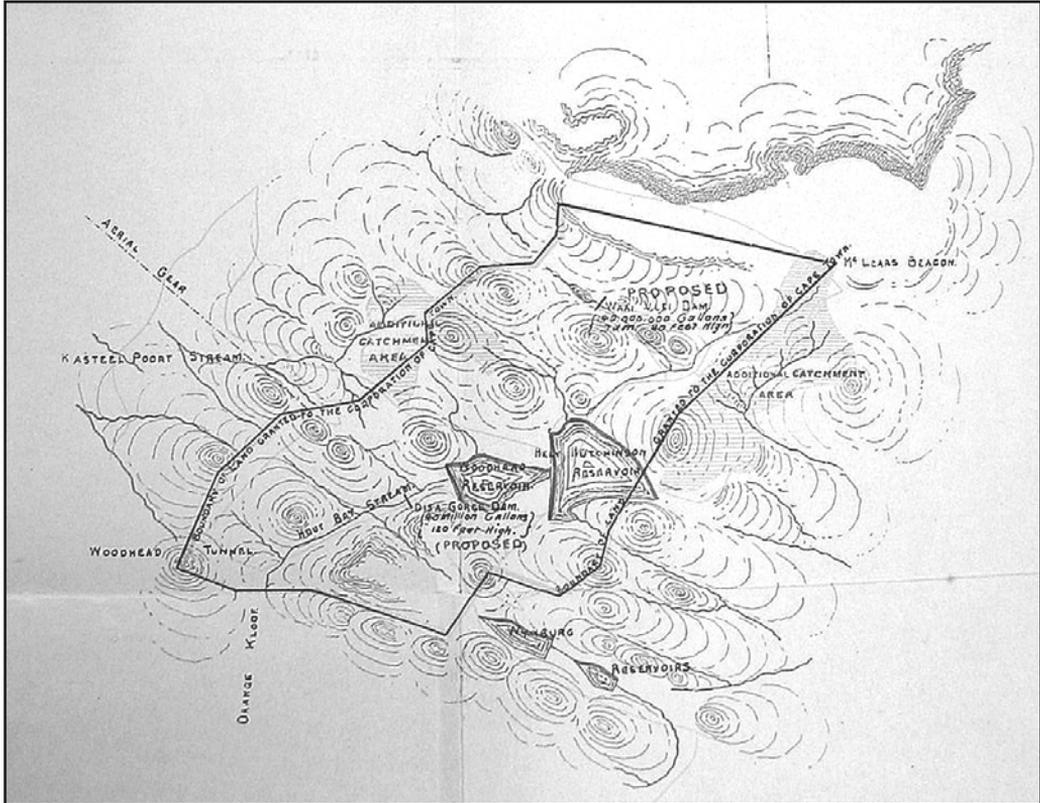


Figure 3.6. Proposed Table Mountain schemes. (Parker 1904, following page 12)

heightening of the Wynberg reservoirs¹⁴⁰ or the building of another reservoir in Orange Kloof¹⁴¹. These schemes, however, had their limitations because the bulk of water in Table Mountain was already utilized. Henry Rofe, an English expert, who reported about Table Mountain in February 1905, was of the opinion that to implement any of them would have involved expense out of the proportion to the advantages received. He also visited the sites of the suggested reservoirs at Steenbras, Palmiet, Zachariashoek, Berg River Hoek, and Warmberg, and ended up recommending the Berg River Hoek Scheme as the best.¹⁴² In September 1905, the Council decided to follow the recommendation of Stewart, who was regarded as the greatest authority on water supply in the Cape Colony that an award was to be offered for the best scheme for conserving water from Table Mountain. In April 1906, the Electric and Water Works and Fire Brigade Committee

¹⁴⁰ Thomas Stewart had already proposed this in 1903. Thomas Stewart to the Mayor of Capetown, 18 Aug. 1903. 3/CT, 4/1/1/91, E42/1. KAB.

¹⁴¹ Joint Water Committee 1904, 4–6.

¹⁴² Mayor's Minute, Cape Town, 1905, 86–88; Wall 1998, 5.

announced that they had received five proposals. After considering them, however, the Assessors unanimously recommended that the award should not be paid, as none of the schemes was “feasible or practicable”.¹⁴³

Peninsula Water Commission 1906–07

Considering the gravity of the situation, the Government was asked to appoint a commission of inquiry into the water supply position of all the municipalities in the Peninsula. The government again formed the Peninsula Water Commission to consider the problem and the scope of this commission was widened to include the whole question of the local government in the area. The commission issued its startling findings in 1907. It recommended that no large additional works should be constructed on Table Mountain, instead the Peninsula authorities should amalgamate into a City of Greater Cape Town and embark on a scheme giving at least 45,500 cubic metres per day, for which it would be necessary to go a distance of up to 80 kilometres from Cape Town. Table Mountain water had served its purpose, but Cape Town had now outgrown it. The stage was set for modern water schemes. At the time, however, nothing was done to pursue this, as the various local authorities were not yet aware of the enormously increased demands that were to be made on their slender resources during the ensuing years.¹⁴⁴

Woodstock presented in 1906 the Cape Peninsula Water Supply Bill for supplying water from Wemmershoek, but because the Parliamentary Committee wanted so many changes to the bill and Rondebosch opposed it, the bill was modified to a joint venture of Woodstock, Rondebosch, Mowbray, and Claremont and presented again.¹⁴⁵ The passing of this Southern Suburbs Water Supply Bill in 1907 against the active resistance of Cape Town finally killed off the Franschoek scheme; rainfall and river gaugings were stopped entirely by the City Council of Cape Town. The bill authorized the municipalities to continue with a scheme on the Wemmershoek.¹⁴⁶ The scheme was to be financed by selling water to the Government for the shipping of Table Bay, which had so far been the sole right of Cape Town.¹⁴⁷ This legislation, nevertheless, enabled Cape Town to undertake the construction of the Wemmershoek Dam in the 1950s because the right to construct a reservoir in the area was never revoked.¹⁴⁸

¹⁴³ Mayor’s Minute, Cape Town, 1906, 91–94.

¹⁴⁴ Burman 1969, 10; Shorten 1963, 152.

¹⁴⁵ Report of the Suburban Joint Water and Drainage Committee 1907; CCP, A7-1906.

¹⁴⁶ Barlow, 3/CT, 4/1/4/298, F134/4, 4, KAB; CCP, A1-1907.

¹⁴⁷ Extract from the Minutes of Proceedings of Council 12 Feb.1907. 3/CT, 4/1/1/90, E37/1. KAB; Mayor’s Minute, Cape Town, 1907, 53–55.

¹⁴⁸ Shorten 1963, 152; Morris 1958, 5–9.

The Kloof Nek Reservoir was opened in September 1908. It was intended to augment the service in the higher levels of Cape Town and Sea Point. During the same year, a system of metering was introduced in order to prevent the wasting of water. The installation of a battery of two Candy¹⁴⁹ filters at Kloof Nek for the filtration of the Table Mountain water supply was also approved. The Mocke Reservoir was to be used for the filtered water, it would serve the Tamboer's Kloof district and the high levels portions of the Gardens district.¹⁵⁰ Before the decision for building the filters was made, R.O. Wynne-Roberts had visited Port Elizabeth and Lourenco Marques to inspect the working of their filters. On his way back, he also stopped in Durban to check filters there. In Port Elizabeth,¹⁵¹ they had Candy filters and in Lourenco Marques and in Durban, Jewell¹⁵² filters. In his report, Wynne-Roberts recommended installing one of each type to compare their performances.¹⁵³

During 1908, 1909 and 1910 Cape Town had discussions with the municipalities of Maitland and Wynberg about Cape Town supplying some water to them. In September 1908, Wynberg asked if Cape Town could supply water to it during the ensuing summer. Cape Town agreed to this if Wynberg would not sell or supply water to the Suburban Municipal Water Works during the period they were taking water from Cape Town. In October, the Town Clerk of Wynberg accepted these stipulations; Wynberg, however, did not find it necessary to take extra water from Cape Town. Negotiations with Maitland started in June 1909 and continued until the next year based on a previous arrangement made in 1906. The Town Council of Maitland wanted to reduce the minimum guaranteed consumption and the officials of Cape Town had no objection to this, provided Maitland would pay a higher rate during the summer months. This, however, was not acceptable for Maitland. After this, Maitland asked if Cape Town was willing to lay the necessary mains and to administer the water supply of Maitland. A tentative agreement was reached in November 1909 on this but negotiations had to be abandoned in early 1910 because of the impossibility to obtain necessary authority for this agreement from the government.¹⁵⁴

In December 1909, the Suburban Municipal Waterworks made a proposal for the amalgamation of Cape Town's water supply with that of Claremont, Rondebosch, Mowbray, and Woodstock. The Electric and Water Works and Fire Brigade Committee

¹⁴⁹ Candy Company had from 1884 made filters containing a layer of polarite, or magnetic oxide of iron, which contributed to the oxidation of organic matters and was useful for the removal of iron.

¹⁵⁰ Mayor's Minute, Cape Town, 1908, 46–48; Mayor's Minute, Cape Town, 1909, 36; Annual Report of the Acting City Engineer and Surveyor, for the year ended 30th June, 1908, *ibid.*, Appendix 2, xxxii–xxxiii; Annual Report of the Medical Officer of Health, for the year from July 1st, 1907, to June 30th, 1908, *ibid.*, Appendix 7, xxx.

¹⁵¹ About water supply in Port Elizabeth, see Bodill 1981 and 1982.

¹⁵² About Jewell filters, see Baker 1948.

¹⁵³ R.O. Wynne Roberts to the Chairman & Members, Electric, Waterworks & Fire Brigade Committee, 31 Dec. 1906. 3/CT, 4/1/1/102, E115/1. KAB.

¹⁵⁴ Mayor's Minute, Cape Town, 1909, 34–35; Mayor's Minute, Cape Town, 1910, 67–68.

of Cape Town considered the matter and in April 1910 reported that they could not recommend the amalgamation. They, however, suggested that an offer for supplying water to the Board should be made. This offer was made but nothing further happened in this matter.¹⁵⁵ The City Engineer highlighted the increasing consumption in Cape Town and Green Point and Sea Point in his annual report in 1911. He said that in a year of minimum rainfall the current summer consumption did not leave anything to spare. According to him, it was obvious that something had to be done to meet the increasing demand.¹⁵⁶

The Municipal Unification of 1913

In 1910, the crusaders for municipal unification formed a “Peninsula Municipal Union Society”, whose chairman was John Parker. He noted that the 1904 census had counted a population of 170,000 of all the races in the area, of which 78,000 were the citizens of the Municipality of Cape Town. Wynberg and Cape Town, which also supplied Green Point and Sea Point, both had “barely sufficient” water reserves for their populations. The Suburban Municipal Waterworks Board was able to provide a supply “totally inadequate for existing needs”. Cape Town and Wynberg both possessed dams on Table Mountain, but the other municipalities depended upon wells, springs, and small streams. He also said that the shame of the Peninsula was that a large portion of it was without any sewerage. This was the most urgent priority in the Peninsula. Dr. L.A.W. Beck¹⁵⁷ commented on the health situation in the Peninsula. He said that only one of the nine centres in the area had a full time health officer. The others have appointed local practitioners who did health work when they could get away from their general practice. He also pointed out that it should be perfectly obvious to everybody how essential good drainage and adequate water supply were for safeguarding the health of the community. He said that a great deal of good water was wasted because of the different water administrations in the area. “Pool all the water supplies, and half the difficulty is solved”.¹⁵⁸

In 1913, Cape Town finally joined with most of the suburban municipalities, from Kalk Bay to Sea Point and also Maitland, to form a single municipality. (See figure 3.7) Only Wynberg resisted until 1927.¹⁵⁹ The main reason for unification was water. As far

¹⁵⁵ Mayor’s Minute, Cape Town, 1910, 67.

¹⁵⁶ Annual Report of the City Engineer and Surveyor, for the year ending 30th June, 1911, Mayor’s Minute, Cape Town, 1911, Appendix 2, xxxvi.

¹⁵⁷ 1864–1918. Brother of J.H. Meiring Beck.

¹⁵⁸ Parker 1911, 13, 18, 23; Parker & Beck 1910, 5, 10, 12.

¹⁵⁹ The incorporation in 1913 of a large area formerly controlled by the Cape Divisional Council increased the demands on already strained financial resources of Wynberg and undermined the strength and autonomy of the Town Council. Robinson 1998, 209.

back as the 1880s, the lack of water had dominated Cape Town's political life. For Cape Town itself, the dams on the top of Table Mountain had temporarily solved the problem but the South African War (1899-1902) and the plague in 1901 demonstrated how narrow the margin of safety was. The suburban municipalities were not viable at all and constantly had to buy water from Cape Town. Although a parliamentary commission of inquiry in 1902 had made it clear that unification was the only way forward, the suburban municipalities clung fiercely to their independence, convinced that their interests would be neglected within a larger body. By 1902, it was clear that the municipalities would have to look beyond the Peninsula for future water supplies but only Cape Town could actually afford to bring its water from further distances. The suburbs were reluctant to accept this fact and the acceptance took some time.¹⁶⁰

Cape Town was not entirely in favour of the unification. In a division, similar to the Clean and Dirty Party conflicts of the 1880s, councillors representing smaller local and business interests, including Dr. Abdullah Abdurrahman¹⁶¹ and the merchant Hyman Liberman¹⁶², opposed the larger merchants and businessmen, led by Parker, the retailer William Duncan Baxter and the past Mayors Thomas Ball¹⁶³ and Sir William Thorne¹⁶⁴. It took all Parker's negotiating skills combined with the multiple votes of the merchants to carry the day. It was also not easy to persuade some of the suburban councils to agree to merge; they did not like to relinquish local control and the temptation was strong to decide the issue on purely parochial lines such as a comparison between the actual rates paid before amalgamation and the prospective rates that might be levied afterwards. In the event it was so obvious that the Peninsula could not be developed properly without uniform schemes for water, electricity, drainage and sewage, tramways, street-lighting, abattoirs, and the fire-brigade.¹⁶⁵

The deciding factor for the merging of the various municipalities into a single local authority was the need for better sanitation at a time when the population of the Peninsula was growing rapidly. In the interests of public health, the Unification Ordinance had stipulated that the City Council take speedy steps to initiate a sewerage scheme for Woodstock, Maitland, Mowbray, Rondebosch, and Claremont. However, waterborne sewerage and sewage disposal works necessitated guaranteed supplies of water. This requirement was met in some measure by the integration into a combined waterworks service of the facilities of Cape Town, the southern suburbs and Kalk Bay-Muizenberg

¹⁶⁰ Report of the Municipal Union Conference, March, 1912; Bickford-Smith e.a. 1999, 46–47.

¹⁶¹ 1872–1940. Physician and political leader. First Coloured member of the City Council of Cape Town 1904–40. Member of the Cape Provincial Council 1914–40. President of APO 1905–40.

¹⁶² 1854–1923. Businessman and philanthropist. Mayor 1904–07.

¹⁶³ 1846–1922. Building contractor. Mayor 1898–1900.

¹⁶⁴ 1839–1917. Merchant and trader. Mayor of Rondebosch 1890. Mayor of Cape Town 1901–04. Member of the Legislative Assembly 1904–10.

¹⁶⁵ Bickford-Smith e.a. 1999, 47–49; Baxter 1954, 50.

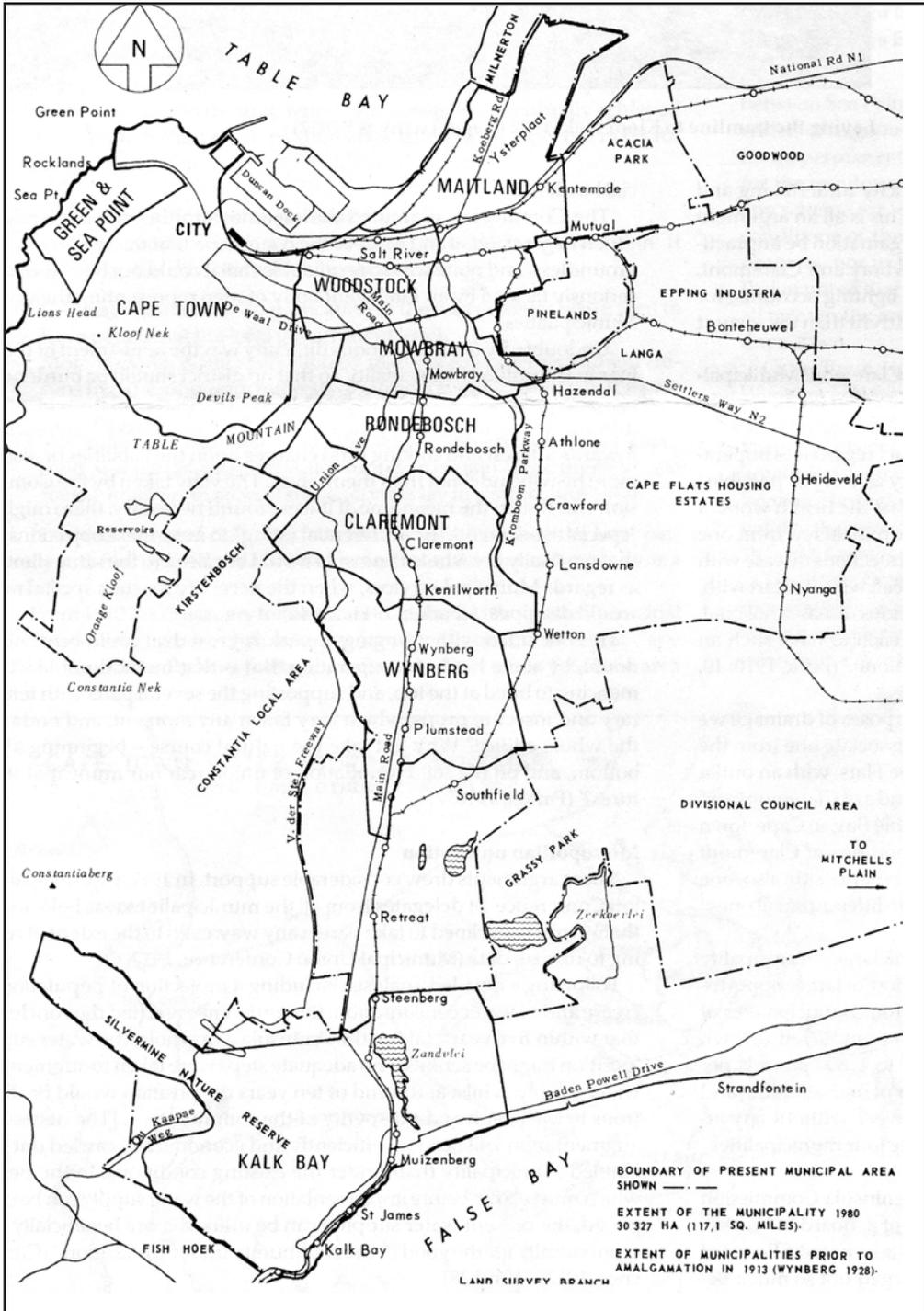


Figure 3.7. Cape Peninsula municipalities in 1913. (Wall 1998, 4)

installations, the supply afforded by the 136,000 cubic metres reservoir at Newlands and the yield of the suburban springs, particularly the Albion Spring at Rondebosch, that gave 4,500 cubic metres a day.¹⁶⁶

3.1.5 Steenbras Selected as a New Water Source

In this Chapter, the developments in water supply after the municipal unification in 1913 are described. Special attention is paid to the 1917 referendum between Steenbras and Wemmershoek schemes, and how this divided the population of Greater Cape Town.

Search for a Solution to the Insufficient Capacity

In February 1913, the Electric and Water Works and Fire Brigade Committee drew the attention of the householders and other consumers of water to the desirability of exercising economy in the use of water, having regard to the increasing consumption and the possibility of a long drought. The City Engineer was also directed to issue instructions to the water consuming departments under his control, to exercise as much economy as was possible in street watering, cleansing, and flushing, considering the possible shortage. The Committee directed notices to all the metered consumers, whose January consumption showed a substantial increase over the average of the previous six months, that their supplies would be limited to 25 per cent above such average. Later on, the hours of supply were restricted in some residential areas of Green Point and Sea Point, and in City; it was deemed necessary to prohibit the watering of gardens. Finally, the supplies of fresh water in all the parts of the city had to be cut off between 4 p.m. and 5 a.m. This restriction, however, was postponed when the rain fell during the first week of April and by the mid-May, all these water restrictions were withdrawn.¹⁶⁷

In his report in 1914, the City Engineer wrote about the need of augmenting the water supply:

*It must be borne in mind, however; that prior to Unification, all three Waterworks authorities were unable from their existing works to adequately meet the demand of a dry season as experienced in 1912–13, and that linking up of the distributory systems of town and suburbs and other works will not much more than cope with the increased consumption. It is therefore imperative that early steps should be taken to materially augment the existing supplies.*¹⁶⁸

¹⁶⁶ Report of the Municipal Union Conference, March, 1912, 15–17; Shorten 1963, 163–64.

¹⁶⁷ Mayor's Minute, Cape Town, 1913, 66–68.

¹⁶⁸ Annual Report of the City Engineer and Surveyor, for the year ending 30th June, 1914, Mayor's Minute, Cape Town, 1914, Appendix 2, xl–xli.

The Medical Officer of Health summarised the condition of water supplies of the City in 1914 as follows:¹⁶⁹

1. From the catchment area on Table Mountain supplying chiefly the Sea Point and Green Point and Central Wards. This water is collected in the two reservoirs Woodhead (210,000,000 gallons) and Hely-Hutchinson (200,000,000 gallons). The Kloof Nek Reservoir (3,000,000 gallons) and the Mocke Reservoir (200,000 gallons), are filled from these and are used as service reservoirs for the higher levels of the town. The Sea Point Reservoir (100,000 gallons) is a service reservoir fed from the Kloof Nek Reservoir.
2. Water from springs on the face of Table Mountain and the Platte Klip Stream collected in the Molteno Reservoir (43,000,000 gallons), Lower Reservoir No. 1 (2,500,000 gallons), and Lower Reservoir No. 2 (12,000,000 gallons). These reservoirs are also fed from the Woodhead Reservoir on Table Mountain.
3. Water from the catchment area on the easterly side of Table Mountain, which is collected in the Newlands Storage Reservoir (30,000,000 gallons), and to which water from the Albion Springs at Newlands is pumped. This water serves Woodstock, Maitland, Mowbray, Rondebosch, and Claremont.
4. From a catchment area on the Tokai Mountains, collected in a reservoir known as the Muizenberg Storage Reservoir (22,000,000 gallons). This supplies Muizenberg, St. James and Kalk Bay. There is a service reservoir with a capacity of 95,000 gallons in connection with this water supply.

In February 1915, the Water Works Committee submitted their first report to the City Council about the augmentation of water supply. In the report, a comparison was made between the population and consumption of water in various towns and cities in South Africa, Australia, Great Britain, and America. The conclusion was that the consumption of water invariably increased with “the advance of civilisation”. Attention was also paid to the fact that the consumption of water, per head, in Cape Town was considerably lower than in most other cities under similar conditions. After careful consideration, the Committee concluded that three storage reservoirs could be built on Table Mountain, that the existing reservoir wall in Muizenberg Mountain could be raised, and that another reservoir could be constructed in Silvermine Valley. However, the total quantity of water rendered from three reservoirs on Table Mountain would have been insufficient for the requirements by the time they could be completed, so the Committee could not recommend this scheme. There were similar problems with the raising of the wall in Muizenberg and the Silvermine Valley scheme was too expensive. This led the Committee to the conclusion that the Peninsula sources could not meet requirements as economically as supplies from outside and directed their attention to the Steenbras, Wemmershoek, and Warmberg

¹⁶⁹ Annual Report of the Medical Officer of Health, Mayor’s Minute, Cape Town, 1914, Appendix 8, xxix.

schemes. In March, the City Council appointed a Special Committee, consisting of the Water Works Committee, five members appointed by the Electricity Committee, and the Mayor, to investigate the matter further.¹⁷⁰

In September 1915, the Board of Engineers was appointed to investigate the matter of augmenting the water supply. In their preliminary report in November, they recommended the construction of one reservoir upon Table Mountain on the site occupied by the Victoria and Alexandra Reservoirs of Wynberg. The Municipality of Wynberg was, however, not very keen about this plan. So, the City Engineer was directed to proceed with preparing plans for constructing a reservoir on the Muizenberg Mountains.¹⁷¹ In December 1916, the Board of Engineers reluctantly recommended the construction of a new reservoir at Silvermine. They also decided that it would be expedient to go outside the Peninsula for water supplies. After investigating the Berg River Hoek Valley, the Wemmershoek Valley, and the Steenbras, they recommended that Steenbras should be developed.¹⁷²

Steenbras or Wemmershoek?

In July 1917, a referendum was held concerning Steenbras and Wemmershoek schemes.¹⁷³ This question divided the city as nothing had ever divided it before. One was either a “Steenbras man” or a “Wemmershoek man” and the argument even led to bitter quarrels. The Citizen’s Water Supply Committee (CWSC) coordinated the main opposition to Steenbras. Although united against Steenbras, this body represented a loose alliance of different interests, drawn mainly from the middle and working classes. Amongst this group were those who supported the Wemmershoek scheme because of the supposedly superior quality of its water. Others, who fought against Steenbras’s “polluted water”, did not specifically campaign for Wemmershoek as an alternative scheme. Some in this group believed that sufficient water could still be obtained from Table Mountain, while others, drawn mainly from the former suburban municipalities, argued that Cape Town should continue to strive to reach an agreement with Wynberg Municipality. The argument for economy drew widespread support, as both hinterland schemes had the problem of the high cost of importing iron pipelines during the First World War.¹⁷⁴ The leadership of the CWSC represented different interests. Those arguing for the Wynberg stopgap scheme were drawn mainly from the Rondebosch and Claremont wards. Another major group within the CWSC consisted of the representatives of the working classes. Vocal

¹⁷⁰ Mayor’s Minute, Cape Town, 1915, 38–42.

¹⁷¹ Mayor’s Minute, Cape Town, 1916, 35–46.

¹⁷² Report of Board of Engineers on Augmentation of Water Supply. Together with Report to the Board on Hydro-Electric possibilities of Steenbras and Palmiet, 7 Dec. 1916. ACLT, 534, 11956. KAB.

¹⁷³ See also Grant 1989.

¹⁷⁴ The Committee published pamphlets to support its opinion. For instance, Steenbras, Why? 1916.

member of this latter group was William Black¹⁷⁵, who had been a supporter of the anti-water party in the 1906 municipal election, and who now championed the fight against Steenbras “in the interests of the poorer people in the community”.¹⁷⁶

Supporting the Steenbras Scheme was a rival Citizen’s Steenbras Water Committee (CSWC), which represented the business interests, as well as the majority of city councillors, particularly those representing middle class wards. This organisation was strongly supported by the *Cape Times*, the Citizen’s Guild, and the Cape Town Publicity Association. The CSWC defended Steenbras because both the Wemmershoek Scheme and the Wynberg stopgap scheme were too costly in the short to medium term. According to William Duncan Baxter, Steenbras was the cheapest of the projected schemes with no complications such as water rights.¹⁷⁷ On the issue of Steenbras’ discoloured water, the Committee garnered a wide range of support from leading doctors who assured the public that the water was not harmful.

While the issue of cost and water quality were relatively clear-cut, the inclusion of the working class on the side of those advocating the more costly Wemmershoek scheme is more difficult to explain. Although a number of working class leaders supported the CWSC, the majority of its leadership was drawn from the professional and middle classes. A close examination of the rhetoric of the working class leadership reveals that the basis for the opposition to Steenbras lay in the suspicion of the motives of the business classes controlling city hall, rather than opposition to the scheme itself. Thus, in the words of the leader of the anti-Steenbras campaign, the issue of “Steenbras vs. Wemmershoek” came to represent one of “Gold vs. the People”; another claim was that they “had wealth against them”.¹⁷⁸

In spite of the fears that the Steenbras Scheme would be lost because of massive working class mobilisation against it, the referendum resulted in a narrow victory for the CSWC. The result of the poll showed 8,006 votes for Steenbras as against 6,905 for Wemmershoek.¹⁷⁹ The actual margin was narrower; the existence of a plural voting system skewed the result in the favour of the more affluent ratepayers who had up to three votes. Based on actual voter turnout, only 4,835 persons voted for Steenbras while 4,929 voted for Wemmershoek. On a straight vote, Steenbras would have lost by 94 votes.¹⁸⁰ Furthermore, the results showed that the four predominantly working class wards of East Central City, Castle, Woodstock, and Salt River voted overwhelmingly against Steenbras.¹⁸¹ The only other ward to vote against Steenbras was Claremont.

¹⁷⁵ 1870–1922. Architect and civil engineer. Served as a member of the City Council for several years.

¹⁷⁶ *Cape Times*, 10 July 1917.

¹⁷⁷ Baxter 1954, 38; about Steenbras Scheme see also Robertson 1976, 139.

¹⁷⁸ *Cape Times*, 18 July 1917.

¹⁷⁹ *Cape Times*, 24 July 1917.

¹⁸⁰ *South African Review*, 27 July 1917.

¹⁸¹ *Cape Times*, 24 July 1917.



Picture 3.3. Building of Steenbras Dam. (Source: KAB, E5513)

The building of the Silvermine Reservoir was postponed after the referendum as it was planned only as a stop-gap scheme until the bigger reservoir was built and again left for further consideration for a period of not exceeding six months in February 1918, when one possible contractor promised to lay a pipeline from Steenbras to the city in 18 months.¹⁸² In 1918, several boreholes were sunk to increase local supply while the Steenbras scheme was developed. An underground source was found on the Palmboom Estate, Newlands that was anticipated to yield a “fair amount” of water for the coming summer months. Later a pumping plant was installed and in 1919, the City Engineer reported that about 73,000 cubic metres were pumped into the service reservoir towards the end of the summer. A second borehole was also sunk on the Fernwood Estate.¹⁸³ The contracts for the Steenbras Dam and the pipeline were signed in 1918, but the project was not completed until 1921, because of the difficulties with the equipment supply. (See picture 3.3) In May 1919, for instance, it became necessary to proceed with the work departmentally because of the unsatisfactory progress of the contractors.¹⁸⁴

¹⁸² Mayor’s Minute, Cape Town, 1917, 25–33; Mayor’s Minute, Cape Town, 1918, 21–22.

¹⁸³ Annual Report of the City Engineer and Surveyor, for the year ending June 30th, 1918, in Mayor’s Minute, Cape Town, 1918, Appendix 2, i; Annual Report of the City Engineer and Surveyor, for the year ending June 30th, 1919, in Mayor’s Minute, Cape Town, 1919, Appendix 2, ii.

¹⁸⁴ Mayor’s Minute, Cape Town, 1919, 20.

3.1.6 From Oranjezicht to Steenbras

The state of development of the water supply in Cape Town from the 1840s to the 1870s could be described as a slow deterioration, mostly because the population growth caused a slow fall in per capita water supply of Cape Town. At first, the municipality tried to fight against this by building the storage reservoirs in the 1850s. Mere storage space was, however, not enough without available water to store. Accordingly, following the extension of the municipality's powers in 1861, the Board of Commissioners started to buy out water rights in the streams and springs in the town area to augment the water supply. This way water pipe networks could be extended over the whole city. This, however, was not enough and the poor of the town were worst affected by the water shortage. Moreover, the City had to resort to water restrictions in the 1870s. Something more had to be done.

In the end of the 1870s, a political battle started between those wanting better water supply and sanitation for the city and those wanting control over basic economic issues. The "reformers" eventually won this battle during 1881. The new legislations in the early 1880s created a base for more efficient water supply. They also gave the Town Council a possibility to start big water schemes later on. Cape Town also got in the 1880s its first municipal health and sanitary officials, who were from the beginning at the forefront in battles for better water supply and sanitation. The building of Molteno Reservoir was the first step in harnessing the waters of Table Mountain. There were problems during the building process but the greatest merit of the reservoir was that it finally proved the need for a reservoir on Table Mountain. First, the unfortunate Table Mountain Water Supply Company delayed process for some years. And still after this delay, the town fathers of Cape Town thought that the tunnel and pipe track from Table Mountain to Molteno Reservoir would be enough. This had already been recommended during 1858 and again in the 1870s. After this tunnel was ready, it became clear that storage reservoirs on the top of Table Mountain were also needed. Consequently, Woodhead and Hely Hutchinson Reservoirs were built during the 1890s and 1900s.

The suburban municipalities around Cape Town were created in the early 1880s. At first, there were three of them, but the biggest, Liesbeek, later split into four smaller ones. Of the suburban municipalities Green Point and Sea Point was dependent on Cape Town for its water supply. Woodstock, Claremont, Rondebosch, and Mowbray had their own Cape Town District Waterworks Company to supply water for them. Wynberg was totally independent from others because it could build its own reservoirs on Table Mountain. (See picture 3.4) The municipal structure of Cape Peninsula was, however, problematic for water supply. The smaller municipalities surrounding Cape Town blocked



Picture 3.4. Table Mountain Reservoirs. (Source: KAB, AG 6530)

the way to other water sources and these municipalities were so small that they could not themselves solve their water supply problems. Only Wynberg had sufficient supplies for its needs.

The municipal battle concerning the augmentation of water supply in Cape Town continued after the Clean Party's victory in the 1880s. During the 1890s, there emerged new persons at the forefront and only after the introduction of a multiple vote system in municipal election was a victory clear for the Clean Party. Still in 1897 when polls were taken concerning borrowing money for building a second reservoir on Table Mountain, two polls were needed for the supporters of the building to win the day. The building of this second reservoir was also a key reason when in 1901 the offices of the City Engineer and the Waterworks Engineer were separated. This separation continued until 1906 when the decision was made that the workload of the City Engineer had diminished enough to merge the offices again.

In 1902, while the building of the second reservoir on Table Mountain was still going on, the Government appointed the first commission to study the water supply situation in the Cape Peninsula. The Commission also looked at the municipal situation in the area and recommended the unification of the municipalities; sanitation and water supply were key issues in concern. The municipalities were, however, not ready for this yet. Already while the Commission was sitting, the water supply situation needed attention and a

number of alternatives were examined in Cape Town. From these schemes, the City Council favoured the Franschoek scheme. The sanction of parliament, however, was delayed and the scheme was never realised. Something else had to be done.

Water supply was a key issue during the municipal elections in Cape Town in 1904 but, at that time, persons opposing spending on water supply were victorious. In 1905, however, the need for more water became obvious when the water consumption reached nearly the amount the City could provide. At first, the City Council hoped that more water could be obtained from Table Mountain, but in 1906, it became clear that this was folly. Help was again asked from the Government, which appointed a second commission to inspect water supply and the municipal situation in Cape Peninsula. The Commission made it clear that to get water the municipalities would have to seek outside the Peninsula; it also again recommended municipal unification as a solution for the problems. Again, municipalities were not ready to accept this.

After this, Cape Town first concentrated on building a new storage reservoir and the filtration of the Table Mountain waters. There were also negotiations with different suburban municipalities about the common schemes or amalgamations of water supply systems but these led nowhere. In 1910 a “Peninsula Municipal Union Society” was formed to promote municipal unification. There was still resistance against this in Cape Town and in smaller municipalities but the water situation deteriorated to such an extent that unification was finally realised in 1913, when suburban municipalities, excluding Wynberg but including Maitland, joined Cape Town. Both the water supply and sanitation were key issues in this unification.

After the unification, search continued for ways to augment the water supply of the new Greater Cape Town. At first, the Water Works Committee concentrated on examining the old sources, for example Table Mountain was again considered as a possible solution. This option was finally abandoned in 1916 and the Board of Engineers studied the Berg River Hoek Valley, the Wemmershoek Valley, and the Steenbras options. Their recommendation was that Steenbras should be developed. This created some controversy amongst the inhabitants of Cape Town, because Wemmershoek also had a strong support. The whole town was divided between the supporters of these two schemes. Finally, in July 1917 a referendum was held ending in a narrow victory for the Steenbras scheme. The dam was finished only in 1921 mainly due to problems during the construction. Wemmershoek Dam was built later in the 1950s.

All in all the development of Cape Town’s water supply during 1840–1920 appeared to be a constant battle against droughts, water restrictions, and population growth. More than once, more storage space for water was constructed before it was realised that there were not sufficient water supplies to sustain that storage space.

3.2 Grahamstown

3.2.1 The First Water Pipes

In this chapter, the water supply of Grahamstown in the 1840s and 1850s is described. Organised water supply started with the furrows built in town after the creation of the municipality. Their replacement by iron water pipes quite soon and the problems the town had with the building of the network are explained. Lastly, some reforms done in the 1850s are highlighted.

The Conditions in the Town

In 1837, the Municipal Commissioners of Grahamstown obtained the first of many grants of land from the Lieutenant Governor. This land was sold and, on the instructions of the Lieutenant Governor, the money was designated to build means to convey the water through the town, and to purchase two fire engines. At the time of a public meeting in February 1838, the Commissioners had already entered into a contract for the building of a dam, which would absorb all the money from selling the land. The Commissioners also procured plans and estimates to bring water into the town. The estimated cost to complete a network of open furrows through the town and build two tanks was 1,400 pounds. If the water was to be conducted in iron pipes, the estimated cost was 2,500 pounds. This was thought to be too much at the time.¹⁸⁵

Furrows carried water from the small dams built on numerous watercourses passing through the town. Open furrows proved, however, to be unhygienic and frequently blocked with rubbish. In 1841, one Wardmaster reported that the water supplied to the upper end of New Street was defiled and rendered unserviceable by persons washing clothes and polluting the water. People also complained that the cattle kept on the town commonage by the local Blacks polluted the water. Even the military authorities had to be reminded from time to time to stop the troops defiling the water supply in the neighbourhood of Fort England. On house sale advertisements “water laid on” was a selling point, although baths were rarely mentioned.¹⁸⁶

Even when the water was not polluted, the furrows would not withstand to the day-to-day demands. In the High Street, for instance, the watercourse was built of stone, but was constantly out of repair because persons driving wagons over it often broke it. The

¹⁸⁵ Hunt 1961, 171.

¹⁸⁶ Hunt 1961, 189; Scott 1987, 206–07.

situation was aggravated by those at the upper end of the watercourse, because they often drew off all the water and left nothing for those further down the course. In addition to these practical difficulties came a concern for public health. In 1840, an epidemic of measles had spread through the town with extraordinary rapidity. Smallpox was a constant threat and outbreaks were recorded periodically.¹⁸⁷

Iron Water Pipes

By 1840, the Municipal Commissioners gave more serious consideration to the use of iron water pipes. In November 1840, a sub-committee of the Board was appointed to consider them. The following year, another sub-committee was appointed with the express purpose of taking measures towards providing iron pipes.¹⁸⁸ A serious drought in 1842, and a concern for public health, finally resolved the matter. During the drought, the water did not flow quickly in furrows, and the *Graham's Town Journal* reported that the prevalence of dysentery was serious.¹⁸⁹ Iron pipes, to carry the water to the inhabitants, were the only obvious solution. The government was prepared to donate 300 pounds towards the venture, but the municipality had to raise the balance.¹⁹⁰

Only by July 1843, had the Commissioners finally decided to procure iron pipes to carry the water supply from the springheads.¹⁹¹ This provoked wide public interest. The editor of the *Cape Frontier Times* wrote that he had been informed that glass water pipes were sometimes used in England. As the order had not yet been placed, the editor suggested that inquiries should be made into the advisability of purchasing glass pipes instead. He thought that they would not only be cheaper, but "would preserve the water in purer state than iron, and would not require repair".¹⁹² As was subsequently realised, wagon wheels broke the iron pipes, when they were not buried deep enough, and glass pipes would have broken even easier.

The idea of glass pipes was in any event not taken up. On the 26th April 1844, the Commissioners decided to call for tenders for the supply of iron pipes and wrote to an agent in Port Elizabeth, asking him for the name and address of the most advantageous foundry or manufacturer in Great Britain. The Municipal Commissioners decided to purchase water pipes from a Birmingham firm. The order was small by modern standards, but in 1844, it represented to the thrifty commercial inhabitants of Grahamstown a

¹⁸⁷ Hunt 1961, 189.

¹⁸⁸ Ibid., 190.

¹⁸⁹ *Graham's Town Journal*, 1 Dec. 1842.

¹⁹⁰ Hunt 1961, 165.

¹⁹¹ Ibid., 190.

¹⁹² *Cape Frontier Times*, 25 Jan. 1844; The idea of the water pipes made of glass sounds a bit odd. It might be that the editor has mixed glass with glazed earthenware. Their produce was started in England in the 1840s. Coffey & Reid 1976, 25.

bold experiment and extravagant expenditure of public funds. The advantage of iron water pipes would have been lost had it not been coupled with the building of dams and reservoirs to meet an increased demand for water. In December 1844, just before the first instalment was paid on the first shipload of water pipes, the Commissioners engaged one Alexander Hyde to build a reservoir. A further sum was to be paid to Hyde to excavate the ground for the reservoir. Plans had also to be drawn up for the placing of the pipelines in the streets of the town. In the High Street, for instance, it was decided to lay the water pipes on the southern side of the street. The inhabitants occupying properties on the north side objected. Individuals were expected to pay their own costs for leading water from the main pipe. To solve the problem, the Commissioners decided to lay the water pipes down the centre of the High Street.¹⁹³

Problems with the New Pipes

The amending Ordinance of 1844 and the definition of the town boundaries in 1847 made municipal enterprise possible. The connection between public health and water supply had already been understood. With the restoration of order on the frontier,¹⁹⁴ the market could be counted upon to recover. Iron pipes were installed in the town centre in 1844–45 to replace the furrows in the streets. They were an improvement and an incentive to local business. The task of laying the pipes was entrusted to a local engineer. Another local worker was given the sole monopoly to fit private water leadings to the main pipes. Private water leadings were in great demand. The extension of water pipes always depended upon the funds available. Pipes could not be laid if storage volume for water to feed the pipes was insufficient so that the expense of dams and reservoirs had always to be considered in the capital outlay when extensions were contemplated.¹⁹⁵ As early as February 1846 the Commissioners had to point out in a public notice that, in order to prevent the destruction of the roads and the waste of water by persons filling bottles and casks at the public fountains, people should use a funnel.¹⁹⁶ In July 1846, more drastic measures had to be taken to preserve the water supply – the use of private leadings was curtailed. Because of the great scarcity of water, the Commissioners resolved to restrict the use of private leadings to two days a week: Mondays and Fridays.¹⁹⁷

There were problems from the beginning; water pipes were not dug deep enough to endure wagon traffic in the streets, dams were badly constructed, and there was vandalism to the pipes.¹⁹⁸ The placing of pipes also provoked criticism. In the *Graham's*

¹⁹³ Hunt 1961, 190–92.

¹⁹⁴ The 7th Cape Frontier War, the "War of the Axe", was fought in 1846–47.

¹⁹⁵ Hunt 1961, 169, 192–93.

¹⁹⁶ Cape Frontier Times, 17 Feb. 1846.

¹⁹⁷ Hunt 1961, 195.

¹⁹⁸ Ibid., 189–96.



Picture 3.5. Grahamstown in 1842. (Source: Scott 1987, Plate 8)

Town Journal an anonymous correspondent, “Pro Bono Publico”, complained about the powers of the Water Committee of the Board of Commissioners. He alleged that personal interests and friendships determined the placing of pipes. He also complained about the monopoly that the Committee had granted to the contractor concerning the laying down of the private water leadings.¹⁹⁹

Development in the 1850s

In January 1847, the Commissioners agreed to employ a full-time official to attend to the water supply, but the resolution was not acted upon until April 1850, when a Superintendent of Water was appointed. To guide him in his duties, he was furnished with a set of regulations. The Superintendent was required to turn on the main water supply each morning at daybreak, and turn it off again in the evening at sunset. He was also instructed to see that each private water leading received the amount of water to which the owner was entitled and to pay attention to the highest and most distant water leadings from the reservoir. This official was further instructed to see that all the public fountains were kept in a proper state of repair, and see that all the horse troughs contained sufficient water. Furthermore, the Superintendent of Water was required to visit the several dams and reservoirs at least once a week and report on their condition to

¹⁹⁹ Graham’s Town Journal, 21 Mar. 1846.

the Commissioners. It seems that the Superintendent of Water was actually expected to concern himself with all the matters connected with the water supply and report regularly to the Commissioners.²⁰⁰ The laying of the pipes in the streets was continued, after High Street, Hill, New, African, and Francis Streets got the pipes during the 1850s.²⁰¹ (See Figure 3.8)

The use of town water was not made compulsory, even in the streets where water pipes had been laid. However, fire insurance companies and resident householders paid a fee for the supply of town water. This fee was included in the total sum entered for rates. Thus, the total sum entered for rates included both the income from water and property tax. The sum increased with the laying of more water pipes. However, from 1847 to 1861, it appears that the income was small and this capital expenditure was the largest single item of municipal expenditure. Hunt considers Grahamstown's financial stability and sustained enterprise remarkable, when it is taken account that both in 1846, and although to a lesser extent, in 1851, it suffered due to the Cape Frontier Wars, and from 1844 was heavily committed to extending the water supply.²⁰²

In 1852, a serious fire in Cape Town provoked thinking about fire safety in Grahamstown. One municipal commissioner pointed out the necessity of steps being taken by the Commissioners to supply Grahamstown with water in the event of fire. Two fire hydrants had already been erected and a third was fixed in High Street opposite the Court House. The Water Committee was authorised to order 25 fire hydrants and they were requested to point out the precise positions where they were to be laid down prior to fixing. Signs were erected to mark the exact position of each fire hydrant. In October 1854, the Board of Commissioners agreed to print a list describing the locality of each fire hydrant, and sent a copy of the list to the Secretaries of the several Insurance Companies in Grahamstown, to all the Public Departments, and to the Wardmasters.²⁰³

In 1854, Grahamstown assumed the title of "City" after becoming the seat of an Anglican Bishopric. Cape Town had also assumed the same designation when it had become the centre of an Anglican diocese in 1847. Until the mid-1910s, they were the only places in the Cape Colony to which that designation was applied.²⁰⁴

²⁰⁰ Hunt 1961, 195–96.

²⁰¹ Maxwell 1958, 5–6. MS 7323, Cory Library.

²⁰² Hunt 1961, 188.

²⁰³ *Ibid.*, 193–94.

²⁰⁴ Mayor's Minute, Grahamstown, 1917, 39.

3.2.2 The Building of Reservoirs

Between 1860 and 1906, six reservoirs were built for Grahamstown. In this chapter, all these are discussed from Grey to Jameson and an examination is also made about circumstances connected to their construction. Some attention is also paid to the overall development of Grahamstown and the water supply of locations during the latter part of the 19th century.

Grey Reservoir – the First Step to Increase Storage Capacity

The biggest problem in Grahamstown's water supply was the inadequacy of water storage capacity. This situation was aggravated by a drought in the summer of 1858–59. The *Grahamstown Journal* reported that the shortage of water was a great inconvenience to the city. "Some localities have not had a drop from the municipal leadings, for which they pay rates, for nearly a month," complained the *Grahamstown Journal*. Those ratepayers who did not possess large tanks or boreholes were "reduced to the utmost straits". The poor who had no leadings and the non-European population who lived in the locations were "in a most miserable plight, begging water from house to house."²⁰⁵ Personal needs were not being met, cleanliness was neglected, and the general health of the whole community was threatened. A large reservoir was urgently needed. A small reservoir already existed in Hope's Garden built in 1850 chiefly for the benefit of the Fort England barracks.²⁰⁶ (See Figure 3.10)

On the 15th October 1858, the Chairman of the Board of Commissioners told the other Municipal Commissioners that he had had an audience with the Governor Sir George Grey²⁰⁷, and had discussed with him the possibility of selling some wasteland for getting the Board the means for building a bigger reservoir. The Municipal Commissioners were publicly urged by the editor of the *Graham's Town Journal* to tackle the problem immediately. In an Editorial Robert Godlonton²⁰⁸ referred to a remark made by the Chief Justice during a tour on circuit that Uitenhage and not Grahamstown should become the capital of the Eastern Province, because the water supply in Grahamstown was

²⁰⁵ *Grahamstown Journal*, 18 Jan. 1859.

²⁰⁶ This reservoir still exists and was in use during the 1973 drought. Way-Jones 2002, 6–8.

²⁰⁷ 1812–98. Governor of South Australia 1841–45. Governor of New Zealand 1845–54 and 1861–68. Governor of the Cape Colony 1854–61. Prime Minister of New Zealand 1877–79.

²⁰⁸ 1794–1884. Newspaper pioneer and legislator. Editor of the *Grahamstown Journal*. Member of the Legislative Council 1851–53. Member of the Legislative Assembly 1854–78.



Picture 3.6. Grey Reservoir in the 1880s. (Source: Willcox 1889)

inferior.²⁰⁹ The Commissioners included some good financiers and Godlonton appealed to them in the *Graham's Town Journal* to work out "ways and means" to remedy the defect.

A great step was taken in April 1859, Mr Hoggan was appointed as a City Engineer to supervise all the public works of the city. Immediately upon appointment, he made a rapid survey of the city's requirements. His report was submitted to a public meeting early in May. Based on this report the ratepayers unanimously agreed that a large reservoir be constructed with as little delay as possible. The Municipal Commissioners were authorised at a public meeting to incur an expenditure of 5,000 pounds to build this reservoir. The final plans were passed in September 1859, but by July 1860, nothing more had been done. On the 12th July 1860, the Town Treasurer reported to a special meeting of the Board of Commissioners that no funds were available to build the reservoir. Attempts to borrow money had failed. Furthermore, the Commissioners had been unable to secure the services of a chartered surveyor to survey land granted to them, and because the Governor was absent from the Colony they were unable to obtain the title to the several

²⁰⁹ *Graham's Town Journal*, 19 Oct. 1858.



Picture 3.7. Grey Reservoir in 2007. (Photo: Petri Juuti)

lots of ground granted to them to sell to raise funds for the reservoir. The construction of the reservoir was clearly a matter of grave urgency and the Commissioners pledged their private credit to guarantee the necessary loan.²¹⁰

In December 1860, the contractor reported that he had completed work on the reservoir in accordance with his contract. (See Figure 3.8) The City Engineer informed the Board that the job had not been completed according to specification “but in a manner equally good.” Godlonton expressed a popular opinion when he claimed that it was “better to have a Reservoir in spite of specifications than to have failure because of specifications.”²¹¹ He praised the Commissioners for providing the reservoir and went so far as to predict that the reservoir would supply water to Grahamstown even when the city was “five times its present size, and so situated as never to be dry.” The reservoir, he stated would “add to the value of property, diminish the risk of fire, give fertility to garden plots, and make the city a more desirable place of residence”. The new reservoir was opened on the 25th January 1861 by the Governor Grey and named after him the Grey Reservoir. In the opening ceremony, the Governor expressed his appreciation of the importance of

²¹⁰ Hunt 1961, 196–97.

²¹¹ Grahamstown Journal, 12 Jan. 1861.

a secure water supply. "Upon a sufficient supply of this, the most necessary element of life, depends in a great degree the health, the comfort, the cleanliness, and in part, the morality of the inhabitants of any city."²¹² (See pictures 3.6 and 3.7)

The Grey Reservoir was an important milestone in Grahamstown's municipal history. It was a goal towards which successive commissioners had striven, yet the solution of the problem of water storage emphasised the inadequacy of the piping. A week after the reservoir had been opened, the Water Committee reported that the many of the iron water pipes were choked with the rust and an accumulation of other deposits and recommended that replacement pipes, stopcocks, and other necessary adjuncts be ordered from England. Godlonton was not prepared to allow the Municipal Commissioners to rest on their laurels. He declared that one public work was completed, others had to be tackled, and that drainage had become the important problem.²¹³

Drought and Two More Reservoirs

The building of Grey Reservoir was timely, for the 1860s were the years of serious drought. The need to augment the water supply became obvious by 1865. Initial pressure was exerted on the Town Council²¹⁴ by a memorial in May from 238 citizens urging the necessity of another reservoir.²¹⁵ At that time, forming a public company to supply Grahamstown with water was discussed in the Council. One councillor moved that a Committee should be appointed to submit plans for such a company. He expected that the profit of such a company would be able to secure not only the water supply, but also the building of the Town Hall. This motion shows how well aware certain councillors were of the English precedents. This proposal was, however, not a realistic within the context of Grahamstown's situation. The other councillor pointed out that Grahamstown needed a new reservoir, not a new company, and carried the day.²¹⁶ The Board of Works presented a plan for a new reservoir situated in the gorge above Fort England. The plan was adopted after two lengthy sessions of debate that rejected a suggestion to raise the level of the Grey Reservoir. The delays exacerbated the water problem to such extent that in December 1865 the military made serious complaints. The military authorities threatened that if a better supply was not provided they would leave Grahamstown. This threat moved the Council to formulate a plan of action, which Sir Percy Douglas, the commander of the forces, accepted.²¹⁷

²¹² Grahamstown Journal, 26 Jan. 1861.

²¹³ Grahamstown Journal, 29 Jan. 1862.

²¹⁴ In 1862, the Board of Commissioners ceased to exist and it was replaced by the Mayor and the Town Council. Hunt 1976, 14.

²¹⁶ Grahamstown Journal, 19 June 1865.

²¹⁷ Gibbens 1982, 138–39.

The Council had made a contract for building a dam in No. 2 Water Kloof. (See Figure 3.8) Unfortunately, the Contractor stated in July 1866 that he was unable to proceed with the work. After this, the military was given a permission to assist in the building of the dam. The supervision of the work was taken over by Colonel R.G. Hamilton of the Royal Engineers. In gratitude, the Town Council decided to name the reservoir as Douglas Reservoir after Sir Percy Douglas. The reservoir was completed at the end of February 1867. The construction proved sound, for late in 1867, the drought gave way to serious floods, but the water level in the reservoir was still over one metre below the top of embankment. The construction of another reservoir on the other side of Signal Hill was also begun before the Douglas Reservoir was completed. The gratitude of the Council was marked by their decision to call the northern reservoir the Hamilton Reservoir. This reservoir was completed in October 1868.²¹⁸

The experience of the droughts in the 1860s made the Council realise that the future water supply necessitated a much larger undertaking. The idea of a dam at Fort England was revived in 1866, 1867, 1868, and 1874. Nevertheless, this plan never got further than the debate. Finance was a problem. The final removal of the military in 1870 and the drain of work force resources to the diamond fields taxed the water supply situation due to decreasing tax revenues in the early 1870s. This was a time of repair and consolidation of existing water sources and necessary expenditures prohibited new plans. The small Hope's Reservoir had to be repaired in 1872. Besides, silting in Douglas Reservoir caused problems and water impurities made the contents of the reservoir virtually undrinkable. This led in 1871 to the Town Council charging an additional rate to finance the repairs. After lively debate in the ratepayers' meeting, this was accepted. The repair works were finally completed in 1873 and the reservoir was fenced with posts and rails.²¹⁹

Due to drought conditions, the curators of the Botanical Gardens also turned their attention to improving the water supply wherever possible. They purchased a piece of ground to secure a passage into the Garden from Beaufort Street and piped water from the quarry spring. By 1865, Corporation water was piped from Beaufort Street and in 1866, a well was sunk on the land facing Beaufort Street, a pump installed and water pumped to the lower part of the garden. In 1877, a steam pump was introduced and in 1879, several lots of land in Grey Street were purchased so that the garden possessed land on both sides of the Kowie River, essential for dam building. By 1881, the new dam was complete and an additional steam pump had been purchased and installed. Despite a severe drought in 1882, the Committee reported a marked improvement in the Garden.²²⁰

²¹⁸ Hunt 1976, 14–15; Gibbens 1982, 139–40.

²¹⁹ Gibbens 1982, 141–44.

²²⁰ History of the Makana Botanical Gardens. [<http://bots.ru.ac.za/history.html>], visited 24 July 2006.

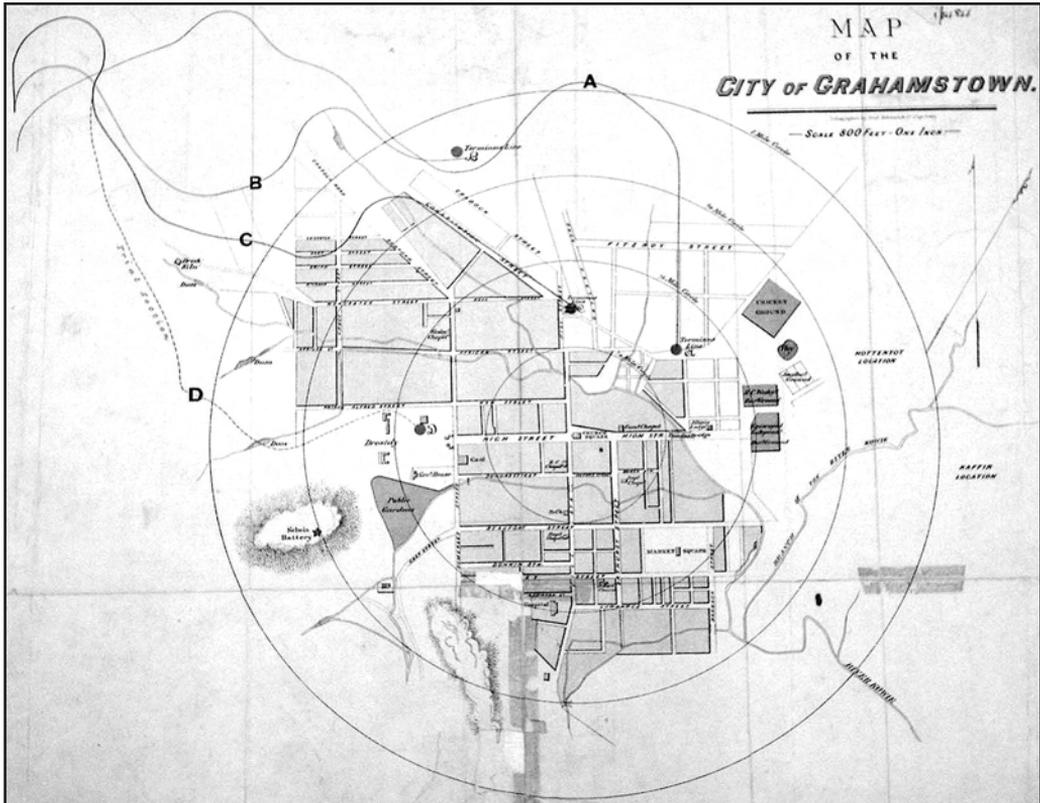


Figure 3.8. Map of Grahamstown in 1870. (M1/1484, KAB)

The Drought of 1877–78 and Yet another Reservoir

The development of the Kimberley diamond fields was largely responsible for Grahamstown's total population dropping from the 8,072 recorded in the census of 1865 to 6,903 in 1875.²²¹ Railway construction was aimed at linking Kimberley with the ports of Cape Town and Port Elizabeth. This resulted in Grahamstown's exclusion from the main lines of railway development since the railway was constructed through Cradock instead of Grahamstown. During the period 1857–1862, the population rapidly increased in Port Elizabeth with the introduction of immigrants from England, Scotland, and Ireland; after 1862, it increasingly challenged Grahamstown's position and surpassed her in size and commercial development in the 1870s.²²²

The problem of water supply became acute once again with the severe drought of 1877–78 and Council efforts to improve the water supply were redoubled. The necessity of an additional reservoir was already impressed upon the Council in 1874, after which

²²¹ Davidson 2000, 176.

²²² The reasons for Grahamstown's stagnation were researched extensively in Watts 1957; Bodill 1981, 128–29.

the Council attempted various avenues to ensure an adequate water supply. A feature of these years was the increasing reliance on professional advice from outside sources like John G. Gamble, the Colonial Hydraulic Engineer. The old plan for a reservoir at Fort England was revived in 1878 and actually approved by Gamble, but once again came to nothing. In the drought crisis of 1878, all the inhabitants were called upon to observe the strictest economy in their use of water. The drought led to the excavation, repair, and enlargement of the Grey Reservoir in 1877–1881 and the repuddling²²³ of the Hamilton Reservoir in 1878.²²⁴

The Council's hopes focussed on the West Hill Reservoir most of all during the years after 1877. (See Figure 3.10) This reservoir sparked off conflict not only between the Town Council and Divisional Council, but also among the Councillors themselves and especially between the railway authorities and the Town Council. The original proposal in 1876 was to ask if the Government would consent to the bank and bridge to be constructed across the gully at West Hill, being used as a dam by the Council. Apparently there had been a small dam named Graham's Dam next to the site of this proposed railway embankment, used by the authority of the Divisional Council. The final arrangement was that the Railway Engineer and workers would construct the West Hill Reservoir at the Town Council's expense. At a later stage during the lengthy construction of this reservoir, which was later known as the Cradock Road Reservoir, railway authorities proposed that they take over the reservoir and relieve the Council of the problem of payment. The terms of the Council proved unacceptable and the reservoir remained Council property after its construction in 1879. The most significant aspect of the construction of this reservoir was the internal conflict within the Council. The quarrel was about whether this reservoir would benefit all the ratepayers or not. A powerful minority urged to proceed with the construction of the reservoir at Fort England as more beneficial to the general body of ratepayers.²²⁵

An interesting example of the ferocity of these battles over water supply can be found in Graaff-Reinet in the early 1880s. There the situation led to brawls between the supporters and opponents of the augmentation of water supply. As an example, in April 1884, when the Town Engineer turned on the water at a new waterworks, he was attacked by a group of opponents and thrown into the water furrow.²²⁶

²²³ Puddling had the objective to minimise the slow leakage and seepage through the dam wall itself.

²²⁴ Gibbens 1982, 144–45.

²²⁵ *Ibid.*, 145–46; Memorandum of Agreement, 13 Sep. 1878. CGR, 3/1/59, 12498. KAB; C.B. Elliott to the Maintenance Engineer, Port Elizabeth, 25 Aug. 1882. CGR, 3/1/59, 12498. KAB.

²²⁶ Henning 1975, 86–88; Minnaar 1987, 24.

Locations and Water

The state of water supply in the location was investigated in the report of the Board of Works and Lands in 1877, due to the severe water shortage as a result of drought during July 1876. The Council was moved to action after receiving further communication from the Acting Civil Commissioner on the water supply to the Fingo Location in April 1877. (See Figure 3.10) The sources of the water supply were springs at the northeast side of the location, a municipal tank placed at Fort England and two wells on the either side of the location. The Council recommended that the springs be opened up and enclosed by a fence, the wells cleaned, and the existing fences put in good condition.²²⁷

By the early 1890s, the water supply for the location inhabitants came from two main sources. A municipal tank near the railway station was supplied twice a week with water for their use. However, those who used the tank complained that the water was insufficient even for their drinking purposes. The second source comprised five holes containing springs. Three were in the bed of a ravine, into whose upper end the night soil and refuse of the city were dumped. The fourth hole was in a riverbed near a burial ground for animal carcasses, and the fifth was located just below the area on which the gasworks were constructed in 1894.²²⁸

The drought at the end of the 19th century provoked a water crisis of major proportions in locations. One resident reported that a number of the Africans had died from lack of water, and appealed for help through the columns of the *Grahamstown Journal*. He described the distressing conditions in which young women begged for water in city.²²⁹ The Council opened several new springs, but not in time to stop a representation to the government on the insanitary and inadequate nature of the location supply. According to the District Surgeon, the water supply was almost non-existent and very bad, no sanitary system was enforced, and only four double latrines existed at the location. The general shortage was such that the Council could merely claim to have done the best possible in the circumstances. Its “best” was unsatisfactory in this case: in 1900, George E. Cory’s²³⁰ analysis of a sample of location water produced the predictable result that the water was so polluted as to be unfit for human consumption. A tour of inspection by the Mayor the next year led him to conclude personally that the high death rate in the location was attributable to the unhealthy water. These findings provoked minor changes to supply. A third water tank was added, so that people had supply during six days in the

²²⁷ Gibbens 1982, 254.

²²⁸ Grocott’s Penny Mail, 7 Sep. 1894.

²²⁹ *Grahamstown Journal*, 2 May 1899.

²³⁰ 1862–1935. Professor of Chemistry in Rhodes University College 1904–35. Mainly remembered as a historian.

week. In December 1902, the Council sanctioned the extension of the main water pipe along Albany Road, and in May 1904 ordered 1,000 pipes for use in the old Coloured location.²³¹

The Complicated Vicissitudes of Slaai Kraal Scheme

Despite all the Council activity and achievements, the necessity for the yet further extension of the water supply became evident in 1882. In April, the city's water supply had to be restricted to one day a week.²³² During the years 1882–84, three reports were made about possible water supply sources. In August 1882, the Council resolved to apply for a loan from the government and to obtain the services of John G. Gamble for a survey and advice. When the report on the suitability of the Green Hills and Slaai Kraal schemes was presented in October, prudent financial considerations won the day. The motion to survey the pipe track from Green Hills and to furnish an overall estimate was defeated.²³³ W.B. Tripp, an engineer employed by the Council to suggest specific implementation programmes for the Green Hills supply scheme, presented the second report in July 1883.²³⁴ The third was issued in April 1884 by Henry Lewis Spindler²³⁵, an independent civil engineer, who selected Slaai Kraal and Howieson's Poort as being the only water schemes worth developing, the former for a minor, economical supply, and the latter as a major supply.²³⁶ At a public meeting on the 15th April 1885, the Council recommended that the Slaai Kraal Scheme should be adopted. The additional expenses of constructing the filter bed, acquiring the water rights, and rearranging the city pipe service, however, delayed the implementation until 1897. Meanwhile, the Council resorted to increasing the supply by using boreholes, which were not effective.²³⁷

In 1887, water from springs and hills were conserved in five reservoirs holding about 230,000 cubic metres. Water was distributed in 1,000 pipelines to the 1,500 houses and stores. Parliament had by then made a grant of land on the New Year's River with riparian²³⁸ rights, for an increased water supply for the city. Reliable surveys, plans, and estimates for pipe track and storage reservoir showed that the water could be led out by gravitation over the railway neck, and by utilising the fall of 90 metres, motive power might be obtained for dynamos for electric lighting or driving machinery. By 1886, such

²³¹ District Surgeons Report. In Reports on the Public Health, 1896, 11; District Surgeons Report. In Reports on the Public Health, 1898, 11; Reports of Local Authorities. In Reports on the Public Health, 1901, 176.

²³² Grahamstown Journal, 20 Apr. 1882.

²³³ Grahamstown Journal, 6 Oct. 1882.

²³⁴ Grahamstown Journal, 6 July 1883.

²³⁵ 1841–1925. Private engineer in Eastern Cape from 1879 onwards.

²³⁶ Grahamstown Journal, 2 Apr. 1884.

²³⁷ Sellick 1983, 94–95; Hunt 1976, 15.

²³⁸ Means that you have a right to use water from the river or to fish if you own land bordering the river.

gravitation works were already carried out, for instance, at Riversdale, Somerset East, George Town, Wellington, and Mossel Bay.²³⁹ Gamble in 1887 described the reservoirs in Grahamstown as being perfectly satisfactory. But then he also commented, “one of these reservoirs, whose bank is a combination of masonry and earthwork, has masonry buttresses on the inside of the dam!”²⁴⁰

The age and condition of the municipal water pipes contributed to the questionably purity, colour, and odour of the water. Some of the water pipes were thirty years old, and in 1895, an unearthed section of Beaufort Street piping was found to be choked with rust, mud, slime, and maggots.²⁴¹ Despite the public outcry, the “money minded” Council undertook pipe replacement with great reluctance. New piping was laid in Market and High Streets only when filth reduced the supply to a trickle, or eliminated it altogether.²⁴² Reservoir pollution was caused chiefly by the growth of vegetation along reservoir walls, decomposing twigs and leaves, and litter left by picnickers. There was no regular cleansing schedule; the reservoirs were flushed only when they were in the most insanitary condition.

Cheap and effective alternatives to the already approved Slaai Kraal Scheme were searched for. Proposals for the construction of new reservoirs at Fort England and Pinnock’s Toll were considered.²⁴³ In 1893, a motion in the favour of the construction of a reservoir at Goodwin’s Kloof was withdrawn as a result of local opposition.²⁴⁴ The devastating drought of the 1890s prompted the Town Council’s renewed search for the best source available. In April 1896, the piped water supply was reduced to a three-hour service in every other week. On many occasions, water was even unfit for washing purposes. During May, the girls in the Wesleyan High School for Girls had half a basin of water per day for all. The health situation in the city was also such that an additional source for water was desperately needed.²⁴⁵ The first signs of concerted group pressure in the favour of the augmentation of water supply came in 1895. In June the Grahamstown Bench, the bar of the Eastern Districts’ Court, Civil Commissioner, local press and clergymen, and 30 representatives of the leading medical, educational and government institutions, expressed their support for the Slaai Kraal scheme.²⁴⁶ The report submitted by engineer Thomas Stewart in February 1896 favoured Slaai Kraal as the best available source at moderate cost.²⁴⁷ Local working class citizens, however,

²³⁹ Souvenir of Grahamstown 1887, 35, 40–41; Noble 1886, 137.

²⁴⁰ Gamble 1887, 17.

²⁴¹ Grahamstown Journal, 28 May 1895.

²⁴² Grahamstown Journal, 28 Jan. 1897.

²⁴³ Grahamstown Journal, 28 Feb., 1 Mar., 12 Apr. and 20 Apr. 1883.

²⁴⁴ Grahamstown Journal, 23 Sep. 1893.

²⁴⁵ CCP, A2-1896, 5; Reports on the Public Health, 1895, 245; District Surgeons Reports. In Reports on the Public Health, 1896, 10; Sellick 1983, 96.

²⁴⁶ Grahamstown Journal, 20 June and 29 June 1895.

²⁴⁷ Grahamstown Journal, 29 Feb. 1896.

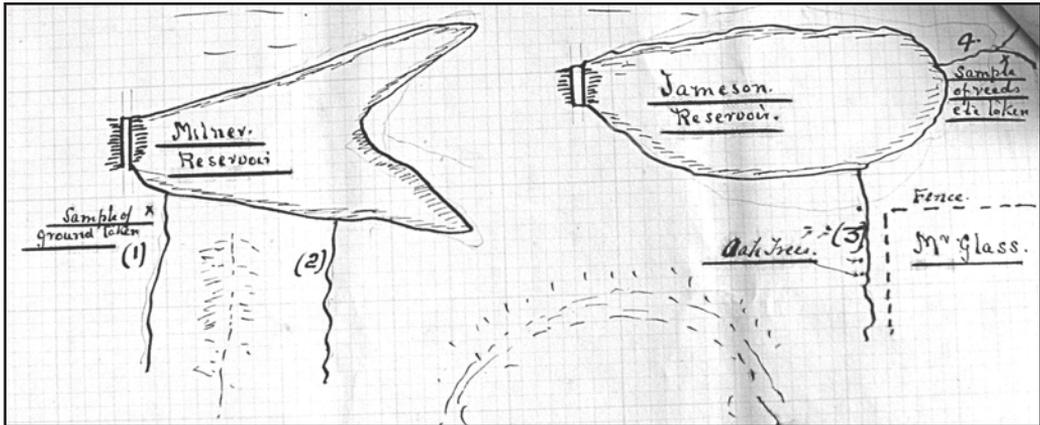


Figure 3.9. Sketch plan of reservoirs at Slaai Kraal. (Map of Reservoirs, 12 Nov. 1909. PAS, 2/80, L3/E, KAB)

were against the scheme. One reason for the resistance was the question of the purity of the Slaai Kraal water.²⁴⁸ This resistance led to the rejection of the proposed scheme during a public meeting in August 1897.²⁴⁹ This woke up the middle class ratepayers whose pressure resulted in a poll in September. In this poll, only those ratepayers who had met all their payments could vote and the result was victory for the supporters of Slaai Kraal scheme.²⁵⁰

The stage one of the Slaai Kraal project comprised the construction of a 364,000 cubic metres storage reservoir (See figure 3.9) with a main running to Brickmaker's Kloof, a high pressure tank for screening and measuring the supply, and the enclosure of the property to eliminate pollution. Water was supplied for the first time on the 12th November 1898, in time to fill the empty Grey Reservoir for the South African Industrial & Arts Exhibition visitors.²⁵¹ In 1901, the new reservoir was named "Milner" in the honour of the British High Commissioner Sir Alfred Milner. Between November 1898 and April 1900, Slaai Kraal was the sole water supply as the other sources had all run dry. In November 1901, a heavy downpour filled the Milner dam overnight. This provoked plans to increase the storage capacity at Slaai Kraal. Supply from the Milner had been fair but constant supply had still been impossible. In good seasons there had been three services per week, but normally only two was allowed. So in May 1904, tenders were accepted for the construction of a 590,000 cubic metres reservoir. This was brought into use in June 1906 and named Jameson Reservoir after the Prime Minister of the Cape.²⁵²

²⁴⁸ There was a dispute about this between the government bacteriologist Alexander Edington and local chemist George E. Cory. *Grahamstown Journal*, 12 Sep., 8 Oct., and 10 Oct. 1896.

²⁴⁹ *Grocott's Penny Mail*, 30 Aug. 1897.

²⁵⁰ *Grocott's Penny Mail*, 13 Sep. and 15 Sep. 1897.

²⁵¹ *Grahamstown Journal*, 15 Nov. 1898.

²⁵² *District Surgeons Reports. In Reports on the Public Health*, 1902, 9; Sellick 1983, 100–101; *Grocott's Penny Mail*, 9 Feb. and 30 Mar. 1906.

3.2.3 Water Supply in the Early 20th Century

In this Chapter, the developments in Grahamstown's water supply during the first two decades of the 20th century are described. Attention is paid to difficulties with the supply and the purity of water, and changes in the municipal officers dealing with the water. The report of the Tuberculosis Commission in 1914 and comments the Commission made about water supply in locations is also discussed.²⁵³ The chapter will end with the examination of various water supply schemes and their failure in the late 1910s.

Problems in the 1900s

In July 1905 James Alexander Mitchell, the Assistant Medical Officer of Health for the Colony, inspected Grahamstown's water supply system. He visited Slaai Kraal and found serious defects in the sanitary conditions of the workers making a new reservoir. In the actual city area, Grey and Hamilton Reservoirs were still in use, water from Slaai Kraal was first led into them, and then into the service pipes; Douglas was no longer used because of leakages. The great majority of the inhabitants used roof water for drinking and cooking purposes. In the location, however, the supply was only through the service pipes. Mitchell made a number of recommendations concerning sanitary conditions in Slaai Kraal area and the actual city. He also recommended that the water should be led directly to the service pipes instead of the old reservoirs; Dr. James Bruce-Bays²⁵⁴, the Medical Officer of Health for Grahamstown, had already suggested this in 1900 without success.²⁵⁵ After 1907, the older reservoirs were used only as standbys for emergencies. While the water storage capability in the reservoirs seemed impressive, in practice there were large problems to be faced. The difficulties with the flow of water to the city from Slaai Kraal were experienced almost immediately.²⁵⁶ In May 1906, two leaks were found in the main pipe leading to the city.²⁵⁷ The other major problem was the cleanliness of the water. In August 1906, the Council authorised the Board of Works to consult D. Gerrand²⁵⁸ about filter beds for the city.

In 1907, the City Council had a special meeting to discuss the working of the various departments of the Council. The Board of Works was singled out for special attention, and several amendments to its functions and personnel were made.²⁵⁹ The most important of

²⁵³ More about the Commission's report follows in Chapter 4.2.3.

²⁵⁴ Medical Officer of Health 1897–1911.

²⁵⁵ Grahamstown Water Supply: Alleged pollution at Slaai Kraal. Memorandum of J.A. Mitchell, Assistant Medical Officer of Health for the Colony, to the Medical Officer of Health for the Colony 11 July 1905. MOH, 77, 286. KAB; Reports of Local Authorities. In Reports on the Public Health, 1900, 176.

²⁵⁶ Grahamstown Journal, 5 Apr. and 19 Apr. 1906; Grocott's Penny Mail, 6 Apr. and 20 Apr. 1906.

²⁵⁷ Grahamstown Journal, 10 May 1906; Grocott's Penny Mail, 11 May 1906.

²⁵⁸ He had been the engineer and inspector of works during the building of Milner Reservoir.

²⁵⁹ Grocott's Penny Mail, 3 June 1907.

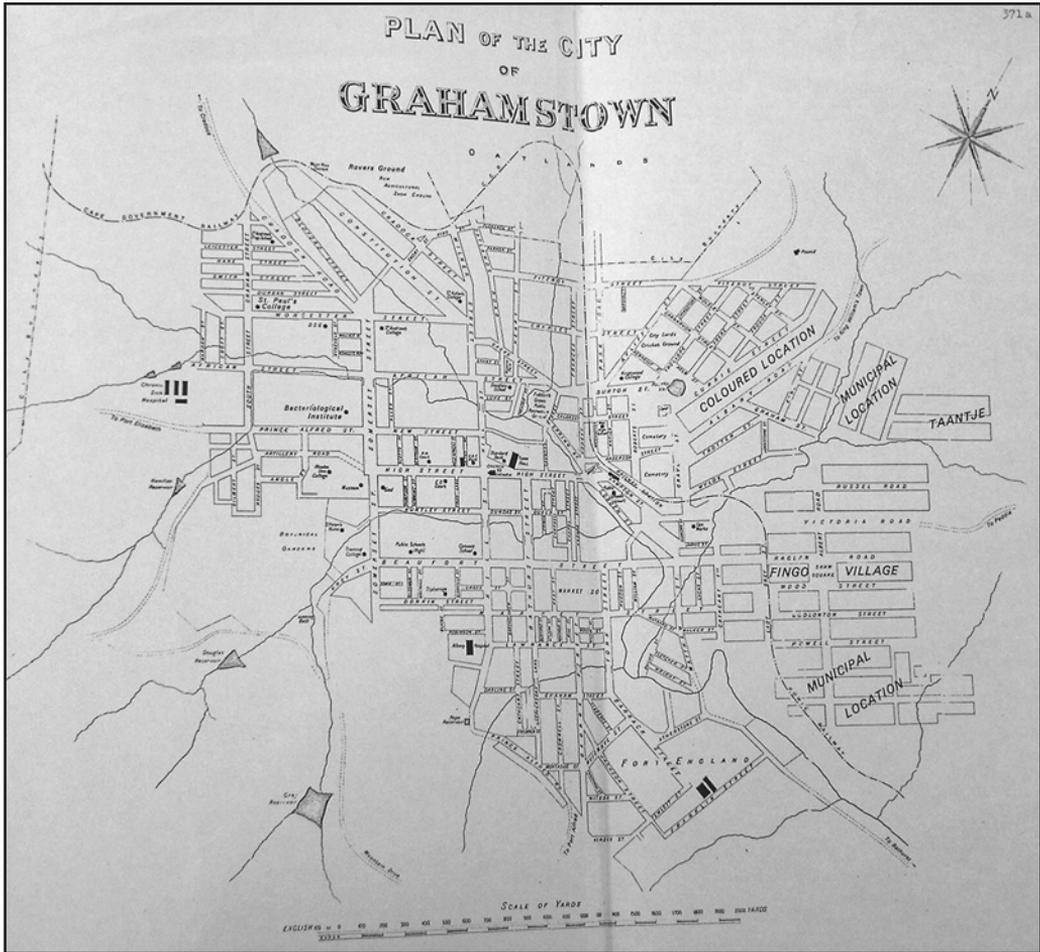


Figure 3.10. The plan of Grahamstown in 1909. (Southey 1984, 371)

these was the appointment of a City Engineer to supervise the working of the Board in 1908. Four years later the Special Investigation Committee made a detailed examination of the Board. It suggested the dismissal of the City Engineer and his replacement by a Superintendent of Works at a reduced salary. The water supply, streets, pavements, adequate lighting, and public amenities all fell under the control of the Board. However, when the new Superintendent was appointed, his title was afterwards altered back to that of the City Engineer.²⁶⁰

Dr. Bruce-Bays caused some controversy in 1907 by stating that the water supplied was so unsatisfactory as not to be suitable for drinking by children and infants.²⁶¹ His words provoked the Council to investigate the problem more seriously.²⁶² Consequently

²⁶⁰ Grahamstown Journal, 7 Nov. 1912; Grocott's Penny Mail, 8 Nov. 1912; Mayor's Minute, Grahamstown, 1913, 12-13.

²⁶¹ Grocott's Penny Mail, 19 July 1907.

²⁶² Grocott's Penny Mail, 20 Sep. 1907.

in June 1908, the Board of Works recommended that a new water scheme be adopted, which involved the construction of filters and also laid out recommendations for the better metering of water and charges to be levied.²⁶³ The scheme was adopted in February 1910. A system of filtration was the first priority; a new distribution pipe was to be provided to meet the needs of the higher levels of the city. A proposal was also made to gradually introduce a system of payment based on metering instead of the rate that was levied. Problems with the condition of the Milner Reservoir, however, prevented the immediate implementation of this scheme. In December 1910, during investigations on the cleanliness of the water, a serious leak was discovered. Detailed investigations revealed that the dam was cracked in various places, and that a water pipe passing through the reservoir wall was broken. Immediate repairs were started and completed by November 1911.²⁶⁴ The supply of water, however, still did not improve; instead, it seemed to worsen.²⁶⁵ The City Engineer submitted a report stating that ensuring constant supply was impossible until further improvements had been implemented.²⁶⁶ The Council accepted the recommendation that the Slaai Kraal water main be cleaned and passed new regulations regarding waterworks.²⁶⁷

In 1911, Grahamstown was amply supplied with water from huge reservoirs, having a combined capacity of 950,000 cubic metres, constructed in the Slaai Kraal area, about 14 kilometres from the city, to which that water was conveyed by gravitation, and served from other reservoirs within the urban limits. The reservoirs were practically full, but there appeared to be some obstruction in the main pipes, and as a result, the inhabitants of the city did not derive sufficient benefit from the supply at the disposal of the municipality. The obvious remedy was the duplication or cleansing of the water mains. An improved system of sanitation, including very efficient provision for the removal of sewage matter, slops, and refuse, was lately installed, and was carried out under the supervision of a Medical Officer of Health and a Sanitary Inspector. The considerable lengths of street gutters were paved with concrete.²⁶⁸ (See picture 3.8)

²⁶³ Mayor's Minute, Grahamstown, 1908, 2–3.

²⁶⁴ Southey 1984, 117–19; Mayor's Minute, Grahamstown, 1911, 15.

²⁶⁵ Grocott's Penny Mail, 12 Jan. and 15 Jan. 1912.

²⁶⁶ Grocott's Penny Mail, 19 Jan. 1912.

²⁶⁷ Grocott's Penny Mail, 15 Mar. 1912.

²⁶⁸ Playne 1910–11, 602; Annual Report of Grahamstown 1911. JUS, 95, 1/566/11. SAB.



Picture 3.8. Old rivers are today used as gutters. (Photo: Harri Mäki)

The Purity Debate of 1912 and Its Consequences

The purity of the water from Slaai Kraal provoked a bitter debate in 1912. George E. Cory reported in August that the construction of filter beds was vital, but that he found the water generally acceptable.²⁶⁹ Dr. Frederick A. Saunders²⁷⁰, the Medical Officer of Health,

²⁶⁹ Grahamstown Journal, 29 Aug. 1912.

²⁷⁰ 1859–1934. Medical Officer of Health 1911–1912.

challenged this report and quoted the analyses that had found the water to be of very doubtful purity, and advised against its use for human consumption.²⁷¹ In the following City Council meeting, Saunders was accused of vindictiveness and unprofessional behaviour, and of blackening the name of Grahamstown.²⁷² A motion was passed unanimously demanding his resignation within seven days.²⁷³ Chemical and bacteriological analyses made in the Government bacteriological laboratory, however, vindicated Dr. Saunders by showing that the water was dirty and seriously contaminated.²⁷⁴ He, nevertheless, resigned his appointment as demanded.²⁷⁵ These happenings show how difficult was the position of the Medical Officer if he did not have the support of the Town Fathers.

After this, the City Council decided to take steps to rectify the situation. Two experts, Dr. Charles Porter from Johannesburg and Dr. D.M. Tomory, the Medical Officer of Health of Bloemfontein, were consulted about the filtration.²⁷⁶ Pressure was exerted even from outside Grahamstown: the Acting Secretary of the Interior requested information about what was done to improve the situation²⁷⁷ and the Administrator of the Cape Colony demanded action.²⁷⁸ As a temporary measure, the Council authorised the Board of Works to clean and scrape the mains from Slaai Kraal to the city, but because of the shortage of water, the work was suspended.²⁷⁹ The scraping was completed in January 1913 and an improvement was reported. Dr. Tomory recommended the Candy method of filtration²⁸⁰ and that engineers ascertain the position of filters.²⁸¹ The entire installation was imported from England and was reported to be the first of its kind in South Africa. It was installed at the west end of the city and was officially opened at the beginning of the September 1914.²⁸²

The water problems were far from over. In October 1914, the scarcity of water forced the City Council to curtail the water supply to once a week, as only two months supply of water remained in Slaai Kraal. The sudden shortage was questioned and criticised in the city's newspapers.²⁸³ An examination of the use of water revealed that many citizens

²⁷¹ Grocott's Penny Mail, 30 Aug. 1912.

²⁷² There had already been some bad blood between Saunders and certain councillors about Saunders' annual report, his report on water situation in location and his behaviour in Sanitary Committee meetings. *Grahamstown Journal*, 18 Apr. and 18 July 1912.

²⁷³ *Grahamstown Journal*, 5 Sep. 1912; Grocott's Penny Mail, 6 Sep. 1912.

²⁷⁴ *Grahamstown Journal*, 12 Sep. 1912.

²⁷⁵ Mayor's Minute, Grahamstown, 1913, 11.

²⁷⁶ *Grahamstown Journal*, 12 Sep. 1912.

²⁷⁷ *Ibid.*

²⁷⁸ *Grahamstown Journal*, 19 Sep. 1912; Grocott's Penny Mail, 20 Sep. 1912.

²⁷⁹ Grocott's Penny Mail, 15 Nov. 1912.

²⁸⁰ About Candy filters see page 78, footnote 149.

²⁸¹ Grocott's Penny Mail, 17 Jan. 1913.

²⁸² Mayor's Minute, Grahamstown, 1913, 10–11; Invitation to the opening ceremony of the water filtration plant in Grahamstown, 1 Sep. 1914. 3/KWT, 4/1/167, M7/17. KAB; Grocott's Penny Mail, 3 Aug. and 4 Sep. 1914.

²⁸³ Grocott's Penny Mail, 5 Oct. 1914.

had been using water extravagantly.²⁸⁴ The regulations that had previously been passed, but never implemented, were adopted, and a meter system introduced in November.²⁸⁵ A report on the water supply by the Board of Works in October 1914 once again revealed the glaring discrepancies between the city and location supply. It was revealed that 7,323 Whites were supplied with c. 470 cubic metres per day, while 6,507 Blacks received c. seven cubic metres per day. This meant about 64 litres were consumed by the each White per day, while Blacks had to be content with one litre. Blacks also paid about 160 per cent more for their water than Whites did. The newspaper reports of the City Council meeting when the report was received revealed the desire of councillors to underplay the issue, as they did not want to create “racial feeling” should Blacks discover these statistics.²⁸⁶

Grahamstown was one of the places, which the government’s Tuberculosis Commission examined. They visited in Grahamstown in March 1913 and singled out its location for a special mention. In their report published in 1914, they wrote that in three locations Council was levying a water rate of ten shillings per annum per dwelling. The supply was given by the means of several 1.82 cubic metres tanks placed at different spots in the locations. The taps of these tanks were locked, and were opened only twice a week, by the order of the Council. A responsible official of the Council told the Commission “the tanks are no sooner opened than they are emptied. They pay ten shillings a year, and perhaps they get two paraffin tins full a week.” In a report by a Special Committee appointed by the Council on the 10th July 1912, “to inquire into the working of the whole municipal staff and Administration, with a view to economy and reform” this recommendation was made regarding the locations: “That additional new taps of a larger size be fixed in the municipal tanks to enable drawing of water to get their supply more readily.” The Tuberculosis Commission mentioned this had not happened when they visited locations. After this, the Commission paid attention to the fact that the water-works account of Grahamstown for the year 1912, showed a profit of 1,694 pounds. So the shortage of money could not been an excuse for not getting new larger taps.²⁸⁷ The water supply situation in location, however, did not much improve after this. In 1920, the Location Inspector still described the question of a better water supply as a very pressing one. At different points, there were 13 public tanks, which were filled twice a week and from which the holders of water-tickets were permitted to draw water. This supply was supplemented to some extent from the tank on Market Square and the location well. Nevertheless, as the Inspector wrote, “when water has to be carried such long distances, you may rest assured, little of it is used for cleansing wearing apparels

²⁸⁴ Grocott’s Penny Mail, 23 Oct. 1914

²⁸⁵ Grocott’s Penny Mail, 27 Nov. 1914.

²⁸⁶ Grahamstown Journal 22 Oct. 1914; Grocott’s Penny Mail, 23 Oct. 1914.

²⁸⁷ U.G., 34-14, 125, 133.

or the persons.” There had been some applications for private leadings and additional public tanks, but as the water available from the mains was not sufficient for existing tanks, the Inspector could not see any useful purpose for adding further leadings.²⁸⁸

The Search for New Solutions

Throughout 1915, the water position was carefully monitored. The level of the reservoirs was never critical. A proposal was made to improve water storage capacity by raising the embankment of the Jameson Reservoir by c. one metre.²⁸⁹ The Provincial Secretary did however, not sanction the scheme. The City Council revised the scheme and applied again for permission.²⁹⁰ The matter was postponed until a consideration of the estimates for 1916.²⁹¹ The investigation was also started about the use of boreholes for improving water supply. A water expert making the investigation reported that you could get groundwater from a site above the Grey Reservoir.²⁹² The Council started tunnelling works but these ceased when a stone formation was encountered.²⁹³ By 1916, the resources of Slaai Kraal were overtaxed and the search for a new scheme started again. This was neither because of the inefficiency of the Slaai Kraal dams nor because of any extraordinary growth in the size of the city, but because leading citizens saw the need for modern sanitary arrangements. Waterborne sanitation required substantially more water than the old reservoirs could provide. The heads of the academic institutions²⁹⁴ in Grahamstown took the lead in urging the City Council to consider the waterborne sewerage.²⁹⁵

The water situation was discussed in a special meeting of the City Council in February 1916. The reports of the City Engineer and the Medical Officer of Health were submitted. The former recommended that a professional be appointed to prepare a scheme to provide for a more efficient water supply, while the latter suggested various small measures to preserve water such as the building of more furrows in the catchment area, the drainage of bogs, and the clearing of vegetation. The City Engineer’s report

²⁸⁸ Report of the Location Inspector for the Year 1920. In Mayor’s Minute, Grahamstown, 1920, 64.

²⁸⁹ Grocott’s Penny Mail, 16 Apr. 1915.

²⁹⁰ Grocott’s Penny Mail, 25 June 1915.

²⁹¹ Grocott’s Penny Mail, 20 Aug. 1915.

²⁹² Grocott’s Penny Mail, 27 Oct. 1915.

²⁹³ Grocott’s Penny Mail, 3 Dec. 1915.

²⁹⁴ P.M.H. Kettlewell, Headmaster of St. Andrew’s College; Prof. J.E. Duerden, Chairman of Senate, Rhodes University; Prof. Ogg, Chairman of the School Board; Principal D. Neilson, Victoria High School; Sister Clare, Principal, Grahamstown Training College; Rev. Jas. Robb, Chairman of Council, Wesleyan High School; Mr. A.T. Williamson, Acting Headmaster, Kingswood College; Rev. Fr. Fitzgerald, Headmaster, St. Aidan’s College; Miss Hargreaves, headmistress, Diocesan School for Girls; Mr. L.M. Hanson, Civil Commissioner and Resident Magistrate; Rev. R. Mullins, Headmaster, St. Andrew’s Prep. School; Rev. J.S. Bazeley, Warden, St. Paul’s Theological College; Prof. G.E. Cory, City Councillor.

²⁹⁵ Hunt 1976, 17–18.

revealed that the current water storage facilities were inadequate; he estimated that the city needed three times more water per day than was the present consumption.²⁹⁶ The question about the safety of the water supply was also raised when Dr. George C. Purvis²⁹⁷, the Medical Officer of Health, declared, with the full support of the Health Committee, that he declined to be responsible for the purity of the water supply.²⁹⁸ The Government Bacteriologist also concluded in his report that “the water from the Municipal reservoirs cannot be regarded otherwise than unsuitable for drinking purposes”.²⁹⁹ Dr. Purvis threatened to report the matter to the Government because the Board of Works did not act on these reports.³⁰⁰

In June 1916, a separate water committee was formed.³⁰¹ The Committee immediately set about obtaining the services of a consulting engineer.³⁰² It also accepted tender for drilling operations at the Slaai Kraal.³⁰³ These, however, all failed; no water was found.³⁰⁴ Robert W. Menmuir³⁰⁵ was in November 1916 hired to research various possibilities to augment the water supply.³⁰⁶ In January 1917, he submitted an interim report in which he advised that no further major expenditure should be undertaken at Slaai Kraal, and recommended that new schemes should be inaugurated. He singled out Green Hills, Howieson’s Poort, and Featherstone’s Kloof as prime sites.³⁰⁷ The Water Committee decided to continue the examination of the first two.³⁰⁸ The water crisis meanwhile worsened; the supply was reduced to a fortnightly (once in two weeks) service in April 1917.³⁰⁹ By the beginning of June 1917, both the Jameson and the Milner Reservoirs contained less than 2.5 metres of water.³¹⁰ Unseasonal rainfall in July relieved the critical situation, and resulted in the restoration of a weekly service.³¹¹ Further rainfall in October enabled the Council to introduce a bi-weekly (twice a week) service.³¹² Record rainfalls then resulted in the overflow of the reservoirs on the 15th October 1917. They only ceased to overflow on

²⁹⁶ Grocott’s Penny Mail, 21 Feb. 1916.

²⁹⁷ Medical Officer of Health from 1913.

²⁹⁸ Grocott’s Penny Mail, 20 Mar. 1916.

²⁹⁹ Grocott’s Penny Mail, 5 May 1916.

³⁰⁰ Grocott’s Penny Mail, 25 May 1916.

³⁰¹ Grocott’s Penny Mail, 23 June 1916.

³⁰² The Board of Works had already been in contact with William Ingham from Rand Water, but thought his fee too high. Grocott’s Penny Mail, 8 Sep. 1916.

³⁰³ Grocott’s Penny Mail, 7 July 1916.

³⁰⁴ Grocott’s Penny Mail, 8 Sep. 1916.

³⁰⁵ 1866–1942. Town Engineer of Woodstock 1901–1913. Had experience with the water supplies of Cape Town, Upington, Uitenhage and East London.

³⁰⁶ Grocott’s Penny Mail, 17 Nov. 1916.

³⁰⁷ Grocott’s Penny Mail, 12 Jan. 1917.

³⁰⁸ Grocott’s Penny Mail, 31 Jan. 1917.

³⁰⁹ Grocott’s Penny Mail, 7 Apr. 1917.

³¹⁰ Grocott’s Penny Mail, 4 June 1917.

³¹¹ Grocott’s Penny Mail, 15 July and 17 July 1917.

³¹² Grocott’s Penny Mail, 12 Oct. 1917.

the 12th February 1918.³¹³ Menmuir's report was eventually published at the end of July 1918. He favoured a site on the Botha's River, but qualified this by emphasizing the need for further investigations.³¹⁴ The Council adopted the report.³¹⁵ The rest of the year was spent in exploring methods to raise enough money, and examining alternative schemes.³¹⁶ The Menmuir scheme, however, was soon discredited; it was based on the high rainfall figures of 1917 and the Botha's River was established to be an unrealistic site. After various proposals, for instance in 1919–1920 nine different places were visited, Howieson's Poort was in 1926 confirmed as the most economical.³¹⁷

3.2.4 Municipal Finance Dictate the Way Forward

In Grahamstown, municipal finance had a deep impact on the way the water supply was developed during the examination period. When the decision had to be made, often the cheapest alternative was chosen or at least the decision was postponed until all the cheaper alternatives had been examined. After the establishment of the municipality in Grahamstown, water supply was one of the first things in the minds of the new Commissioners. The possibility of getting the proper water pipe network was already examined then but it was thought to be too expensive and furrows were dug instead. This proved to be an unsatisfactory solution. A drought in 1842 and concerns for public health finally forced the hands of the Board of Commissioners; in 1843, the decision was made to install iron water pipes in High Street. Here again a cheaper alternative, glass water pipers, was presented, but luckily did not led to anything.

Pipes were installed during 1844–45, but not without problems. There was a discussion about the placement of the pipeline in the street. Moreover, critical shortcomings were later found in the work done. Allegations of corruption were also made against the Water Committee of the Board of Commissioners. During the 1850s, there were some important developments. In 1850, the Superintendent of Water was appointed to take the care of every matter concerning the water supply. Fire hydrants were fixed in the network during 1853 as a precaution. In addition, the pipe network was extended into new streets in the town centre.

³¹³ Mayor's Minute, Grahamstown, 1917, 24–27.

³¹⁴ Grocott's Penny Mail, 29 July and 31 July 1918.

³¹⁵ Grocott's Penny Mail, 2 Aug. 1918.

³¹⁶ Grocott's Penny Mail, 9 Dec. 1918.

³¹⁷ Mayor's Minute, Grahamstown, 1919. In Mayor's Minute, Grahamstown, 1920, 12–13; Mayor's Minute, Grahamstown, 1920, 25–26; City Engineer's Report. In Mayor's Minute, Grahamstown, 1920, 51.



Picture 3.9. Grahamstown in 1846. (Source: De Kock 1952, 175)

During the 1850s realisation came that what was needed next was storage space for the water so that supply could also be steady during the droughts. During 1860–68 three reservoirs were built in the immediate neighbourhood of the city centre. The building of the first of these, Grey Reservoir, was a big occasion in Grahamstown. The appointment of the first City Engineer to supervise this work only stresses the importance of the reservoir to the City. One reservoir, however, was not enough and in the late 1860s, the next two, Douglas and Hamilton, were built. In the building of these, municipal finance was again important. There were droughts but only military pressure for better water supply forced the City Council to make the building decision. Moreover, most of the construction work was done with the help of military.

The removal of the military in 1870, the lure of the diamond fields around Kimberley and the railway policy of the Cape Colony reduced the municipal incomes during the 1870s, which proved to be the worst decade of Grahamstown's history. During the 1870s, local politics also entered the water supply question. There were two alternatives for the next reservoir in the neighbourhood of the city centre. Fort England Reservoir was under consideration several times but was never realised because of the financial reasons. The other possibility was the West Hill or Cradock Road Reservoir, as it was called later. This was actually realised with the help of railway authorities, but also caused conflicts both inside municipality and between municipality and other authorities.

In the 1880s search for new water sources further away was started. During 1882–84, several possible sources were examined of which the City Council preferred the Slaai Kraal Scheme. For various reasons, like extra expenses and question about the purity

of water, it took, however, over ten years to realize this scheme. In the mean time, some cheaper alternatives were examined, but none of these was good enough. Only after the very bad drought in 1896 was the decision made to start building the first reservoir in Slaai Kraal and even this decision needed two public meetings to be accepted by the ratepayers. This Milner Reservoir proved to be so successful that the decision was made to build another reservoir by it. This Jameson Reservoir was finalised in 1906.

Grahamstown had constant troubles with the new reservoirs in Slaai Kraal and main lines coming from there to city centre in the beginning of the 20th century. Leaks in the pipes and the debates about the purity of the water did not help at all to keep the supply at needed levels. Two purity debates in 1907 and 1912 caused particular controversy. In both cases, the local Medical Officer of Health condemned the water as undrinkable and dangerous for health. Dr. Bruce-Bays condemnation in 1907 led the City Council to inspect the possible filtration of water. Various difficulties, however, slowed the process and in 1912 when Dr. Saunders condemned the water, the first result was that he was forced to resign. The analyses, however, proved the bad quality of water, and the pressure outside Grahamstown pushed the Council finally in action. The filtration plant was opened in 1914. Still, even after this, Dr. Purvis, the successor of Dr. Saunders, in 1916 declined to be responsible for the purity of the water. Interestingly it seems that both the Medical Officers of Health and the City Engineers were constantly at loggerheads with the City Council.

The water supply of location got countrywide attention after the Tuberculosis Commission published its report in 1914. Report gave a bleak picture about the conditions of the locations in Grahamstown and blamed the City Council straight about the situation. The situation was discussed for some time but no real improvements followed this discussion. During the last part of the 1910s, the discussion about water supply in Grahamstown again concentrated about finding a new water source for the city. This discussion was pushed up by the droughts and the increasing demands for the waterborne sewerage system, which could not be realised without augmented water supply. The various investigations, however, did not lead to anything until 1926.

3.3 Durban

3.3.1 Water Supply from the 1850s to Currie's Fountain in 1879

In this Chapter, the first years of the Borough of Durban and how the water supply was organized there from the pumps and wells will be described. The first discussions about getting water from near-by rivers are examined. The rest of the Chapter is used in the examination of the situation in the 1870s and the founding of water in the Botanic Gardens area.

Wells and Pumps

In the Municipal Ordinance of 1854, a Mayor and Councillors replaced Commissioners in Natal. Consequently, two boroughs, Durban and Pietermaritzburg, were proclaimed on the 15th May 1854.³¹⁸ The decisive factor contributing to creation of the municipality was the call for improvements; harbour and water supply needed to be improved, postal arrangements were primitive, a bridge had to be built over the Umgeni River. The limits of the Borough were proclaimed; Durban contained c. 34 square kilometres bounded by the Berea Crest and the Umgeni and Umbilo³¹⁹ Rivers. These borders were altered only in 1926. In August 1855, the Public Works Department was inaugurated by a resolution authorising the Town Committee to appoint one or more labourers as required.³²⁰

On the 14th November 1854, the Town Clerk was directed to report upon the state of the town pump in order to make it available for the use of the public. The pump was situated in Old Well Court, in Smith Street and continued in use until long after the Umbilo Waterworks were opened. Similar pumps were later installed in the other parts of the Borough. This form of water supply provided about 215 cubic metres per day. The residents mostly depended on private wells until H.W. Currie³²¹ began importing corrugated iron, and so introduced the water tank.³²² Henderson described the situation later:

³¹⁸ The first attempt to set up a Municipality was made in 1849 but then the majority was against it. Stark s.a., 26; See also Hall 1969, 143–56 and Heard 1943.

³¹⁹ Nowadays called Mbilo.

³²⁰ Henderson 1904, 12.

³²¹ Mayor 1879–80.

³²² Green 1957, 33–36; Henderson 1904, 225; Stark s.a., 124; Vines 1984, 6; Morrison 1987, 16.



Picture 3.10. Place of the original well in the Garrison area. (Photo: Petri Juuti)

Fifty years ago [1854] the township of Durban consisted of a few wooden huts and shanties, the roads were but sandy tracks cut through virgin bush – without drains of any description or any attempt at public lighting – and the water supply was obtained from primitively sunk wells yielding water of an indifferent quality.³²³

The first wells in Durban were probably private, but the earliest public well was in all likelihood from the year 1855 in St. George's Street. Its wall was made of the alternate double rows of brick and the single rows of slate and it was a typical dug well. During the next 24 years, 29 more wells were dug in the Borough area. During April 1856, Durban was flooded by the Umgeni River overflowing its banks and opening up a new course through the Eastern Vlei into the Bay. During the four days from the 12th to the 16th April, the rainfall was 68 centimetres, and the effect of this, conjointly with the overflow of the Umgeni, was to wash away entirely all the roads, drains, and footpaths. In 1868, destructive rainfall occurred again. This time only the embankment built after the previous disaster prevented water from pouring into the town centre.³²⁴

³²³ Henderson 1904, 1.

³²⁴ Bjorvig 1979, 61–64; Russell s.a., 269–72; Brown 1875, 234–36.

In March 1858, the Town Council discussed which was more important for the municipality: a new town hall or paved roads and pure water. A motion for a new town hall was carried by three votes to two. In April of the same year, the *Natal Mercury* reported on the state of the town pumps stating that some of them were out of order or unfinished and needed attention. In November, the women of the West End wrote a letter to the Town Council about the state of the wells in that quarter. The letter was referred to the Town Committee for reporting on the best position of the pumps so that they were equally distributed throughout the town.³²⁵

The First River Schemes

In December 1861, the Council requested a report on the feasibility of supplying the Borough with water from the Umgeni River. The report was duly received, but the Council could not agree to finance the scheme as submitted. It would have needed a policy of large-scale borrowing and the Council was unable to agree on this. In reference to this matter, the Mayor stated in his annual Minute that he hoped the scheme would be carried out by private enterprise, either by the Corporation giving the monopoly of the sale of water to some private company, or by the Council guaranteeing a certain percentage on the capital laid out. The news was welcomed in 1862 that “Pure Umgeni Water – for the invalid and the healthy” was to be brought daily to town, and dispensed at the corner of Pine Terrace and Field Street. In July, the Borough was presented with the drinking fountain at the corner of the Town Gardens facing West Street and Gardiner Street.³²⁶

J.D. Holliday commented in his book about these plans of the 1860s:

*Plans for supply from adjacent rivers have recently been decided on by the Town Council, and the very questionable and permanently expensive method of employing the aid of steam engines to force the water up into reservoirs, to get the required level, instead of drawing it from a spot sufficiently high up the river to supply all parts by its own gravitation, without the aid of steam, has been adopted. Town Council, think again!*³²⁷

Apparently, the Town Council thought about it again since the plans were not realized.

In 1873, the Council apologized for any inconveniences to citizens because the droughts had affected supplies from the wells.³²⁸ Still dreaming about its future water supply, the Council in 1874 considered a proposal that private tenders be invited to provide Durban with the best water supply.³²⁹ This seems to have received little support. In 1875, a public meeting was called to consider water requirements; a special committee was set up to consider a variety of schemes proposed. Those included a supply from

³²⁵ Russell s.a., 348; Tait s.a., 120.

³²⁶ Henderson 1904, 50; Lynsky 1982, 11; Malherbe 1965, 154; Swanson 1964, 276.

³²⁷ Holliday 1890, 20.

³²⁸ Mayor's Minute, Durban, 1873, 5.

³²⁹ Mayor's Minute, Durban, 1875, 6.

the Umhlatuzana³³⁰ River; a supply from the Umhlatuzana River with a supply pipe laid adjacent to the railway under construction to Pietermaritzburg; and the development of an artesian³³¹ source of water within the Borough.³³² The outcome was that the Borough authorised an expenditure of 500 pounds on an investigation into the last option.³³³

Water Supply in the 1870s

Urban growth was dramatic from the 1870s onward. Durban's population doubled each decade, when its advantages for mineral exploitation inland, for agriculture on the coast, and for railway building were realised. The inadequate water supply and sanitation forced the Town Council to start considering the public health problems. By the 1890s, the city alone contained nearly a third of the Natal's White inhabitants. In the 1860s and 1870s, the government of Natal was not conceived as a provider of social services or an instrument of social construction. In addition, because of the nature of the urban poor, the problems of public health, sanitation, overcrowding and slum clearance, public order and security, were usually perceived in the terms of racial or ethnic differences.³³⁴

In January 1878, the Water Supply Committee decided to ask for a report on the water supply from the Colonial Engineer and the Resident Engineer of the Government Railways.³³⁵ They recommended that from the seven inspected schemes, the one from Mr. O'Meara should be adopted with a modification; it fulfilled all the three premises the engineers had, i.e. supply from the Umhlatuzana River, supply by gravitation and it could supply the higher levels of the town. Considering drainage, they recommended that water closets be forbidden and that the municipality should not entertain the water carriage of sewage.³³⁶ The large amount of capital required to carry out any of these schemes, however, rendered it impossible for the Council to do anything until borrowing powers had been obtained and a loan floated for this and the other public works of importance.³³⁷ The public improvement works carried out during 1878–79 were of slight importance; principally owing to the want of funds to undertake the other drainage works than that of the Central Drain.³³⁸

³³⁰ Nowadays called Mhlatuzana.

³³¹ An artesian well is a confined well containing groundwater that will flow upwards out of a well without the need for pumping.

³³² Mayor's Minute, Durban, 1876, 8.

³³³ Francis 1991, 43.

³³⁴ Swanson 1964, 273–74; Swanson 1969, 33; Swanson 1976, 161; Swanson 1968, 33–34.

³³⁵ Water Supply Committee Meeting, held 9th January 1878. CSO, 642, 1878/357. NAB.

³³⁶ Report upon the Proposed water Supply for the Borough of Durban. CSO, 642, 1878/1781. NAB.

³³⁷ Mayor's Minute, Durban, 1878, 9–10.

³³⁸ Henderson 1904, 105.

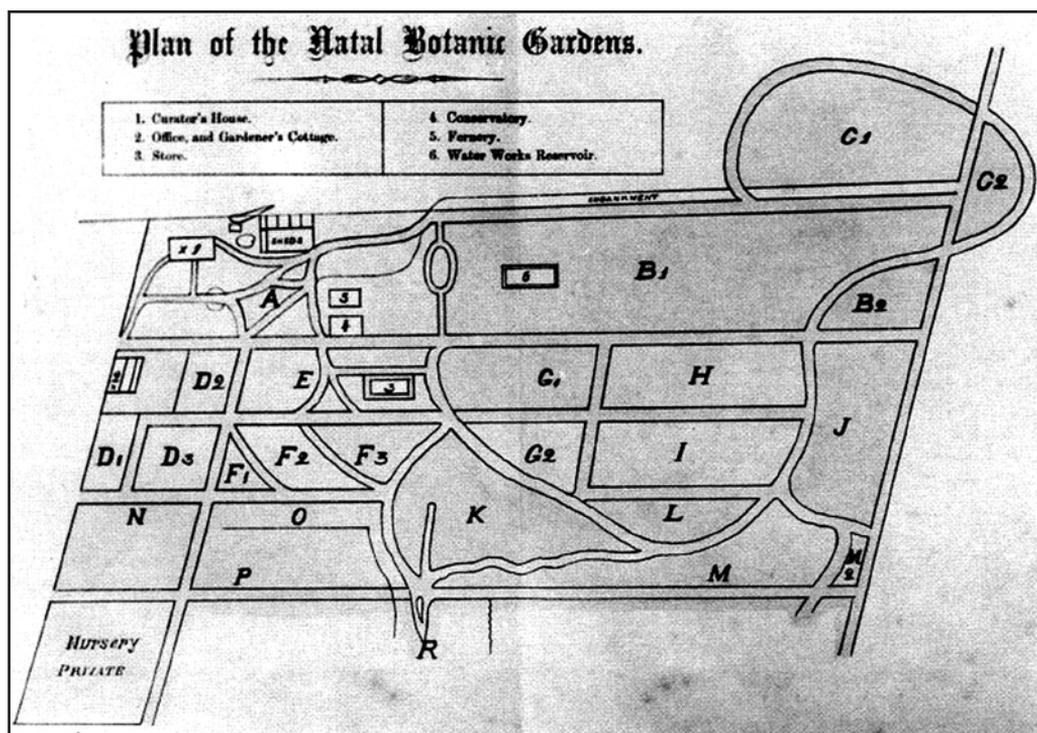


Figure 3.11. The plan of the Natal Botanic Gardens. (McCracken 1987, 66)

The water supply of the Borough continued to be obtained from tanks and wells sunk in the various parts of the city until the end of 1879. It was a duty of the Superintendent of the Police to take the soundings of the 18 hand-pumped public wells, and according to the Superintendent's report of soundings taken in July 1877, these wells yielded approximately 43 litres per person a day, when the population of the city was over 5,000.³³⁹ The unsatisfactory quality and the sparse quantity of the water from these pumps had already been the source of discussion by the councillors for years. Several experiments had been tried with artesian wells but without success. With the increasing population and repeated dry seasons, the necessity for providing some other source of supply became imperative. In 1879, the possibility of a shortfall in the water supply became so serious that the Mayor arranged with the Railway Department for the supply of water in tanks from the Umgeni River. A special siding was laid down for the trucks in Pine Street, and water was sold at the rate of one penny per bucket.³⁴⁰

³³⁹ Report on Town Wells. In Mayor's Minute, Durban, 1877, Annexure D, 12.

³⁴⁰ Mayor's Minute, Durban, 1879, 10.

In 1875, Councillor H.W. Currie advocated the sinking of an artesian well.³⁴¹ Drilling operations were conducted in the course of 1876–77 but only with partial success. However, in 1878, the Council placed the drilling operations entirely under Currie’s control, and he eventually succeeded in sinking a well yielding 227 cubic metres per day in July 1879 at the foot of the Botanic Gardens. (See Figure 3.11) Storage tanks were erected and water pipes were led from “Currie’s Fountain”, as the well was named, into city and along West Street, hydrants being fixed at convenient sites.³⁴² An additional well was sunk in 1883 and a steam pump erected to increase the supply.³⁴³ Currie’s Fountain continued to be the principal source of supply until the Umbilo Waterworks was opened in 1887. In 1886, the Borough Engineer reported that without this water source, there might have been water famine throughout Durban and the Berea during the last two years and again in 1891 he praised the value of it during the previous 18 months.³⁴⁴ The Fountain was used until the early 1890s, but mostly for supplying the railways.³⁴⁵

3.3.2 The Era of Improvements

After the appointment of the first Borough Engineer in 1882, Durban finally started the building of big water supply schemes. In this chapter, those schemes from Umbilo to Umlaas will be described. Attention is also paid to the role of two successive Borough Engineers, J.F.E. Barnes and John Fletcher, during the 1880s and 1890s. Fletcher’s opinion on water supply and water consumption are under special examination.

John F.E. Barnes and the Umbilo Scheme

The need for proper drainage and waterworks increased together with staffing problems in the Survey Department. This led the Council to the decision of appointing a qualified engineer.³⁴⁶ Applications were called for, resulting in John F.E. Barnes³⁴⁷ being appointed Borough Engineer on the 17th January 1882.³⁴⁸ Barnes immediately urged that the Currie’s

³⁴¹ Mayor’s Minute, Durban, 1876, 8.

³⁴² Mayor’s Minute, Durban, 1879, 2, 10.

³⁴³ Mayor’s Minute, Durban, 1884, 9.

³⁴⁴ Borough Engineer’s Report. In Mayor’s Minute, Durban, 1886, 21; Borough Engineer’s Official Report, for Year 1890–91. In Mayor’s Minute, Durban, 1891, 27.

³⁴⁵ McCracken 1996, 86.

³⁴⁶ The need for an engineer for the Borough is mentioned the first time in Mayor’s Minutes in 1877. Mayor’s Minute, Durban, 1877, 3; this was under consideration in 1878 but the founding of the Currie’s Fountain removed the need at that time. Mayor’s Minute, Durban, 1879, 10.

³⁴⁷ 1851–1925. Government Surveyor of Natal 1880–82. Borough Engineer 1882–87. Assistant Colonial Engineer of Natal 1888–1893, Chief Engineer of Public Works 1893–1910.

³⁴⁸ Lynsky 1982, 16.

Fountain supply and extension be seen only as a temporary measure especially since it was not able to supply the whole Borough. In addition, it necessitated heavy pumping machines and accompanying expenditure and could not meet the requirements of an active fire brigade. Added to this was a warning that the water was not pure enough.³⁴⁹ Samples had been forwarded to Dr. Edward Frankland³⁵⁰ of London for analysis in 1879–80. His report concluded that the water was not suitable for “dietetic purposes”, although some subsequent analyses were of different opinion.³⁵¹

In September 1883, Barnes submitted reports and estimates on schemes to supply water from the Umlaas³⁵², the Umhlatuzana, and the Umbilo Rivers. (See Figure 3.12) In December, the Council decided that under existing conditions the Umbilo River was the most suitable source. Barnes was instructed to proceed with the surveys and the preparation of documents in connection with the enactments the Council required to proceed with the scheme. The building works were started in early 1885.³⁵³ The site selected for the Umbilo Headworks lay on a bend of the Umbilo River just above Umbilo Falls some 14 kilometres from Durban. An earthen dam, which could conserve 169,000 cubic metres of water, was built across the valley, complete with a spillway and control valve structure. Downstream a settling basin, discharging into two circular sand storage reservoirs, was provided. (See picture 3.11) The attraction of the scheme was two-fold. Firstly, it was within the Borough’s financial means and, secondly, it was designed to provide a gravity supply to the growing Berea residential area. A cast iron pipe carried the filtered water via a halfway break pressure tank to two small covered reservoirs adjacent to South Ridge Road and on the site where the South Ridge Road Reservoir was subsequently built. These two reservoirs had a capacity of 227 cubic metres. In 1888, a large open service reservoir near St. Thomas’ Churchyard in Ridge Road was built with a capacity of 1,400 cubic metres. The Pinetown Waterworks, as they were usually called, were formally opened by turning on the Queen Victoria Jubilee Fountain in the Town Gardens on the 21st July 1887.³⁵⁴

When considering the vital necessity of a water supply for the Borough in 1883, the Town Council had to take into consideration primarily the estimated initial cost of the scheme. In conjunction with the question of cost, another point to be considered

³⁴⁹ Mayor’s Minute, Durban, 1882, Annexure C, 23–24.

³⁵⁰ 1825–1899. Professor of Chemistry at Owens College, Manchester 1851–57, at St Bartholomew’s Hospital 1857–65, and at School of Mines, London 1865–85. World’s leading authority on water quality from the mid-1860s to the late 1880s.

³⁵¹ Mayor’s Minute, Durban, 1879, 10; Mayor’s Minute, Durban, 1880, 12–13.

³⁵² Nowadays called Mlazi.

³⁵³ Mayor’s Minute, Durban, 1884, 3–4, 9–11; Quarterly Report of the Borough Engineer, re Water Works. In Mayor’s Minute, Durban, 1885, Annexure A, 34–37.

³⁵⁴ Mayor’s Minute, Durban, 1887, 17; Borough Engineer’s Official Report for the Year. In Mayor’s Minute, Durban, 1887, 20–22; Twentieth-Century Impressions of Natal 1906, 439; McIntyre 1957, 109.



Picture 3.11. Umbilo filter construction site. Borough Engineer Barnes at the right. (Source: Horne 1991)

was that at the time the Umbilo scheme was inaugurated, the Corporation could not possibly have incurred the expenditure necessary for a scheme, which would have given a greater quantity of water, but at a lower level, by tapping one of the other sources of supply. It was a *sine qua non* that the whole Borough, including the high levels of the Berea, should be supplied from the one source, and the Umbilo River alone afforded facilities for such supply due to its high elevation, while the cost of the scheme was far lower than the cost of either of the alternative schemes.³⁵⁵ The sufficiency of the Umbilo scheme to meet Durban's needs was based on the consumption of water per the head of population being c. 90 litres per day when existing consumption was judged to have been 23 litres. The Umbilo scheme allowed Durban homes to have private connections and eliminated the use of wells, undoubtedly helping towards raising public and private health standards.³⁵⁶ A storage reservoir with a capacity of 227 cubic metres was erected in the Botanic Gardens in 1884. The position of the reservoir was selected so that the supply could be utilised in any later gravitation scheme. This way a serious

³⁵⁵ Mayor's Minute, Durban 1883, 3; Mayor's Minute, Durban, 1883, Annexure B. – Water Supply, 27–28; Henderson 1904, 231.

³⁵⁶ Lynsky 1982, 22.

water famine was averted; the rainfall during the three succeeding years falling far short of requirements. This reservoir also made Botanic Gardens more attractive by giving a permanent water supply to it.³⁵⁷

John Fletcher and the Umlaas Scheme

In the years 1888–90, serious droughts were experienced and this, combined with the demand of water for manufacturing purposes, made it necessary to extend the water supply. The Town Council, due to the increased revenue and importance of Durban, was in a position to undertake a far more ambitious scheme than earlier. At the first consideration of the extra-Borough Waterworks undertakings in 1883, the Umlaas as a source of supply had been dismissed on the basis of cost, but the necessities of the situation in 1890 demanded more comprehensive measures, which city's finances permitted at that time. J.F.E. Barnes was selected as an Assistant Colonial Engineer of Natal in 1888. In May 1889, John Fletcher³⁵⁸ (see picture 4.5) was appointed as a new Borough Engineer. Within months, his experience was put to the test. Barnes' Umbilo scheme was already overtaxed by drought and population growth. As a temporary measure, the Council voted to allow the construction of a plant to pump water from the Umhlatuzana River to the Umbilo River above the Headworks. In January 1890, five months after arriving in Durban, Fletcher tabled a report detailing various schemes for supplementing the existing supply. He advocated the tapping of the Umlaas River to supply the lower levels of the city. The council approved this during 1890. Fletcher estimated that the flow from this source would be sufficient for 50,000 people and recommended a gravitational scheme. The new waterworks were completed in the following year and formally opened by the Council on the 30th July 1891.³⁵⁹

This was only a supplementary supply measure carried out before building a permanent gravitation scheme. It consisted of a pumping plant erected on the Umlaas River at some 13 kilometres distance from Durban. (See Figure 3.12) This pumped water to the Neck Reservoir in the present day Lamontville, from where gravity took it in water pipes to the Florida Road Reservoir (completed in late 1892). This pumping plant was capable of raising 1,100 (3,200 says Lynsky) cubic metres per day, and proved sufficient until the gravitation scheme was completed.³⁶⁰ This work proved its worth immediately during a severe drought in the first months of 1892.³⁶¹ Water, however, could not be

³⁵⁷ Mayor's Minute, Durban, 1884, 9; Borough Engineer's Report. In Mayor's Minute, Durban, 1886, 21; Borough Engineer's Official Report, for Year 1890–91. In Mayor's Minute, Durban, 1891, 27.

³⁵⁸ Borough Engineer 1889–1918. Former Borough Engineer of Sutton Coldfield, Warwickshire.

³⁵⁹ Twentieth-Century Impressions of Natal 1906, 439–440; Lynsky 1982, 26–27; Henderson 1904, 140–41.

³⁶⁰ Henderson 1904, 235.

³⁶¹ Mayor's Minute, Durban, 1892, 3.

filtered before the gravitation scheme was ready and the river floods continued to cause trouble for the quality of water.³⁶² Two temporary sand filter beds were still constructed to get experience for building permanent ones later.³⁶³ Filtration was a matter of supreme importance in Fletcher's opinion, "one to which every possible care and attention should be given, and no reasonable expense should be spared to reliably and satisfactorily accomplish throughout the year".³⁶⁴ Fletcher returned to this question again in his report in 1897.³⁶⁵ He gave a long report about his visit to England and his discussions about different filtration methods with the local experts. At the end of this report, he again stressed that:

*[O]f all municipal questions a pure water supply is of the greatest importance. If the composition of our water supply were such as to warrant even the expenditure of £150,000 to effect its essential purity, I should not hesitate in recommending the outlay of so large a sum as being justifiable on a work of such vital importance.*³⁶⁶

Until 1894, the Umbilo supply of 910 cubic metres per day and the Umlaas temporary pumping plants capacity of 1,100 cubic metres per day proved to be sufficient to supply Durban's requirements. The permanent mains were laid from city to the temporary pumping station through which the water was pumped, and from the temporary pumping site, the new gravitation works were connected up, whereupon the pumping plant was superseded. This was realized in 1894 when the Umlaas gravitation scheme was built. Fletcher originally designed it to supply 9,000 cubic metres per day, but as the details were worked out, an increased expenditure to augment the delivery of water considerably was found economical. The distance between the water intake and the filter beds were shortened and the delivery of water augmented by the construction of tunnels and conduits. However, in 1898 the Medical Officer still had to recommend to the people of Durban to boil their drinking water.³⁶⁷

By 1895, Fletcher could point to the successful completion of the scheme. The Umlaas and Umbilo projects, combined, gave Durban a cheaper and more plentiful supply than either Port Elizabeth or Cape Town, both with bigger populations. Fletcher estimated that to consume the daily delivery of over 9,000 cubic metres, Durban's population would have to double from its then 28,000. "It is Durban's good fortune that in such close proximity a source of supply has been made available, from a river which is so greatly in excess of the city's future needs, as to place it beyond the risk of scarcity even from a

³⁶² Borough Engineer's Official Report, for Year 1891–92. In Mayor's Minute, Durban, 1892, 17.

³⁶³ Borough Engineer's Official Report, for Year 1892–3. In Mayor's Minute, Durban, 1893, 21.

³⁶⁴ Borough Engineer's Official Report, for Year 1894–95. In Mayor's Minute, Durban, 1895, 37.

³⁶⁵ Borough Engineer's Official Report, for Year 1896–7. In Mayor's Minute, Durban, 1897, 48–59.

³⁶⁶ Ibid., 58–59.

³⁶⁷ Bjorvig 1994, 324; Henderson 1904, 235; Medical Officer's Report. In Mayor's Minute, Durban, 1898, 46.

recurrence of the severest drought ever recorded.” He also compared the cost of Durban water works with those of the various British towns and ended up saying that it was the most favourable with the average of 21 towns examined.³⁶⁸

Fletcher and Water Consumption

John Fletcher was making his opinions clear on various matters relating to water supply from the beginning. His annual reports were quite long because of this. In 1892, he was advocating for an increase in the powers of the Town Council over the water connections made for private and trade purposes. He was afraid that without proper control the rapid population growth would lead to the use of inferior leadings and bad workmanship. He said that the Council should be able to licence plumbers and to prohibit them from undertaking work if their work was sub standard. Fletcher was also blaming consumers of having a misapprehension about being entitled to a fixed amount of water, no matter how they used it. He hoped that burgesses would understand that the water supply was unlimited only for purely domestic purposes. Because of this, he was strongly advocating the discontinuance of water meters for domestic purposes. Finally he said that he wanted the inhabitants of Durban to understand that they got ample supply of water with no greater charge per head than consumers in most English towns and that the water was more liberally supplied than in England, because it was practically free and unrestricted for a large section of population like the Africans and Indians.³⁶⁹

In 1894, Fletcher was happy to announce that all the water used for domestic purposes was now supplied without meter measurement. He was also suggesting that now when the Umlaas Gravitation Works were nearly finished the practice should be extended to hotels and business premises where water is not used for direct profit. In his opinion only one good method for the benefit of consumers from sanitary and economical standpoint existed, to do away with meters in all the cases. The only exceptions were non-rateable properties and places where water was used for direct profit, like some manufactures. According to him, unrestricted water service should be allowed under proper supervision. However, unnecessary waste should not be tolerated. Where this was found, the guilty persons should be punished.³⁷⁰

In 1899, Fletcher wrote a memorandum on increasing water consumption; he even called it excessive. He did not see the recent dry weather as an excuse to the growing difficulty in maintaining a constant supply for the promiscuous use and thoughtless waste of water. He blamed a rapid increase in consumption for the causes and abuses

³⁶⁸ Borough Engineer’s Official Report, for Year 1894–95. In Mayor’s Minute, Durban, 1895, 23–27.

³⁶⁹ Borough Engineer’s Official Report, for Year 1891–92. In Mayor’s Minute, Durban, 1892, 21, 23.

³⁷⁰ Borough Engineer’s Official Report, for Year 1893–94. In Mayor’s Minute, Durban, 1894, 23–24.

that in his opinion should have been more rigidly regulated and prevented. He wanted restrictions in the use of water for watering grass “and what in many cases amounts practically to land irrigation, and the careless waste of water which serves no purpose whatever”. These abuses affected the supply, reduced the pressure, and interfered with the constant supply of the inhabitants of the more elevated areas, which in turn charged the Water Department with having cut off their supply. He saw three ways how to restrict these abuses: the use of water meters, using the same dribble system as in Cape Town and giving the Council more powers to punish consumers who wilfully wasted or used water for unauthorised purposes.³⁷¹

3.3.3 The Demands of Population Growth after the South African War

Immigrants flooding in Durban during the South African War and recurring droughts in the 1890s put a pressure on water supply. In this chapter, solutions for this pressure are examined. Attention is also paid to the floods of 1905 and 1917 and their effects on Durban’s water supply.

Answer to Population Growth: the Camperdown Dam

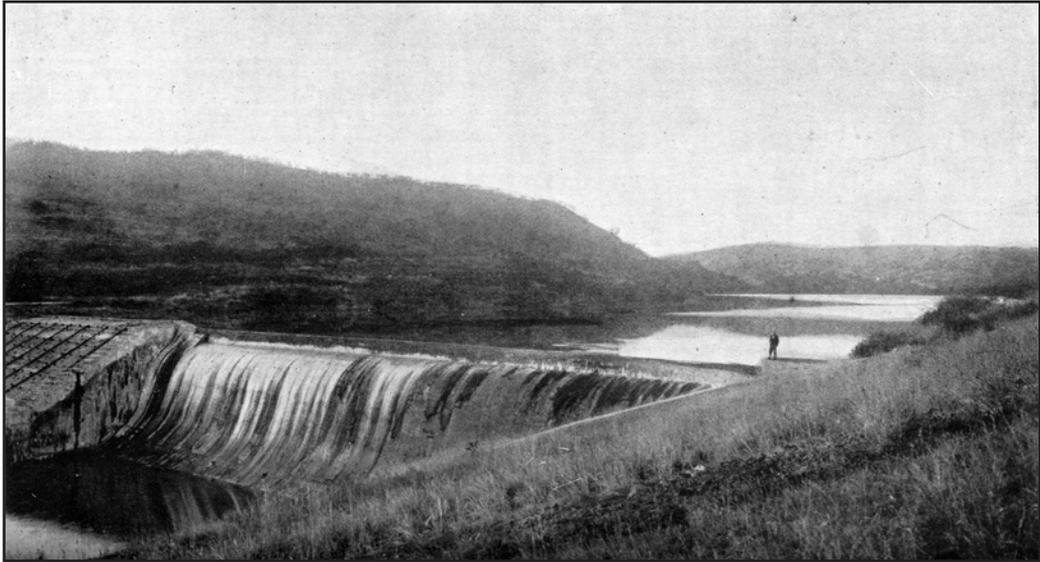
*The water/supply is ample and excellent, being derived from rivers several miles from the town, and being passed through filter-beds before distribution. A modern drainage system is approaching completion.*³⁷²

The consumption of water grew from c. 1.1 million litres per day in 1890 to c. eight million litres per day in 1900. Per capita consumption had risen from 45 litres per day in 1877 to 290 litres per day in 1904. A piped water supply, a bath, and waterborne sewerage were common in all households.³⁷³ At this time, water from the Umlaas had to be pumped to the Berea, as the Umbilo River Scheme could not cope. The Mayor was paying attention in his Minutes to increasing consumption. He put some blame to the unavoidable waste of water. The use of water for manufacturing purposes was the other reason mentioned. If the unrestricted supply was to be maintained, then the water supply

³⁷¹ John Fletcher to the Mayor and Councillors of the Borough of Durban, 6 March 1899. In Mayor’s Minute, Durban, 1899, 28–31.

³⁷² Little 1903, 165.

³⁷³ Horne 1991, 397.



Picture 3.12. Camperdown dam. (Source: Henderson 1904)

had to be augmented from time to time. He, however, did not see any cause for alarm, because revenue was increasing at a greater rate than the interest and maintenance costs.³⁷⁴

The spectre of recurring droughts, like those of 1887, 1891 and 1900, led John Fletcher to seek the Council's authority for additional storage in the Umlaas catchment. Work commenced in 1901 on the "temporary" dam on the farm "Killarney Isles". Fletcher and his team of the Indian labourers completed the concrete and earthen embankment for the Camperdown temporary dam in a record time of five months. (See Figure 3.12) On completion, the 128 metres wide and 12 metres high wall impounded c. 2.3 million cubic metres of water in a reservoir stretching back three kilometres. (See picture 3.12) Even before this temporary dam was finished Fletcher was contemplating at the same place a permanent dam with a 30 metres wall and capable of storing 36.4 million cubic metres of raw water. The foundation stone for the proposed permanent dam was laid but six months of preliminary work was to prove that the site was unsuitable and work was abandoned.³⁷⁵

The summer of 1902–03 was notable as the serious drought extended until to April. During this time, the Camperdown Dam proved its value, and helped to avoid a water famine.³⁷⁶ In his Minutes, the Mayor was giving his thanks to the foresight and engineering

³⁷⁴ Mayor's Minute, Durban, 1900, 6-8.

³⁷⁵ Borough Engineers Official Report, for the year 1901–1902. In Mayor's Minute, Durban, 1902, 29; Lynsky 1982, 30.

³⁷⁶ Borough Engineers Report, for the year 1900–1901. In Mayor's Minute, Durban, 1901, 23–24; Borough Engineers Report, for the year 1902–1903. In Mayor's Minute, Durban, 1903, 26.

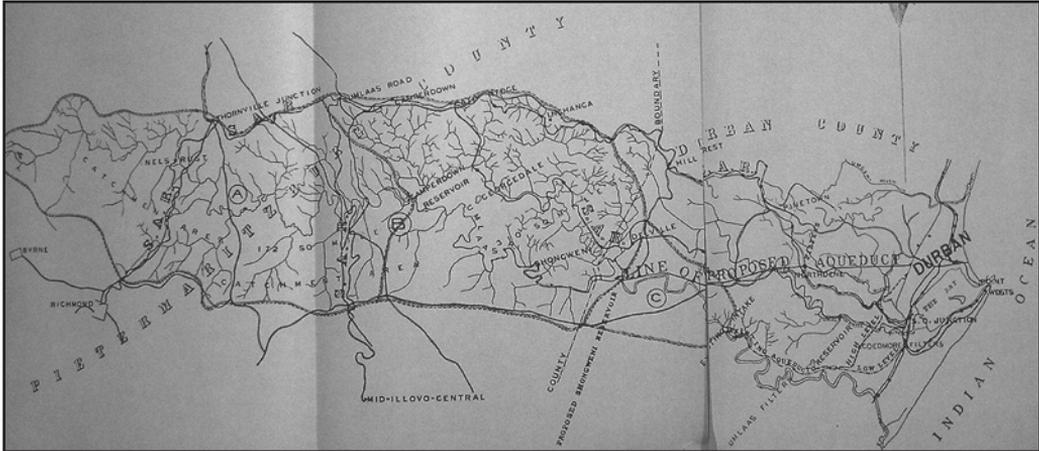


Figure 3.12. Durban Corporation Waterworks in 1925. (Campbell 1925)

skill of the Borough Engineer without which there would have been a water famine with terrible consequences.³⁷⁷ The Camperdown temporary dam stood its first test in December 1903 when a heavy flood, which damaged the Umlaas Intake downstream, left the Camperdown Dam untouched.³⁷⁸ This “temporary” structure was to remain until floods destroyed the wall in 1943. It was of incalculable value in maintaining water supplies to Durban between 1901 and 1904 during periods when the normal river flow at the Intake Works would have been less than Durban’s consumption unless augmented from Camperdown.³⁷⁹ The Corporation started relief works and a number of men were employed by the Borough Engineer’s department on the construction of the Clear Water Reservoir near the Umlaas Filters. A site straddling a valley was chosen and an earth embankment with a clay core was built. The reservoir was completed in 1903 and it increased the Umlaas scheme’s storage capacity by 523,000 cubic metres.³⁸⁰

In 1905, twenty years after the completion of the first reservoir, the total storage capacity of the Durban waters was c. 3.2 million cubic metres.³⁸¹ The decision was made during the same year that the Camperdown temporary dam would be changed into a permanent one. Work was started the following year and in 1908, the retaining wall was laid. The resulting body of fresh water was the largest in Natal; the lake was three kilometres long and at some points over 700 metres wide.³⁸²

³⁷⁷ Mayor’s Minute, Durban, 1903, 4.

³⁷⁸ Borough Engineers Report, for the year 1903–1904. In Mayor’s Minute, Durban, 1904, 28–29.

³⁷⁹ Lynsky 1982, 30–32.

³⁸⁰ Borough Engineers Official Report, for the year 1901–1902. In Mayor’s Minute, Durban, 1902, 29–30; Mayor’s Minute, Durban, 1903, 3.

³⁸¹ Twentieth-Century Impressions of Natal 1906, 439.

³⁸² Borough Engineer’s Report. In Mayor’s Minute, Durban, 1906, 34; Borough Engineer’s Report. In Mayor’s Minute, Durban, 1908, 42.

In the early hours of the 1st June 1905, a caretaker of the Umbilo Waterworks watched in horror as a wall of water roared down the narrow valley, washed away the bridge crossing the dam bypass, overflowed the embankment, cut away the earthworks, and rushed downstream. The storm had broken out in the catchments earlier in the night with 40 centimetres of rain falling in 15 hours. Debris had collected under a Pinetown bridge, which gave away and resulted in a large volume of water striking the waterworks. At the Umlaas works, the floodwaters broke the main pipes below the filter beds. Three cast-iron pipes, each weighing a ton, were washed away and Durban was without water. Fletcher and his staff worked for 26 hours, waist deep in water, diverting the stream and then replacing the 12 metres length of pipes. Durban's water supply was reconnected without too lengthy a break, by midday the 2nd June. The Umbilo Water Scheme, which had served Durban for 18 years, was abandoned and water was pumped from the Umlaas Water Scheme to the higher levels of the Berea, previously supplied by gravity from Umbilo.³⁸³

Conditions in the Early 1910s

The water rate in 1909 was ½d. in the pound, at which figure the rate had stood unaltered since 1897. The sum of 538,534 pounds had been spent in providing comprehensive sewerage and drainage to the borough, and 540,000 pounds upon the excellent water service system. By 1911, most of the developed areas within the Borough were connected to the waterborne sewerage system, whilst extensions were undertaken as new areas were opened up.³⁸⁴ In the same year, the Borough Engineer John Fletcher again paid attention to the increasing use of water other than for domestic purposes. He was not so worried about the cost of augmenting the daily supply but the increasing cost of distribution. Larger distribution mains and increased service storage to maintain a constant supply were needed. He said that the maximum hourly consumption was nearly five times greater than the minimum. He was blaming this largely on garden watering, which was "too often wasted by the careless way in which it is applied".³⁸⁵

A.H. Tatlow described the water supply system of Durban in 1911:

*Amongst the great undertakings owned and managed by the Corporation of Durban, a chief place is claimed for the water supply system, on which the health and comfort of the inhabitants are in a large measure dependent. [...] Durban's sanitation system is quite "down to date," and the health of the town has already been indicated by the low death rate.*³⁸⁶

³⁸³ Borough Engineer's Report. In Mayor's Minute, Durban, 1905, 35–38; Mayor's Minute, Durban, 1906, 7.

³⁸⁴ Tatlow 1911, 59–60; Stark s.a., 126.

³⁸⁵ Borough Engineer's Report. In Mayor's Minute, Durban, 1911, 58.

³⁸⁶ Tatlow 1911, 61, 63.

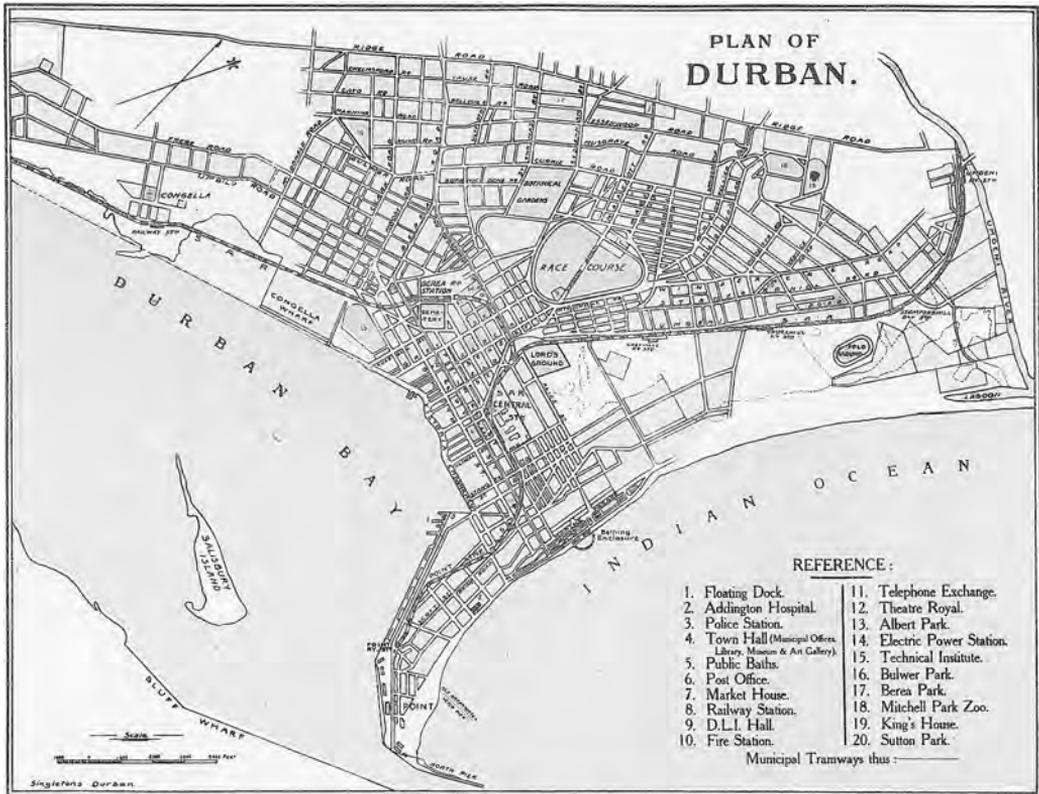


Figure 3.13. The plan of Durban in 1911. (Tatlow 1911)

The Umlaas Filters, however, could not cope with the increasing demand for purified water. In 1912, the Borough Engineer's Department built filter beds at Coedmore and laid a main from the Clear Water Reservoir, via Bellair, to the new filters. In 1914 and 1915, additional service reservoirs were built at Congella and Stella.³⁸⁷ (See Figure 3.13) The Town Council of Durban emphasized in 1914 the industrial and commercial advantages of Durban, which offered private enterprise better terms and conditions than any other South African town. More specifically, the Council drew attention to the ample supply of coal; the plentiful supply of skilled and unskilled labour; the abundant and cheap water supply; the efficient municipal telephone service; the abundant electric power supply offered at very attractive rates to industry; and the low municipal rates.³⁸⁸

³⁸⁷ Mayor's Minute, Durban, 1914, 4; Borough Engineer's Report. In Mayor's Minute, Durban, 1915, 51.

³⁸⁸ Maharaj 1996, 589.

The Flood of 1917

On the 25th October 1917, it started raining heavily in the Durban area. This culminated in a severe storm on the 27th October with more than 30 centimetres of rain falling in 24 hours in the Pinetown area. The Umbilo River flooded again, carrying away the pipeline bringing water from the Coedmore Filters to the Stella Reservoir. On the Umhlatuzana River, three mains from the Umlaas Works were also destroyed. Even before emergency repairs were underway, John Fletcher and his staff received news that the concrete weir at the intake had collapsed under the floodwaters, which also carried away the portions of two mains at the intake. The mains had to be repaired and a temporary dam built to replace the destroyed weir. The intake weir was reconstructed only in 1921. For five weeks, the Resident Engineer at the Umlaas Works and labour gangs worked under exceptional weather conditions – four floods occurring while the work was in progress. While repairs were being carried out between October and December Durban depended entirely upon a small stream, which was led into the Clear Water Reservoir. As this was not considered safe for drinking, a temporary treatment scheme was started. The Town Council saw it necessary to advise residents to boil all the water intended for human consumption.³⁸⁹

Charles Smythe wrote in his diary about the floods that they “caused great damage, especially on the coast where the Umgeni railway bridge was swept away, along with many others. The pipeline carrying the Durban water supply from the Umlaas was carried away in five different places, and for four days not a drop could be got in the town except what came off the roofs.”³⁹⁰ The townspeople had to depend on unfiltered water from the rivers for weeks until a safe supply could be restored.

The 1917 floods resulted in Durban’s existing water supply coming under critical examination. By January 1918, it had been resolved by the Council that a new dam was required and that the city needed the services of an experienced “Water Works” Engineer. He would have to be a specialist with a working knowledge of chemistry, biology, and bacteriology. The appointment of a Waterworks Engineer would relieve the Borough Engineer of a large amount of work he had to do personally so that more important issues suffered. Although there was a body of opinion that the Waterworks Engineer should be subordinate to the Borough Engineer, the Council made him responsible directly to the Council. The Water Engineer’s Department was to be completely separate from the Borough Engineer’s Department for the 16 years following its establishment in January 1919. The main concern of the Water Engineer was the new water scheme. In 1918, investigations had been carried out as to the possibility of using various rivers along the

³⁸⁹ Lynsky 1982, 39–40; Natal Mercury, 4 Jan. 1918.

³⁹⁰ Diary of Charles Smythe. Quotation in Child 1973, 251.

Natal coast. The pilot survey resulted in the Council deciding to continue developing the Umlaas River and to proceed with the Shongweni Scheme, the nucleus being a proposed dam to be called the Vernon Hooper Reservoir, 16 kilometres upstream of Fletcher's Umlaas Intake. Construction started in 1923 and was finished in 1927.³⁹¹

3.3.4 Water from Wells and Rivers

In the beginning, the water supply of the Borough of Durban was based on the wells and pumps but the water in them was not of good quality. It was self-evident that at some point they would have to start supplying water from the rivers flowing in the area. Originally, most of the wells were private but by 1879, there were 18 public wells with hand pumps. When the Borough started to grow, this type of water supply reached its limits and in the 1860s, there were already plans to supply water from near-by rivers. The scheme was, however, too expensive for the Town Council. The next time this was discussed in the 1870s, the result was the same, the schemes were too expensive. The only actual improvement in water supply happened when the drilling operations in the Botanic Gardens area succeeded in 1879. This Currie's Fountain was Durban's main water source for the next eight years.

Durban and the municipal engineering works had grown so much by the 1880s that it became necessary to appoint a Borough Engineer. The schemes to supply water from nearby rivers only got under way after this appointment in 1882. John F.E. Barnes submitted almost immediately plans for obtaining water from three rivers. From these the Town Council chose Umbilo as the most suitable. With this scheme, the highest part of the Borough in Berea could also be supplied. Of course, it was also financially the most feasible plan.

The waterworks were opened in 1887 but serious droughts followed nearly immediately in 1888–90. These combined with increasing demand for water forced the Town Council to start planning the augmentation of water supplies. The actual work was left to the new Borough Engineer, John Fletcher. He presented, within five months of arriving in Durban, various proposals to improve the situation. There followed in rapid succession the pumping of water from Umhlatuzana to Umbilo in 1890, Umlaas temporary pumping plant in 1891 and Umlaas gravitation scheme in 1894. In addition, at the same time Fletcher was leading improvement works in drainage and sewerage as will be described in Chapter 4.3.2. Fletcher also made his mark on Durban's water supply in many other

³⁹¹ Lynsky 1982, 42–45; Macleod 1975, 41.

ways. He was lecturing about the increasing water consumption from year to year. He also removed water meters from domestic consumption, where according to him they were unnecessary.

During the early 20th century, big schemes were not anymore built in Durban. People fleeing the war into Durban, however, created the water supply emergency during the South African War in 1899–1902. The base supply was big enough to cope with the situation. What was needed was more storage space for the water. For that purpose a temporary dam was built in 1901 at Camperdown; it was later in 1908 changed to a permanent dam. New Clear Water Reservoir was built near Umlaas filters in 1903 and in the mid-1910s, two new service reservoirs were built. Durban's location in the rainiest part of South Africa also caused problems. The disastrous floods of 1905 and 1917 both impacted on Durban's water supply. Umbilo Waterworks were destroyed by the flood of 1905 and they were abandoned after 18 years of service. The 1917 flood made it clear that a new dam was needed. Another identified need was that a specialised water engineer was required to develop the water supply system. On a more personal level, the flood was also the direct cause of John Fletcher's resignation after 29 years of service. He fell from his horse during the repairing works and never recovered fully.

3.4 Johannesburg

3.4.1 The Water Supply Concession

In this chapter, the powers and development of the Sanitary Board from 1887 to 1890 are described. Examination is also made of the water supply situation in Johannesburg around the time of the establishment of the Sanitary Board in 1887. Lastly, the water concession given in December 1887, the subsequent establishment of the Johannesburg Waterworks and Exploration Company, and its first years of operation are examined.

The Early Governance of the Town

At the meeting of the residents of Johannesburg on the 6th October 1887, a decision was made to ask the government to appoint a sanitary and health committee, as well as a hospital committee. The government responded to this request by proclaiming health regulations, which would be applied only in Randjeslaagte, Marshalltown and Ferreira's town, while the other suburbs were left to their own devices. Almost exclusively related to sanitary matters, these regulations were not designed to have any effect on the physical development of the mining camp.³⁹²

In November, a Sanitary Board was nominated to govern the town. The town comprised at this time Johannesburg proper i.e. Randjeslaagte, Fordsburg, Jeppestown, and Mayfair. The Mining Commissioner acted as a Chairman of the Board until the end of 1890, when the first meeting of the elected members took place. The Board represented the owners and occupiers of fixed property in Johannesburg and was responsible for the sanitary conditions of the town, as well as essential services like water, electricity, and transportation. The provision of sanitary services was not an easy task. It would have been ridiculous to install proper drainage and sewage disposal when it was assumed that the urbanization was only temporary. Even when it began to appear that Johannesburg was becoming a permanent town, the scarcity of water and the hardness of the rock on which the town was placed made any proper scheme of sanitation impossible except at a very great expense. Therefore, the only practicable means of providing a sanitary system was the collection of refuse in buckets. The Sanitary Board was allowed to make regulations on any subject it liked, especially in respect of the health of the community, but also for the general convenience of the public. Indeed, it made regulations dealing with not only the collection of pails³⁹³, the disposal of slop-water, and the overcrowding of houses, but

³⁹² Van der Waal 1987, 11.

³⁹³ A watertight cylindrical vessel, open at the top and fitted with a handle; a bucket.

also with a great variety of things and persons, which the White inhabitants wished to see controlled. Among others were the careless storing of gunpowder, offensive trades, Blacks walking in the streets, the houses of ill fame, persons riding bicycles and tricycles at more than six miles an hour, or driving carts, carriages, or wagons in a furious manner, or cracking whips loudly in any streets within the jurisdiction of the Board. By means of regulations, the Board was also able to control in some measure the development of the town. It forbade the erection of reed huts as early as 1888 and insisted on progressively more civilized standards of buildings. In order to pay its way the board was allowed to raise money by various means. It for instance charged fees for the collection of sanitary pails and rubbish and the householders were compelled to make use of this service, at one time under threat of imprisonment without the option of a fine for the non-payment of fees. The revenues and expenditure, however, were controlled and subject to the approval of the central government in Pretoria, which made the Board dependent on grants from the central administration.³⁹⁴

The Sanitary Board, recognizing that the town lacked any natural drainage, which would allow for the ready removal of effluent, prohibited the washing of clothing in residential areas since it feared that the slops tipped onto the streets would create a serious health hazard for the White community. This meant that miners had to do their own laundry in the streams on the outskirts of the town. The Amawasha, many of whom were Zulu speaking, soon recognized this potentially lucrative market for a washing enterprise and quickly won formal recognition from the Sanitary Board. Its members did much to ease the domestic burden of the immigrant miners. They continued to be the important part of the Johannesburg life until 1906 when the last guild members were expelled to Klipspruit.³⁹⁵ Although the Sanitary Board was not an efficient local government method, a greater degree of self-government was later got on the basis of this. This was a spontaneous development as the Diggers Committee gradually disappeared and the constant population growth made the expansion of the Sanitary Board necessary.

With the exception of Potchefstroom, the first capital of the Transvaal, no elected Councils existed in the republic, and the central government was unwilling itself to provide such amenities and necessities as marketing facilities, tramways, water, gas, and electricity in Johannesburg, Pretoria, and other towns. It therefore looked to private enterprise to supply these services and granted concessions to individuals or companies that were willing to provide the necessary capital. In its contracts with these entrepreneurs, the government took steps to safeguard the interests of the public as well

³⁹⁴ Report on the Work of the Town Council for the Period from May 8th 1901, to the 30th June, 1903, 3; Maud 1938, 23–24; Lange 2003, 49; Ramsden 1985, 47.

³⁹⁵ Van Onselen 2001, 275–308; Zangel 2004, 143–54.

as to increase the revenue of the state. Maximum charges were laid down, regulations governing the management of the undertaking were imposed, and the entrepreneurs undertook to make certain payments to the treasury.³⁹⁶



Pictures 3.13 and 3.14. William Henry Miles and Charles Aburrow, Johannesburg's first two town engineers. (Sources: Grant & Flinn 1992; Proceedings of the South African Association of Engineers and Architects 1894-5)

Neither the Sanitary Board nor the Mining Commissioner was made responsible for providing the local community with the services that they principally needed. When local services were required, the Pretoria government preferred the same policy of granting concessions as practised in the Transvaal as a whole.³⁹⁷ In 1887, a concession was granted for supplying water on the Witwatersrand, and the next year a waterworks company was formed to exploit the monopoly. A similar gas concession was granted in 1888, and an electricity and tramway concession in 1889. In August 1889, the area of Johannesburg was extended to include the area within c. 2.5 kilometres around the Post Office of Johannesburg.³⁹⁸ In the same year, the Board succeeded in appointing out the first Town Engineer, William Henry Miles³⁹⁹, who arrived on the 10th November.⁴⁰⁰ (See picture 3.13)

Some concessions were made to local demands when in July 1890 the unpopular Sanitary Board was dismissed. It was reformed to consist of three government nominees and 12 elected members, who, in turn, were to elect a chairman from their own number.

³⁹⁶ Marais 1961, 23–24.

³⁹⁷ Concessions are still widely discussed issue. See for instance Hukka & Katko 2003.

³⁹⁸ This area then included Fordsburg, Jeppestown, Troyeville, Bertrams, Bellevue and Bellevue East. It did not include Old and New Doornfontein. See Figure 3.18.

³⁹⁹ Town Engineer of Johannesburg 1889–92. He was dismissed for misconducts of his duties.

⁴⁰⁰ Maud 1938, 22–23; Ramsden 1985, 47.

The elections were run in November. The principal government nominee was Carl von Brandis, the popular *Landdrost* of Johannesburg. The Board was empowered to levy local rates and to borrow money, the latter power exercised under government supervision. Up to this time, there was only one department, the Sanitary Department, functioning under the authority of the Board. The entire staff consisted of a Secretary, a Sanitary Superintendent, one Sanitary Inspector, a Street Inspector, five sub-inspectors, a market constable, two rangers, two guards for convicts, and a cemetery caretaker. However, with the appointment of a Town Engineer and a Treasurer, the single department began to be divided so that by July two recognisable units, the old Sanitary Department and a new Secretarial Department were born. While retaining its previous responsibilities the former added engineering to its duties. The latter, in turn, was concerned with secretarial and financial matters. The second Town Engineer, Charles Aburrow⁴⁰¹, was appointed in 1893. (See picture 3.14) At that time, his chief functions were the construction and maintenance of roads and open spaces and the enforcement of regulations requiring the erection of buildings of reasonable standard. His entire staff consisted of an assistant engineer, one technical assistant, a building inspector, a clerk, and a messenger.⁴⁰²

Polluting Wells and Streams

For some time complaints had been prevalent concerning seepage from cesspools into Johannesburg's water supply, and though the Government officials drew their water from a well, which had been sunk for them, even that water was not fit to drink unless it first had been boiled and filtered. With the growth of population, wells were laid down wherever practicable, but in most cases, these were unprotected and as Johannesburg was not lit, they proved a serious and sometimes fatal danger to those who had to walk through the town at night. Many people, desperate for water, simply dug holes just a few metres deep near their dwellings. The wells were made without any protective lining; consequently, the pollution of water was a threat as the population increased. The seepage from sewerage, the brickyards, the cemetery, and overcrowded areas were dangerous. Thus, the only sources of supply available to the large sections of the public were the itinerant vendors who sold water at 2 shillings 6 pence a bucket from water carts.⁴⁰³ Some persons even stole water or could drink it only mixed with some stronger stuff:

Square Face Gin [...] was cheap – 6d a tot, it was warming, and it was a very healthy spirit to mix with the very doubtful water that was all that was available in those days. There was of course no water laid on and this water was brought up in carts and wagons in barrels from

⁴⁰¹ 1852–1933. Town Engineer 1893–1900.

⁴⁰² Shorten 1970, 450; Marais 1961, 54; Bulpin 1955, 162; Stark 1956, 354; Grant & Flinn 1992, 60.

⁴⁰³ Shorten 1970, 489; Zangel 2004, 31.

*Natal Spruit, the Fordsburg dip and from out towards Sans Souci near what is now the Show Ground. Ordinary folk paid 6d a bucket and everyone of us had a bucket in our bedrooms. Sometimes there was water in it, sometimes there wasn't and if there wasn't and there were no carts about, we used to pinch it where we could and sometimes get caught and get a black eye in the process.*⁴⁰⁴

Even in this early period, when settlement was relatively sparse, most of the available water was impure and even muddy. This lack of wholesome water was not surprising, however, as the majority of water sources were communal, and were utilized for people, ore stamps, as drinking places for livestock, and as a playground for ducks. For those who were fortunate enough to live near a spring, the small quantities of water could be rolled home in a barrel. Baths were a luxury throughout Johannesburg, and those who could not afford soda water sneaked out after dark to secure an extra barrel of water. Housewives were constantly told to use water sparingly, and this added to the many hardships in the primitive settlement.⁴⁰⁵

When the rains started, the filth from the streets was washed into the Fordsburg Creek, which constituted Johannesburg's natural drainage so that this source of supply became thoroughly polluted. The desperation of Special *Landdrost* Carl von Brandis was shown in a telegram he sent to the State Secretary in October 1887, "What about the waterworks for Johannesburg? The wells are dry".⁴⁰⁶ Nevertheless, the position was at its worst in the times of drought. Then the streams became mere trickles or they would dry up altogether, and the masses of rotting matter would lie exposed to sun and wind. That happened in 1886 and although rains were good in early 1887, most of the water ran to waste and the town was forced to fall back on wells. Even water from these sources was not fit to drink unless it had been boiled and filtered first.⁴⁰⁷ In the early days of Johannesburg, many residents also relied on water obtained from Natal Spruit. The condition of it, however, deteriorated in a few short years. This was caused by two factors: one being its use as a "dumping ground" for slop water by people residing on its banks, and secondly, the building of the dam by the City and Suburban Company. This dam hampered the free flow of the water and ultimately led to the silting up of the river. Had the residents taken more care of the *spruit*, it would have remained, in all probability, an important source of water for the community.⁴⁰⁸

According to Edward P. Mathers, a visitor to Johannesburg in 1887, the water supply had engaged the attention of the Johannesburgers. Some of the inhabitants had adopted artesian wells to get purer water than was obtainable from shallow wells. The

⁴⁰⁴ <http://www.wanderersclub.co.za/oldgold/chapter2.php>, visited 29 May 2007.

⁴⁰⁵ Cosser 1990, 16–17.

⁴⁰⁶ Quoted in Shorten 1970, 489.

⁴⁰⁷ Shorten 1970, 96.

⁴⁰⁸ Zangel 2004, 44.

government had purchased a farm from Braamfontein to draw water but that had been a bad purchase. There had also been a private initiative for solving the problem with the water supply. However, as Mathers wrote: “public feeling is not altogether in favour of this private method of supplying the indispensable element at erratic rates.” The people were saying that the Government should not give this concession but keep water supply in their own hands. Concession policy was already doubted in this early date.⁴⁰⁹

Water Concession

At first, there was enough water but as the population grew rapidly, the first indications of the water shortage could already be seen in early 1887. The Government tried to solve problems by granting a private concession to provide Johannesburg with water in December 1887, when James Sivewright⁴¹⁰ got the right to lay pipes through the streets of Johannesburg for supplying the inhabitants with water. This, however, did not impose on him any obligation to make the water available. The population of Johannesburg at the time was 3,000, and was said to be rapidly increasing. Anticipation was that water would be available in three months. The water was turned on in Doornfontein, however, only on the 23rd June 1888. Sivewright was, in March 1888, instrumental in the founding of the Johannesburg Waterworks Estate and Exploration Company in Kimberley. The company’s business was to sell land. A secondary operation was to provide water to Johannesburg.⁴¹¹ This concession is an important point of difference between Johannesburg and other cases considered in this study. When other cities kept water supply in their own hands, in Johannesburg it was given to an independent company.

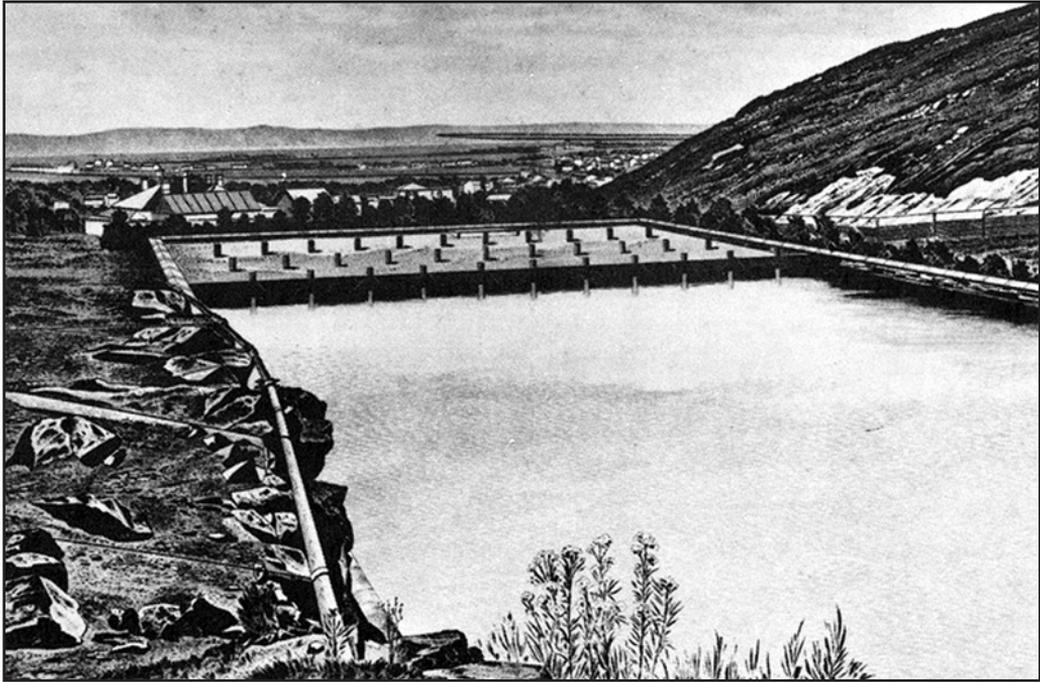
A similar kind of situation existed in Kimberley where the municipality had in 1880 entered into agreement with Griqualand West Railway and Water Company Limited about water supply. The municipality took it over only in 1921.⁴¹² We can see here a clear connection between the rapid development of mining industry and the ability of the municipality to supply water for the need of the industry. There are, however, main differences between the cases of Johannesburg and Kimberley. In Johannesburg, the central government gave out the concession whereas in Kimberley the municipality itself made the agreement. Moreover, in Kimberley the municipality eventually took over the water supply whereas in Johannesburg that never happened.

⁴⁰⁹ Mathers 1887, 251–52.

⁴¹⁰ 1848–1916. General Manager of the Cape Telegraph Service 1877–84. Commissioner of Crown Lands and Public Works of the Cape Colony 1890–93, 1896–98.

⁴¹¹ Gray 1937, 202–04; Leyds 1964, 52–53; Tempelhoff 2003, 28–30.

⁴¹² Turton e.a. 2004, 3; Roberts 1978, 18, 25.



Picture 3.15. Saratoga Avenue Reservoir. (Source Rosenthal 1974, 38)

The concession, however, conferred monopoly rights only in the area of the original Johannesburg (the previous Randjeslaagte). The suburbs outside this triangle were open for competition. In 1891, for instance, the government granted a similar concession to the owners of a farm called Wonderfontein, giving them the right – which in practice was never used – to supply the Rand with water from that farm. The only condition imposed on the concessionaires by the government was that the charge for water should not exceed 2 pounds per 4.55 cubic metres. At the outset, the water provision for Johannesburg was conducted according to a well-executed plan. By 1888 the Johannesburg Waterworks Estate & Explorations Company, was technically able to provide daily 950 cubic metres of water from Natalspuit, 1,520 from a reservoir near Berea and 570 from Doornfontein. Quality was a priority. Instead of opting for second hand material, the company imported new water pipes from Britain. The work was also done at great speed. The company's first engineer, one Mr. Dunbar from East London, dug around and inspected the springs, erected pumping machinery and planted reservoirs.⁴¹³

On the 23rd June 1888, the first consumer was linked to the new waterworks scheme when water was piped from the springs at Ellis Park and in September, Mrs von Brandis laid the foundation stone of a 225,000 cubic metres storage reservoir at Saratoga

⁴¹³ Maud 1938, 126; Tempelhoff 2000, 92; Sander 2000, 22.

Avenue. (See Figure 3.14) This reservoir can still be seen in Mackay Park. (See picture 3.15) Piped water was led from there to the town. The reservoir was built just below a substantial fresh water spring. The water from this spring flowed down the side of the ridge and at its foot formed a stream that flowed south to join up with the Jukskei River in present-day Ellis Park. Below this reservoir stood a farm dam of F.J. Bezuidenhout, who also owned the spring. The dam was situated along the stream near the foot of the ridge to the north-west of the present-day Harrow Road and Saratoga Avenue.⁴¹⁴

The amount of piping laid down by the company, however, was quite inadequate to meet the needs of the rapidly growing town, while the high charge for the water it supplied varied from 1 shilling 6 pence to 10 shillings per 4.55 cubic metres. Yet even this tariff was far from sufficient to ensure the company's success. Its first balance sheet showed a debit of 18,645 pounds while cash in hand amounted to only 10 pounds. A large number of premises did not connect with the company's mains and shallow wells and rainwater tanks were in use for a long time. In the higher levels of the town, the pressure was not sufficient to send the water through the water pipes and the company used to deliver it in service vans or water carts.⁴¹⁵

3.4.2 Barnato and the Competitors

At first, in this chapter some schemes to supply Johannesburg with water in 1888–89 are presented. After this, the takeover of the Waterworks Company in 1889 by Barney Barnato is examined and his motives in this are pondered. The situation of Johannesburg's water supply after this in 1889–90 is also considered. Lastly, attention is paid to the competitors of the Waterworks Company in 1890–93.

Competing Water Supply Schemes

On the 15th June 1888, an engineer, L.G. Vorstman asked the government for a permission to provide Johannesburg with water from the Klip River, south of the town. He was of the opinion that there existed a need and consequently he intended on installing a pumping system and a dam, which could yield as much as 11,400 cubic metres of water. Part of the river scheme included a fountain on the farm Olifantsvlei.⁴¹⁶ Vorstman's proposals were backed by a petition with 460 signatures, among who numbered the Magistrate of

⁴¹⁴ Tempelhoff 2003, 32; Shorten 1970, 96; Gray 1937, 204; Cartwright 1965, 191; Turton e.a. 2004, 4; Doucakis 1990, 5.

⁴¹⁵ Shorten 1970, 166; Neame s.a., 65–66.

⁴¹⁶ L.G. Vorstman to State President and members of the Executive Council, 15 June 1888. SS1654, 5340/88, 58. TAB.



Figure 3.14. The plan of eastern past of central Johannesburg. Saratoga Avenue Reservoir in the middle, Ellis Park Reservoirs south-east of it. (Part of the plan of Johannesburg in 1896, in Itzkin 2000)

Johannesburg, the representatives of the Medical Board, the Diggers Committee, the Health Board, and the representatives of various newspapers.⁴¹⁷ The prospects of a new or even an additional supply of water for Johannesburg, however, was not welcomed in all the circles. Especially in the business community, there were complaints. In June 1888, a group of 25 residents declared that their agricultural activities would be affected by the proposed water scheme.⁴¹⁸

⁴¹⁷ Verzoekschrift van de ondergetekende inwoners van Johannesburg voor een voldoende en ruim van water voor Johannesburg en gebuurte. Undated. SS1654, 5340/88, 46–55. TAB.

⁴¹⁸ Memorial of C.H. de Power, J. van Jaarsveld and 23 other signatories. Undated. SS1654, 5340/88, 33–34. TAB.

The strongest opposition to the Klip River scheme came from the existing water supplier, the Johannesburg Waterworks Estate and Exploration Company. A petition to the government explained that an additional water supply was unnecessary. In fact, the manager claimed that the company was able to extract as much as 3,800 cubic metres of water daily from Doornfontein. Even more water could be produced, should the need arise.⁴¹⁹ The government's reservation about the Klip River Scheme was that the farmers would not approve of the water being tapped from their river.⁴²⁰ This proved to be no problem. By October 1888, the co-operation of the majority of farmers was secured.⁴²¹ The response was overwhelmingly favourable to the proposed water scheme. Consequently, the government in October 1888 granted a concession to Vorstman to pump water on the farm Olifantsvlei. Reservoirs were to be built and mains were to be laid. The concessionaire undertook to start the job within four months. He intended completing the construction within the space of two years.⁴²² This undertaking proved to be somewhat quixotic because even after a year nothing had come of the project.⁴²³

In October and November 1888, engineers undertook a survey of water resources available within a 65 kilometres radius of the Rand for the Waterworks Company. The Klip River and Vierfontein, which were inspected by an English engineer Edward Pritchard⁴²⁴, were the most favoured sources. The estimates of dams and reservoirs, of pumping stations and filter beds, and of coal requirements were reported on in great detail.⁴²⁵

There were six schemes surveyed during the next years that were not implemented⁴²⁶:

1. The Braamfontein scheme (1892 and 1893);
2. The scheme of the Vierfontein Syndicate, to supply water from the Klip River (the early 1890s);
3. The Klipspruit scheme, 20 kilometres outside Johannesburg, to supply about 7,000 cubic metres of water per day;
4. The possibility of supplying about 10,000 cubic metres of water per day from Kromdraai, 40 kilometres from Johannesburg;
5. The Weltevreden scheme, about 14 kilometres outside town, with a capacity to deliver around 9,000 cubic metres of water per day;

⁴¹⁹ J.P. Meyer, I.T. Lewis and others to the State president and members of the Executive Council, 14 June 1888. SS1654, 5340/88, 62–64. TAB.

⁴²⁰ W.E. Bok to the Deputy State Secretary, 19 Aug. 1888. SS1654, 5340/88, 4. TAB.

⁴²¹ J.P. Meyer to W.E. Bok, 11 Oct. 1888. SS1654, 5340/88, 73. TAB.

⁴²² Acte van Overeenkomst, S.P.J. Kruger, W.E. Bok and L.G. Vorstman, 18 Oct. 1888. SS1654, 5340/88, 25–26. TAB.

⁴²³ L.G. Vorstman to W.E. Bok, 27 Apr. 1889. SS1654, 5340/88, 36–37. TAB.

⁴²⁴ Originally, Pritchard had come to South Africa to make a drainage scheme for Cape Town, see Chapter 4.1.3.; He also advised Kimberley, Pretoria, and Klerksdorp in their drainage and water supply problems. Pritchard 1888, 10–11, 21–23.

⁴²⁵ Klip River and Johannesburg Waterworks. Engineers Report. Pritchard & Co., Civil Engineers, London & Birmingham. JARCH 318, JAM; Pritchard 1888, 17–20.

⁴²⁶ Turton e.a. 2004, 5.

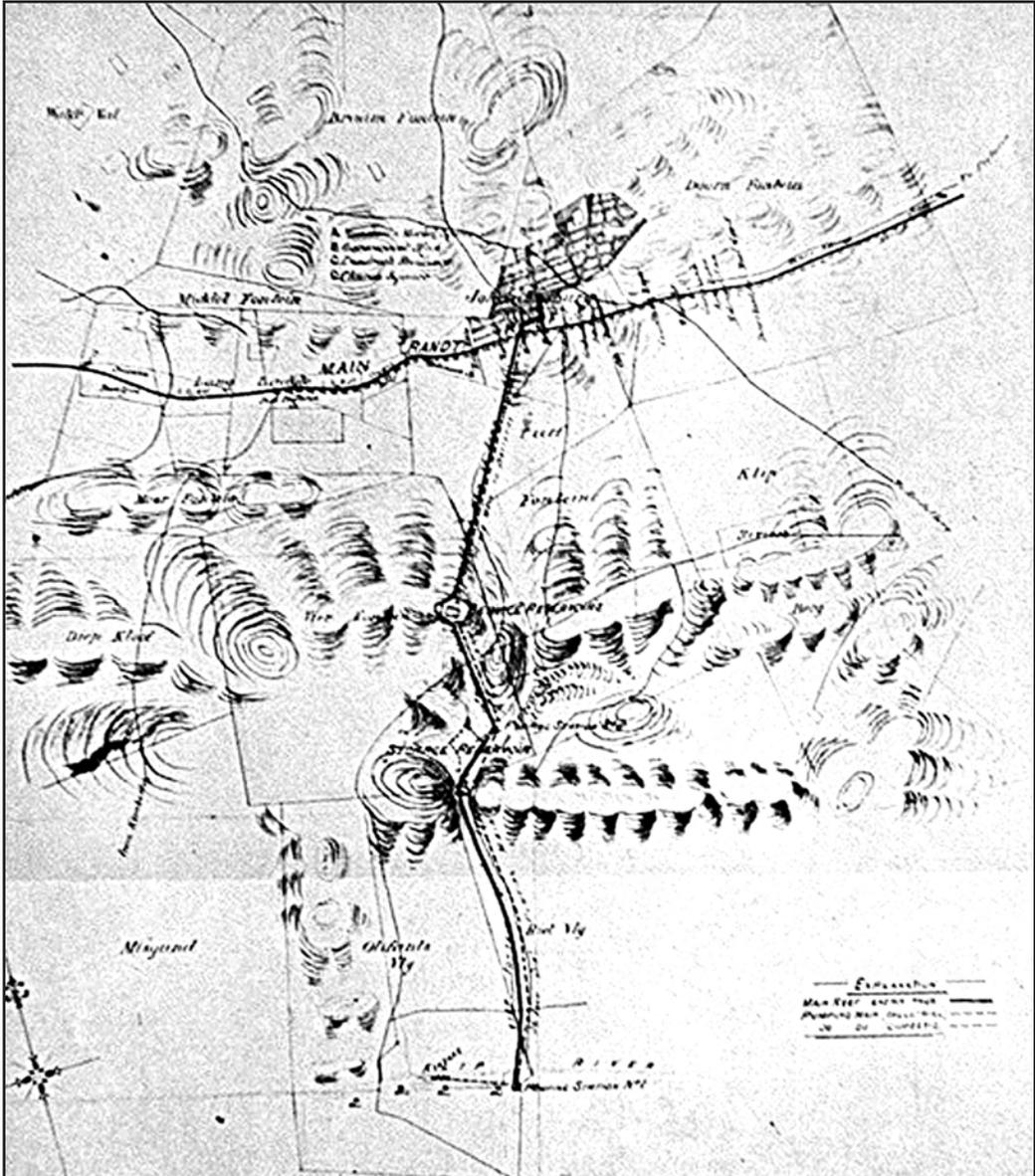


Figure 3.15. Plan for the Klip River Scheme, 1889. (Rand Water Board 1953, between pages 2 and 3)

- 6. The Wonderfontein scheme, 75 kilometres outside Johannesburg, which would have supplied 117,000 cubic metres of water per day. The people of Potchefstroom complained about the scheme because the Mooi River, Schoonspruit, and Klip River's source originated in the area where the scheme would have been implemented.

In December 1888 William Hay, a representative of the Vierfontein Gold Mining Company, which conducted mining operations in the vicinity of the Klip River, explained to the government that the company's interests might be harmed by the proposed water scheme. By granting concessions to all and sundry, future developments might be subdued. In the same letter, he let the government know that his company was prepared to negotiate. There was a fountain on Vierfontein; if the company were granted a concession for providing water to Johannesburg, they would be prepared to pay the government a yearly fee.⁴²⁷ By 1889, the Vierfontein Syndicate had managed to construct a pumping station on the farm Olifantsvlei in the Klip River and was pumping water to a dam.⁴²⁸ (See figure 3.15) Meanwhile, on the 21st November 1888 a deed of cession was concluded between Vorstman and the Johannesburg Waterworks Syndicate. The concession was ceded to the syndicate. The government was informed in April 1889 that the concession had been sold to a European company. Conditions were laid down to the effect that the project to supply water had to be executed within a specified period. In December 1892, the rights for the Klip River scheme were ceded to the Vierfontein Syndicate. In future, the scheme was essentially relegated to a bargaining device to be used if market forces demanded a viable water supply for Johannesburg. The Klip River was in fact earmarked to supply the local mining industry with water. This had a direct effect on the future development of the Vaal River scheme.⁴²⁹

The first proposals for supplying water from the Vaal River were made to the government at the beginning of 1889. More substantial plans were tabled when an engineer, C. Schürmann and his associate, F.C. Eloff, the son-in-law and private secretary of President Kruger, in August 1889 asked the government for a concession to supply water to Johannesburg from the Vaal River. They were aware of the Vorstman concession in respect of the Klip River and were eager to have similar terms laid down in the agreement they intended concluding with the government. At the time, a number of similar requests were also made to the government. On the 27th November 1889 the government, however, concluded an agreement with Eloff and Schürmann to supply water from the Vaal River to Johannesburg. This concession was a typical example of the dealings to which the opponents of the government took a strong exception. *The Land en Volk* –newspaper presented the most unpleasant picture in a series of allegations, none of which was denied, and none of which formed the subject of a libel action. The main allegation was that Eloff had gained 20,000 pounds by using his influence to obtain the concession.⁴³⁰

⁴²⁷ W. Hay to State Secretary, Pretoria, 14 Dec. 1888. SS1654, 5340/88, 35. TAB.

⁴²⁸ Laburn 1979, 2.

⁴²⁹ Lionel Phillips to Messrs Wernher Beit & Co., 28 Jan. 1893, ATG 69; Tempelhoff 2000, 100–101.

⁴³⁰ Tempelhoff 2000, 101; Gordon 1970, 18, 39–40.

Barnato Takes Over

Why did I do this? I'll tell you. I knew this place was going to be great, even now we are only at the beginning of it. I tell you now I knew, and I told the men of the Rand then that I Knew; but they wouldn't believe, even though they saw me every day putting more and more money into the place. Water companies were not much in my line, but I could see this plain enough; that while the slump in itself was bad enough, if the water supply stopped then the town would be uninhabitable, and would be ruined [...] Now I tell you honestly I did not do this because I saw it would be a good paying thing. Of course I should not have done it if I had not seen a profit sticking out, but that was not the reason; for I could have made more money by bringing in other water. I did it as a pledge of good faith to those of the public who supported me and followed my lead [...] I reckoned it up then this was: that if I kept the water company going, it would be a greater proof of my good faith and belief in the place than anything else I could do [...] The company has been more trouble to me than any other of my undertakings. It had cost me more time than I shall ever get out of it; but mind, I don't regret it, and would do the same over again.⁴³¹

In 1889 Johannesburg was suffering from a severe drought, which soon resulted in a real danger of famine. In the backyard of Barney Barnato's⁴³² house stood two large hogsheads for water, which were supplied three times a week. Barnato had little faith in Kruger's proclamation ordering a day of prayer for rain. A full-scale water programme was clearly needed.⁴³³ In June 1889, a deputation went to Pretoria to ask for improved water and sanitary facilities for Johannesburg. Incidentally, one member of the deputation was John X. Merriman⁴³⁴, who at the moment was the Manager of the Langlaagte Mine Company.⁴³⁵ The Big Slump⁴³⁶ left the new Waterworks Company without sufficient capital to meet the heavy cost of material and its transport by rail and ox-wagon; it failed to raise money and was faced with the prospect of liquidation to help pay what it still owed for the water pipes and machinery it had bought.⁴³⁷

Barnato Brothers had put a few pounds into the company. Many others bought shares after plans were announced to construct a reservoir near the Doornfontein farm. Despite this, the working capital was insufficient. Plagued by drought, impatient shareholders, and banks that were pressing for the repayment of their loans, James Sivewright turned to the Barnato Brothers. Barney Barnato at once advanced 30,000 pounds from his own pocket to pay off pressing creditors; soon pouring in still more cash to give his firm

⁴³¹ Raymond 1897, 126–27.

⁴³² 1852–97. Mining magnate. Member of the Cape Parliament 1889–97.

⁴³³ Jackson 1970, 106.

⁴³⁴ 1841–1926. Minister in the Cape Government 1875–78, 1881–84, 1890–93 and 1898–1900. Prime Minister in 1908–1910.

⁴³⁵ Extract from Diary, June 25. Merriman 1960, 288 and note 45.

⁴³⁶ Mining crisis in Johannesburg related to the type gold ore in the area. During the crisis almost a third of the population of the Rand left and the prices of shares went down. See for instance Shorten 1970, 157–60.

⁴³⁷ Symonds 1953, 99.



Picture 3.16. Business centre of Johannesburg in 1889. (Source: KAB, AG 11/7)

a controlling interest. Barnato realised that if the Waterworks Company went bankrupt, Johannesburg would be deprived of the bulk of its water supply no matter how defective it might be. He therefore acquired the concession and company in 1889 and furnished the working capital, which enabled it to continue operations. Some would even say that he saved Johannesburg from a disaster. The company then built a dam and pumped water to a reservoir in Saratoga Avenue. This was the first proper gravity reservoir in Johannesburg.⁴³⁸

It was an act of faith in the future of Johannesburg but only a few of Barnato's enterprises earned him more unpopularity. His water kept the town habitable and he did not charge profiteering rates, but investors expected profits as soon as he took over. They never reconciled themselves to small dividends and grumbled at the cost of installing pipelines to serve a population, which soon grew to 40,000. Barnato's intervention had been public-spirited or so he himself explained it (as seen from the quotation in the beginning of the chapter). There were, nevertheless, valuable benefits. Without a reliable water supply, he could not have kept his mines going on or maintained property. He was quick off the mark in developing building sites owned by the Waterworks Company at Doornfontein. Barnato wanted to get a valuable monopoly. Water was as troublesome a problem at Johannesburg as it had been at Kimberley. Even before he started buying mining-ground, he had bought up two water sources near Johannesburg. He now started to

⁴³⁸ Jackson 1970, 106; Leyds 1964, 53; Shorten 1970, 166; Story of "Johnnies" 1965, 18–19.

organize supply. The company gave him a good deal of trouble, but at the same time it brought him very tangible advantages, since rents and the price of land depended very largely on the distribution of water. In barely three months, Barnato formed six mining concerns, three large companies dealing in real estate, and had control of the Stock exchange and water supply.⁴³⁹

The situation of a multimillionaire taking over the town water supply also nearly happened in Tampere, Finland. In 1865 after the fire, industrialist William von Nottbeck offered to build a water pipe from nearby lake to the town centre. The Town Council, however, could not accept the terms of von Nottbeck. According to them, the municipality would have taken all the risks and von Nottbeck would have gotten all the profits. Another similar proposal was made in Sundsvall, Sweden, when in 1874 the industrialist J.W. Bergström made an offer to build a water pipe.⁴⁴⁰ It would be interesting to know if there are other similar situations elsewhere.

Water Supply after Takeover

In May 1889, the Waterworks Company had 54 kilometres of water pipes, while it claimed that the number of connections exceeded one thousand and that new ones were added daily. The consumption was about 3,400 cubic metres per day, and the minimum charge per month for leading was 30 shillings. The charge by meter was 1 shilling 6 pence for 4.55 cubic metres, though early in 1890 it was raised to 2 shillings. By September 1889, the company claimed that a supply of 3,400 cubic metres a day was available and that this quantity was far in excess of the requirements. The claim was justified because the company did not then possess a reticulation service capable of supplying more than a small portion of the town. Besides, each consumer was charged 5 shillings a month as meter rent and 15 shillings per 4.55 cubic metres, so the effective demand for water was comparatively small.⁴⁴¹

In November 1889, G.R. Andrews⁴⁴² arrived in Johannesburg to take up the appointment as a general manager of the Company. Later, in 1896, Andrews wrote a very critical account about what he found in Johannesburg:

[The] company was supplying dirty water, about the colour and thickness of cocoa; the people of all ages and nationalities dying on all sides, through drinking the water supplied by this Company, which was off the surface off the streets, and the drainage of cowsheds, stables, and back yards of stores and houses [...] a waterworks without reservoirs; with only sump holes in the ground, without any care being taken to keep out the surface water from the streets of

⁴³⁹ Jackson 1970, 106–107; Lewinsohn 1937, 196.

⁴⁴⁰ Katko, Juuti & Hukka 2002; Juuti, Katko & Hukka 2007, 244.

⁴⁴¹ Neame s.a., 66; Maud 1938, 126–27.

⁴⁴² Earlier the Town Surveyor of Bournemouth and the Borough Engineer of Brighton. His son, G.S. Burt Andrews, was later the Town Engineer of Johannesburg in 1905–1927.

*Johannesburg [...] five pumping stations, with old pumps, pumping direct into the mains [...] with neither the pumps nor boilers in duplicate, so that on the least stoppage or breakdown the town was without water while repairs were being done.*⁴⁴³

The first improvement of the situation in Johannesburg was when the Waterworks Company began to bring clean water to homes in the early 1890s. This brought down the number of typhus, dysentery, diphtheria, and scarlet fever incidences considerably, before that, only a few of the pioneers lived beyond the age of 47. The primitive water arrangements, however, led to a serious outbreak of typhoid fever in 1890, which provided the hospital with 70 cases of which 45 died.⁴⁴⁴ In a leading article on the 4th January 1890, *The Star* reviewed local conditions and wrote, “The alarming increase in the number of cases of fever in the town is exciting a good deal of attention [...] an epidemic of typhoid fever of a virulent nature is just now rife throughout Johannesburg.” The water supplied to the town was described as “thick and muddy” though it was added, “the quality is as good as in the days when monthly analyses were regularly published”.⁴⁴⁵ One visitor described the situation like this:

*Typhoid was terribly prevalent, we heard there were seventy cases in the hospital when we left, and many candidates for admission. Small wonder when one looked at the vile water which was generally supplied to this town; sometimes so discoloured that when a lady diver was performing at the arena her performance in the tank was once or twice prevented in consequence of the water being too dirty for her to be visible – and this was the water supplied for drinking purposes.*⁴⁴⁶

The discussion about the quality and the quantity of the water supplied by the Waterworks Company continued in the pages of *The Star* through whole month.⁴⁴⁷ On April, *The Star* wrote under the title “The Sanitary Health Scandal” that there still was no sanitary service in the town. “The state of the town is lamentable. During the recent rains filth of all the sorts was removed from the premises only to be upset on the public thoroughfares, and the return of the hot weather has set all this stuff festering and fermenting to such an extent that the town has become a hotbed of fever.”⁴⁴⁸ As from the 14th January 1890, water was supplied only three times a day because some people allowed their taps to run all the time. On some mines, which had to rely on streams and water pumped from underground, the crushing plants were operating only intermittently. However, copious rains fell in April and the supply was restored. At this stage, the

⁴⁴³ Andrews 1896, 8–9.

⁴⁴⁴ Leyds 1964, 169; Burrows 1958, 278.

⁴⁴⁵ *The Star*, 4 Jan. 1890.

⁴⁴⁶ Kennedy 1985, 57–58.

⁴⁴⁷ Sanitary Board, *The Star*, 16 Jan. 1890; G.R. Andrews’ and L. Loewenthals letters to the editor, *The Star*, 18 Jan. 1890; J.W. Matthews to the editor, *The Star*, 20 Jan. 1890.

⁴⁴⁸ Quoted in Clarke 1987, 20.

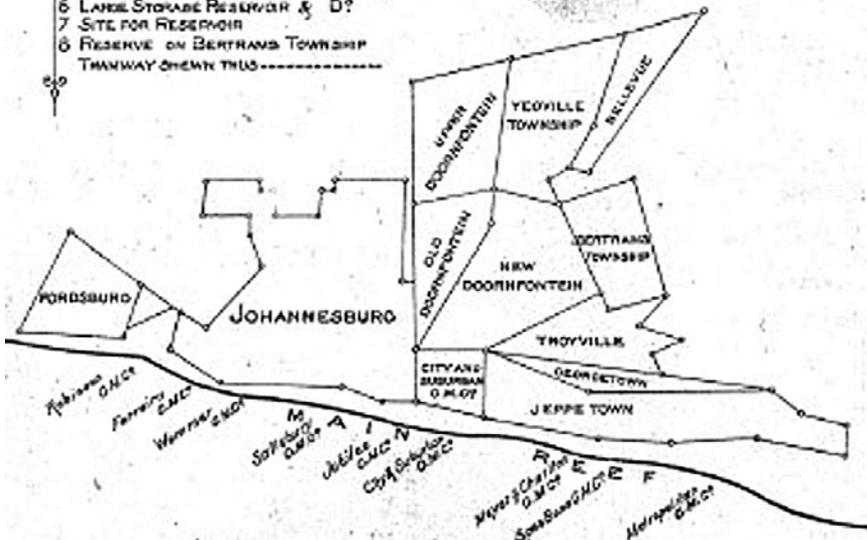
Plan accompanying Report
 shewing the property belonging to the
JOHANNESBURG WATERWORKS
ESTATE & EXPLORATION COMPANY LIM^{TD}

G. R. Andrews C.E.
 ENGINEER & MANAGER

AUGUST 1892

REFERENCE

- The property of the Company is shown thus
 Upper DOORNHOUTEIN
 Old DOORNHOUTEIN
 New DOORNHOUTEIN
 The Company's Reserves are Numbered as follows
 1 Proposed New Park
 2 High Service Reservoir
 3 Service Reservoir & Pumping Station
 4 Stores and Workshops
 5 Covered Reservoir & Pumping Station
 6 Large Storage Reservoir & D?
 7 SITE FOR RESERVOIR
 8 RESERVE ON BERTRAND TOWNSHIP
 TRAMWAY SHOWN THUS -----



KEY PLAN

Shewing Townships supplied
 with Water by the Johannesburg
 Waterworks Estate & Exploration Company Lim.

Scale for Key Plan



Figure 3.16. The supply area of the Waterworks Company in 1892. (Tempelhoff 2003, 31)

company only pumped 15 litres per head because a shortage in the coming winter was feared. At that time, the company still did not serve a large part of the town. In Jeppe, wells 9–12 metres deep secured an ample supply.⁴⁴⁹ (See Figure 3.16)

The Water Schemes Committee of the Sanitary Board discussed about five schemes, including Steenkoppies and Weltevreden, in April and May 1890. Nothing seems to have come of this despite the fact that Johannesburg's water supply was a matter of urgent concern.⁴⁵⁰ In the same year, another traveller, John Finch, wrote in his narrative about the bad water situation in Johannesburg⁴⁵¹:

Speaking of great-coats reminds me of the heavy rainfall I witnessed. Every one wore top-boots and waterproofs; the town was deluged, the water falling in torrents, and rushing over the place in small rivers. But after it was over we were all thankful, the air having been cleared and freshened, and the water required for use improved. The rain-water was a godsend, for the town's supply was greatly complained of. It was so discoloured that a lady diver at the circus refused to perform in the diving tank. The water is drawn from wells sunk only a few feet, and the colour in the bath suggested weak coffee.

He also commented on the Waterworks Company but was cautious in his criticism:

This has now, I believe, been remedied, the joint-stock company established to supply Johannesburg having erected efficient filtering reservoirs; and so far as I am able to judge the public feeling is decidedly in favour of the supply being in the company's hands rather than in those of the Government. There is plenty of water in the neighbourhood, and now that there is good pumping machinery to get it to a sufficiently high level, there should be no uncertainty as to the supply.

Finally, he mentioned the deplorable sanitary situation:

This is of course assuming that guarantee have been taken that the reservoirs and distribution will be maintained adequately and properly safeguarded. The Sanitary Board have, no doubt, their hands full; but why not increase their staff, and arm themselves with stronger powers? When visitors complain that the sanitation is not all that it might be, and especially that slops are thrown out on to the veldt, they are not likely to remain long in the town. And this is all the more to be deplored in that the climate of Johannesburg – at the bracing altitude of five thousand feet – is one of the finest in the world.

The Vaal River, Wonderfontein, and Other Possibilities

Early in January 1890, the Vaal River concessionaires, F.C. Eloff and C. Schürmann, asked the government for a more comprehensive concession. It was clear to them that the Klip River was “insufficient” to provide Johannesburg with water. Consequently, they wanted to integrate the system, so that the scheme could operate from the Vaal River. No specific proposals were made, but the government was asked to bring the *Volksraad* in on the proposed scheme. The concessionaires wanted the *Volksraad* to give formally its

⁴⁴⁹ Neame s.a., 66; Zangel 2004, 15.

⁴⁵⁰ Shorten 1970, 167.

⁴⁵¹ Finch 1890, 99–100.

approval for the Vaal River Water scheme. At first the government ignored the request, but later in the year it responded by taking the matter to the *Volksraad* where it was approved without much debate.⁴⁵²

The objectives of the concessionaires with the Vaal River project can only be guessed. They wanted to get the Waterworks Company interested in the project. The company obviously would have wanted to eliminate potential competition. A second agreement between the government and the concessionaires was concluded on the 28th July 1890.⁴⁵³ From there on the course of the development of the Vaal River Scheme was similar to that of the Klip River Scheme. The concessionaires had originally agreed to submit the drawings of the proposed scheme to the government within six months of the conclusion of the agreement.⁴⁵⁴ They then asked the government for a respite. Their reason was that the financial markets in South Africa and Europe were in a state of depression. They informed the government that they had entered into an agreement with one French Baron, who undertook to raise investments from Europe.⁴⁵⁵ His efforts were futile because according to him most of the people did not know even where the Transvaal was.⁴⁵⁶

For a considerable period, the Vaal River project was dormant. Only in the 27th December 1892 were there signs of activity when Eloff and Schürmann notified the government that they had ceded their concession to Barnato Brothers – the company that owned the Waterworks Company. The effective control over the proposed Vaal River Scheme gave the company the freedom to determine if and when Johannesburg's existing water supply needed upgrading. Within the borders of the country, some spontaneous forces also undermined the credibility of the Vaal River Scheme. One controversial proposition for water to the Rand was the Wonderfontein Scheme, a project promoted by the mining magnate George Goch⁴⁵⁷. His plans were first mooted in April 1890. The objective was to supply water to Johannesburg from the source of the Wonderfontein, in the Potchefstroom district. From the outset, the plan was shrouded in a cloud of controversy. Goch was an important player in the politics of water; he had contacts high up in the government. For very transparent reasons, he was opposed to the government's leniency to extend its deadline for the development of the Vaal River Scheme. In the public debate, it increasingly became apparent that a comparison was

⁴⁵² Tempelhoff 2000, 101–102.

⁴⁵³ Executive Council decision Art. 482, 25 July 1890, copy. SS4939, 7835/95, 217–21. TAB.

⁴⁵⁴ Kuypers to Onder-Statsekretaris, 30 June 1894. SS4939, 7835/95, 249–50. TAB.

⁴⁵⁵ C. Schürmann and F.C. Eloff to the State President and members of the Executive Council, 16 Jan. 1891. SS4940, 7835/95, 76–78. TAB.

⁴⁵⁶ E. Oppenheim to A. Roch, 5 Dec. 1890. SS4940, 7835/95, 79. TAB.

⁴⁵⁷ 1850–1918. Member of the Cape Parliament 1884–89. One of the founders of the Transvaal Chambers of Mines. Mayor of Johannesburg 1904–05.

being drawn between the viability of the Wonderfontein and the Vaal River Schemes. The major issues were anticipated costs, and the amount of water that a source could provide.⁴⁵⁸

A concession was granted in 1891 to the owners of Wonderfontein farm.⁴⁵⁹ This scheme aroused bitter controversy from 1892 onwards. The concession had lapsed and at a public meeting, reported in the issue of the 19th April 1893, of *The Standard and Diggers News*, the people of Potchefstroom protested against its renewal because this was the source of the Mooi River, Klipriviersoog, and Schoonspruit.⁴⁶⁰ A petition to this effect, containing three pages of signatures in double columns, was submitted to the Government. Although the cost was estimated to be 461,730 pounds, including the cost of mains, pumps, and reservoirs, to bring water 75 kilometres to Johannesburg, the Sanitary Board was impressed with the engineers' report that the scheme would provide 118,000 cubic metres a day.⁴⁶¹ Another business venture was the Vierfontein Syndicate. It had bought up water rights near the Klip River and the Board was informed that water could be delivered at an estimated cost of 4 shillings per 4.55 cubic metres. However, this plan also fell through when the syndicate asked for a long contract.⁴⁶² As long as local sources provided enough water, there was no need to look anywhere else. This changed when rapid urban and industrial growth began. It was then that the sources further afield, like the Vaal River, were contemplated.⁴⁶³

The operations of the service provider were conducted within the playing field of the gold mining town's free marketers. Many were after lucrative business opportunities and small companies and syndicates were formed. For example, in 1892 the Braamfontein Water Company was founded by the Corner House, which had started with the development of 174 erven⁴⁶⁴ in Parktown and surrounding areas. (See figure 3.17) This involved bringing water to the town from springs on West Braamfontein, but negotiations between the Sanitary Board on the one hand and the Braamfontein and Waterworks companies on the other could not be finalised despite the advantage of a close source of water. By the end of the century, the company was able to provide about 380 cubic metres of water daily. The value of the real estate was directly linked to the availability of a good supply of water.⁴⁶⁵

⁴⁵⁸ Tempelhoff 2000, 102–103, 105–106.

⁴⁵⁹ Deed of Agreement, 9 Feb. 1891. JARCH 318, JMA.

⁴⁶⁰ *The Standard and Diggers News*, 19 Apr. 1893.

⁴⁶¹ Shorten 1970, 168.

⁴⁶² Proposal to the Chairman and Members of the Water Supply Committee of the Johannesburg Sanitary Board, Johannesburg, 27 Apr. 1893. JARCH 318, JMA.

⁴⁶³ See for instance Tempelhoff 2000, 88–117.

⁴⁶⁴ Erf: a plot of ground, stand.

⁴⁶⁵ Tempelhoff 2000, 93.

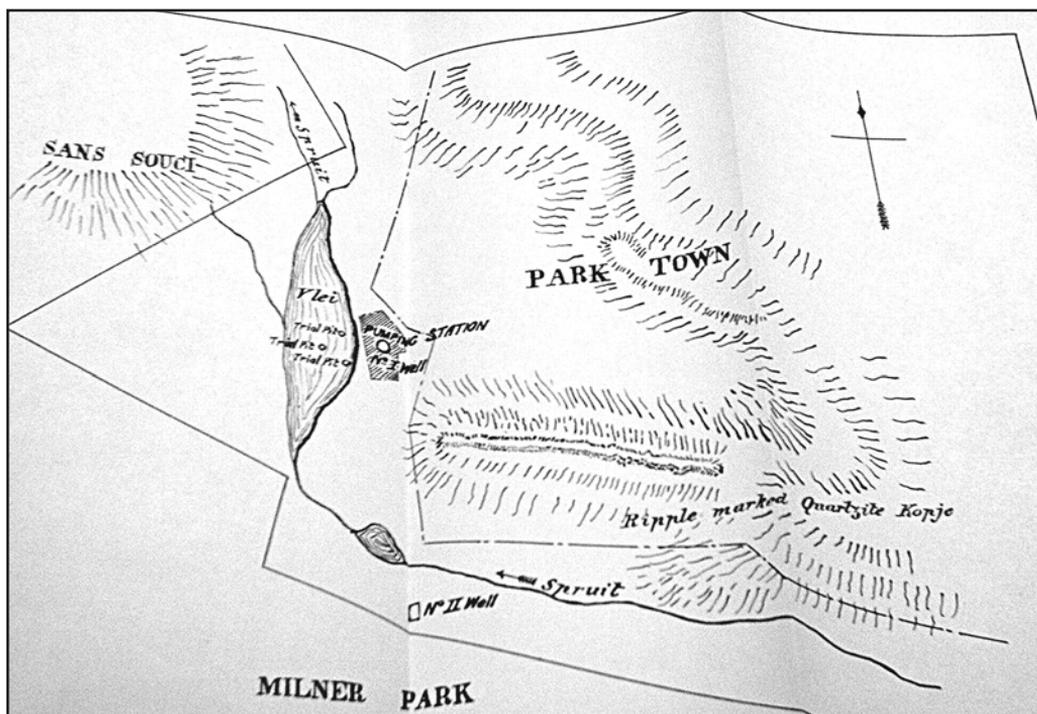


Figure 3.17. Braamfontein water sources. (Report of Medical Officer of Health. In Mayor's Minutes, Johannesburg, 1906)

Weltevreden Farm, 14 kilometres from Johannesburg, was also under consideration between 1893 and 1896. Estimation was that the stream on this property would give 9,000 cubic metres of water a day, but where the Sanitary Board was concerned, this scheme went the way of its predecessors. However, the Waterworks Company acquired Weltevreden and Steenkoppies and began using the water from these sources to supplement its supply. In 1895, the company built a 1.25 million cubic metres storage reservoir in Weltevreden and an intermediate pumping station at Paarlshoop. The pumping of the water was started in April 1896, although the Mining Inspector in his report earlier had not considered works there "at all suitable for a final solution of the water question", according to him, water was not healthy for drinking purposes, and available quantity was not sufficient. The scheme also involved great technical difficulties. Later the State Secretary informed the company that it did not have the right to take water from these sources as they were public streams and the rights of riparian owners had to be safeguarded.⁴⁶⁶

⁴⁶⁶ Andrews 1925; Report of the Public Works Department, Johannesburg, 1895, 9. JARCH 200A, JMA; Report of the Public Works Department, Johannesburg, 1896, 19. JARCH 200A, JMA; Report re the Quantity and Quality of water on the farm "Weltevreden" by G. Schmitz Dumont, Mining Inspector. JARCH 318, JMA; Shorten 1970, 167–68.

3.4.3 The Early 1890s and Droughts

This chapter describes the development of the Johannesburg water supply in 1892–1896. Special attention is paid to the various possible new water sources, like the Vaal River, Klip River, and Wonderfontein, which had all been under consideration earlier. The attempts by the government and the Sanitary Board to help the situation are also examined. The droughts of 1894 and 1895 also deserve special attention.

The Water Supply of the Early 1890s

During the year ending June 1892, three additional reservoirs were built. One at Natal Spruit on the southern boundary of New Doornfontein to hold 1,800 cubic metres, one at Bezuidenhout Valley, which is now the site of Ellis Park Sports ground, to hold 96,400 cubic metres, and one on the Berea Estate with a capacity of 590 cubic metres to act as a high service reservoir.⁴⁶⁷ (See Figures 3.14 and 3.18)

In 1892, Major C.S. Goldmann⁴⁶⁸ described the water supply of Johannesburg:

*Water derived from springs, reservoirs etc.; over 60 miles [96 km] of service pipes laid in the streets of Johannesburg, above 1,500 water-leadings laid on. Co. has service reservoir, 4 pumping stations; supply effected by gravitation and pumping. The filter bed is estimated to filter 400,000 gallons [18,200 m³] in 24 hours. A high service reservoir, 80 ft. [24 m] above the tower of the hospital, is being constructed; hydrants fixed for the purpose of extinguishing fires and road watering. During the past year 127 new leadings have been laid on, 243 extensions, 938 turned on, and 896 cut off. Water supply for the last half-year ample, the springs on the north of the service reservoir were sufficient to supply town.*⁴⁶⁹

Indirect taxation and the policy of concessions kept the cost of living in Johannesburg higher than the rest of the country; house rentals were more than four times higher than in Cape Town, while board and lodging was 50 per cent higher.⁴⁷⁰ The dissatisfaction of potential and actual consumers was expressed in September 1892 in the form of a petition from the inhabitants of the town to the Sanitary Board. In January 1893, a special water committee was appointed by the Board to consider the demand of the petitioners for “more and better water”. From the deliberations of this committee, it became clear that the search for water must go beyond the borders of Johannesburg. By November 1893, a plan had been worked out for acquiring a source of supply at Wonderfontein and raising a loan of 400,000 pounds for the purpose. But the opposition of the chamber of commerce, which held the well-known view that “the time was not ripe

⁴⁶⁷ Andrews 1892, 123–24; Andrews 1925, 2.

⁴⁶⁸ 1868–1958. Writer and financier. Later member of the British Parliament.

⁴⁶⁹ Goldmann 1892, 96.

⁴⁷⁰ Maud 1938, 39; Johannesburg 1986, 252; Leyds 1964, 53.

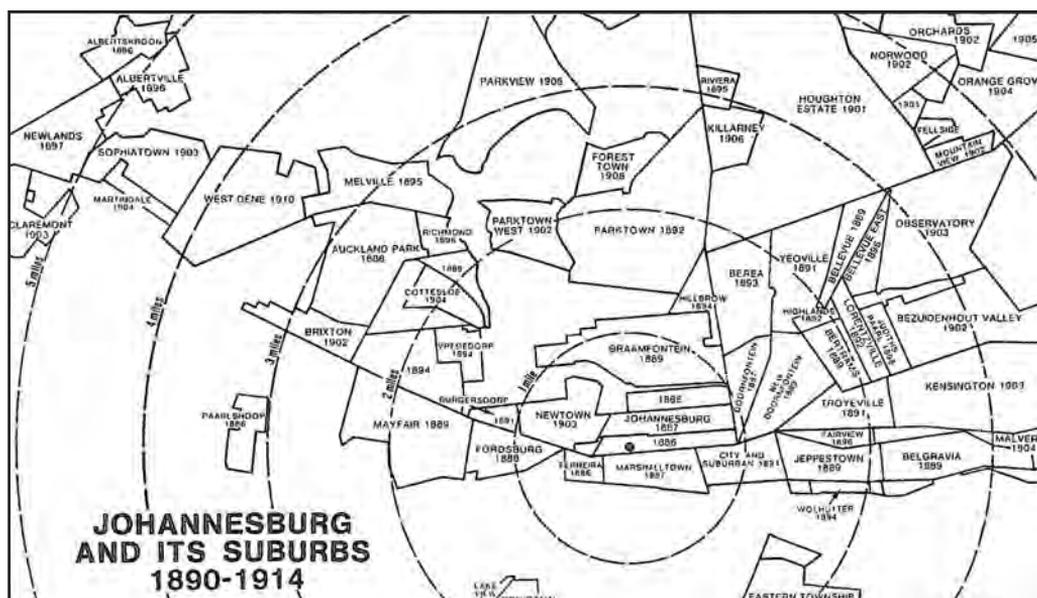


Figure 3.18. Johannesburg and its suburbs in 1890–1914. (Van Onselen 2001, 270)

for such a large outlay”, was so powerful that the public meeting at which a vote was intended to be taken on the question was not even held, and the plan fell through.⁴⁷¹ During the years 1893 and 1894, three more reservoirs were constructed, one again at Bezuidenhout Valley on the later site of Ellis Park tennis courts to hold 56,900 cubic metres, one lower down the valley to hold 38,700 cubic metres, and a high service reservoir at Yeoville to hold 13,700 cubic metres. However, for the most part the capacity of the reservoirs was far greater than the water available.⁴⁷²

The Vaal River Scheme Resurfaces

In July 1893, the President Paul Kruger told the second *Volksraad* that he had held talks with the *Nederlands Zuid-Afrikaansche Spoorwegmaatschappij* on the viability of a plan to transport water from the Vaal River to Johannesburg. The railway line, which connected the Orange Free State and the Transvaal in May 1892, crossed the Vaal River at Vereeniging. The plan of the government was thus not far fetched. The only constraint was the high cost of building the necessary railway wagons and constructing the necessary equipment for pumping water into the railway wagons. Sammy Marks⁴⁷³

⁴⁷¹ Andrews 1925; Cosser 1990, 53–54; Maud 1938, 127; Filmer & Parry 1958, 45–46; Marais 1961, 24.

⁴⁷² Report of the Public Works Department, Johannesburg, 1894, 18. JARCH 200A, JMA; Andrews 1892, 125–26; Andrews 1925; Grant & Flinn 1992, 186.

⁴⁷³ 1843–1920. Industrial and agricultural pioneer. Opened first coal mines in Transvaal. Member of the Union Senate 1910–1920.

thought that coal could be used to provide power for the scheme to pump water to the Witwatersrand from the Vaal River.⁴⁷⁴ The greater threat to the Vaal River Scheme was related to the development of the Klip River. In March 1893, the Vierfontein Syndicate was founded. The expanded membership improved its financial strength considerably. They were now in a position to offer water to the residents of Johannesburg from a source almost seven kilometres south of the town on the farm Vierfontein. The plan was for an extensive dam wall to be constructed that could secure the storage of some 7.6 million cubic metres. A fountain was also available for pumping water, but its potential was limited. One factor, which did not count in the favour of the syndicate, was the fact that as a rule the local authority of Johannesburg, as well as the government of the South African Republic gave preference to fountain sources over storage dams which relied on rainwater. The Vierfontein Syndicate was, however, of the opinion that at some point of time there might be a demand for their resources. Consequently, they were prepared to enter into an agreement with the government.⁴⁷⁵ As a potential service provider, should there be a need for water in Johannesburg and environs, the syndicate could oppose literally any expensive scheme, which was aimed at providing the large quantities of water over a considerable period, by making cheaper offers. This had a serious detrimental effect on the prospects of developing the Vaal River.

In the face of stiff competition, Barney Barnato remained optimistic about the potential of the Vaal River Scheme. On the 30th May 1893, he submitted the first set of plans for the water supply to the government.⁴⁷⁶ Three pumping stations were to be erected over a distance of 58 kilometres from “Waaldrif” to Johannesburg. A 450 millimetre diameter main was to be used for pumping the water to the Witwatersrand. From a strategic point of view, the plans were outstanding. The water would be taken from the confluence of the Vaal and Klip River, close to the new town of Vereeniging. It was to follow a route via Olifantsvlei in the Klip River. On the farm Vierfontein a filtration plant was to be constructed, where the water would be purified before being pumped up to Johannesburg.⁴⁷⁷ At the time of the plans being mooted, Marks was strongly in favour of Barnato’s project. He was convinced that the Vaal River was to be the ultimate source of water for the Witwatersrand. Barnato’s plan also appealed to the Kruger government. After some scrutiny by officials, some recommendations were made. One suggestion was that the pipeline be situated adjacent to the route of the road between Vereeniging and Johannesburg, a suggestion that was taken to heart.⁴⁷⁸

⁴⁷⁴ Tempelhoff 2003, 59–60; Mendelsohn 1991a, 51.

⁴⁷⁵ Rapport, J.M.A. Wolmarans and S. Wierda. SS4378, 7961/94, 174. TAB.

⁴⁷⁶ P. Nel to the State Secretary, 30 May 1893. SS4940, 7835/95, 91–92. TAB.

⁴⁷⁷ General description of the waterworks to be done by the Johannesburg Waterworks, Estate and Exploration Company Limited. R.L. McDonald, Johannesburg, 29 June 1893. SS4940, 7835/95, 100–102. TAB.

⁴⁷⁸ Mendelsohn 1991a, 51; Tempelhoff 2000, 107.

Barnato went even further in preparing the way for the Vaal Water Scheme. His company appointed Thomas Stewart⁴⁷⁹ to research the scheme. In June 1893, Stewart submitted plans, which made provision for supplying Johannesburg with an estimated 11,400 cubic metres of water daily. As a whole, the scheme could easily stand the test of experts. Barnato was confident that water shortages would soon be something of the past. It was going to cost the Waterworks Company 600,000 pounds, he explained, but it was worthwhile. Barnato's aim was, however, in some respects, a ploy to bring the proposed Wonderfontein scheme, which the government favoured, into discredit. Overall, the scheme underlined the fact that in future substantial capital investments would have to be made to provide the Witwatersrand with water. It also became increasingly clear that it would in future be necessary to differentiate between two types of consumers: the mining industry and the rest.⁴⁸⁰

The Drought of 1894

The summer rains failed in 1894 and the town endured its worst drought in years. Hotels refused to serve tea or coffee and men drank their whisky neat, smuggling out the soda bottles for domestic ablutions. The Waterworks Company could not cope and limited its supply to an hour each morning while a small gang of water pirates raided outlying dams and wash holes to retail buckets at several shillings a time. In June 1894, the *Volksraad* appointed a commission of enquiry into the water supply of Johannesburg. The objective was to try to find a solution to the water shortages experienced in the town. There had been attempts since 1893 by the local authority to become a service provider.⁴⁸¹ According to J.W.N. Tempelhoff, this was seen in business quarters as an attempt to interfere in the operations of the free market. Lobbyists spread rumours that the role of the government would merely push up taxes.⁴⁸²

The commission submitted two reports to the *Volksraad* on the 21st September 1894. In the first, the recommendation was that consideration be given, to enabling the Johannesburg Sanitary Board ultimately to take over the water service. A number of potential sources were considered.⁴⁸³ The report further recommended that taxes be levied from local landholders to pay for the service.⁴⁸⁴ The minority report recommended

⁴⁷⁹ Stewart had the first time visited Johannesburg in 1889 to make some geological investigations. He was engaged as a Consulting Engineer by the Waterworks Company from 1896.

⁴⁸⁰ Lionel Phillips to Julius Wernher, 16 Sep. 1894, ATG 84; *The Truth* 1893; Tempelhoff 2000, 107–8.

⁴⁸¹ Jackson 1970, 173; Ramsden 1985, 129–36.

⁴⁸² Tempelhoff 2003, 61.

⁴⁸³ These included Rooikop, Klipfontein, which formed the part of the Jukskei River, Gemsbokfontein, Klipspruit, Alewijnspoor, Wonderfontein, Rietfontein, Olifantsfontein, and the sources of the Vierfontein Syndicate as well as the sources of the Johannesburg Waterworks Company.

⁴⁸⁴ Rapport J.M.A. Wolmarans and S. Wierda. SS4378, 7961/94, 172–77. TAB.

that the government should be wary of embarking on a plan to take over all the water resources. One implication was increased taxation. Overall, an investment could be costly without necessarily bringing in profits. The report opposed the Wonderfontein scheme because it would be expensive.⁴⁸⁵ According to Tempelhoff, the first *Volksraad* was in favour of the commission's proposals for the government playing a leading role in providing water. However, when the decision was made on the 22nd September 1894 that Paul Kruger's executive and the Sanitary Board of Johannesburg should carry on to try to find a solution, the plan was in fact dead.⁴⁸⁶ Lionel Phillips suggested quite clearly that this result was because of Barnatos work behind the scenes.⁴⁸⁷

The discontent in Johannesburg was rising. In the First *Volksraad*, the representative for Johannesburg explained that the memorials to the government, signed by more than 4,000 residents of Johannesburg, were symptomatic of the discontent with the prevailing state of affairs. At the time, water was transported by means of carts to the different parts of the town. It was then sold at exorbitant prices. According to the Town Engineer, the whole Fordsburg was still supplied only with water from shallow wells.⁴⁸⁸ Adlam described this time later:

*Johannesburg suffered a drought, and the old town reservoir was really too small for the needs of the growing population. These two factors combined to produce an acute water shortage. In spite of all efforts to economise, taps in houses on the higher ground yielded no water at all. In End park, where the ground was lower, there was sometimes a weak dribble of water, and I remember seeing a line of people queuing up with bottles and jugs at a tap in the Park to get a little of the precious fluid. The distress was relieved when tanks of water were brought into the town on carts. People could then buy water as so much a gallon.*⁴⁸⁹

The Sanitary Board received an instruction from the Transvaal government at the end of 1895 to take a poll of the White inhabitants of the town on the subject of the original Wonderfontein proposal and that if the scheme were adopted the board was to be allowed to take over the concession. The Waterworks Company organized opposition to this plan so effectively that the board dropped it.⁴⁹⁰ The government thereupon entered into an agreement with Goch to exploit the new source, but the South African War intervened before this could be accomplished.⁴⁹¹ Klipspruit was under discussion in 1894. It was only 19 kilometres from Johannesburg and the scheme, which would produce 6,800 cubic metres of water a day, was estimated to be completed for 80,000 pounds. At the

⁴⁸⁵ Rapport A. Bock, Pretoria, 20 Sep. 1894. SS4378, 7691/94, 177–78. TAB.

⁴⁸⁶ Tempelhoff 2003, 62.

⁴⁸⁷ Lionel Phillips to Julius Wernher, 16 Sept. 1884. AGT 84.

⁴⁸⁸ Tempelhoff 2000, 110–11; Report of the Public Works Department, Johannesburg, 1894, 19. JARCH 200A, JMA.

⁴⁸⁹ Adlam 1985, 41.

⁴⁹⁰ In 1901 Goch claimed that Barnato had hired men to break up an earlier meeting, had spent over £3,000 in attempting to secure control of the Sanitary Board, and bribed people extensively prior to the public meeting of 13–15 February 1896. Report of the Witwatersrand Water Supply Commission, 1902, 20.

⁴⁹¹ Maud 1938, 127; Marais 1961, 24–25.

same time, Kromdraai was also being considered. The engineers were of the opinion that this source would supply 10,200 cubic metres a day, but it was 42 kilometres from the town and would require a capital outlay of 238,000 pounds. Eventually, the Board turned down both these schemes. The Sanitary Board considered overall 12 different water supply schemes during the years 1893–94.⁴⁹²

Water Consumption

The growth in water consumption was phenomenal. At the end of the 1880s, the Waterworks Company provided 342 cubic metres of water a day to Johannesburg. By 1894, the town consumed between 2,890 and 5,860 cubic metres a day. A special commission of inquiry in 1895 pointed out that although the Waterworks Company could provide 10,360 cubic metres a day, it would in time become necessary to provide at least 11,570. Up to that point, it had appeared that the company would be able to meet the existing demand.⁴⁹³

In communications with the government, the Waterworks Company reminded the executive that they were still capable of providing for in all the water needs of Johannesburg. (See figure 3.19) Moreover, should there be an even greater need for water they would be able to make use of the Vaal River.⁴⁹⁴ One proviso was that the company would require of the government to allow them to be the sole supplier of water to Johannesburg.⁴⁹⁵ It made sense because the development of a water scheme, like the Vaal River, would be expensive. The fact that Johannesburg did not have a formally constituted municipality prevented the existing local authority from entering into loan agreements. It was thus unable to raise funds for the development of an expensive water supply undertaking, such as the Vaal river scheme. The government was also hesitant to invest large sums in infrastructure. It was not in the interest of the population of the country as a whole.⁴⁹⁶

According to the political circles a major problem was that the Vaal River was “net afloepend water” and not fountain water. It was also argued that the water of the Vaal River was not consistent throughout the year. The quality of the Vaal River’s water was also claimed to be inferior to that found in the dolomitic areas adjacent to the Witwatersrand. Under these circumstances it appeared as if the political climate in the country and

⁴⁹² Report of the Public Works Department, Johannesburg, 1894, 18–19. JARCH 200A, JMA; Shorten 1970, 167.

⁴⁹³ Tempelhoff 2003, 35.

⁴⁹⁴ P. Nel, Pretoria to Regeering der Z.A. Republiek, 17 Sep. 1894. SS4378, 7961/94, 136. TAB.

⁴⁹⁵ Rapport in zake watervoorziening - Johannesburg. (Commissie van 1895), Augustus '95. SS4383, 7961/94, 51. TAB.

⁴⁹⁶ Tempelhoff 2003, 63.

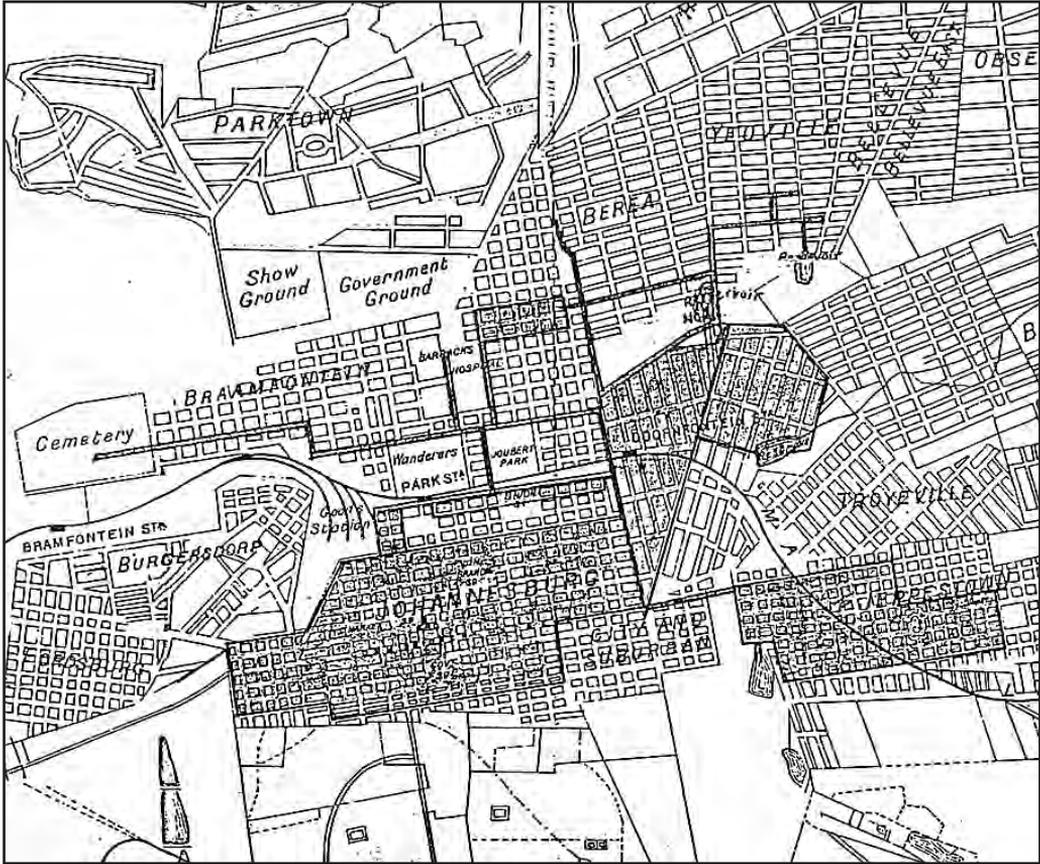


Figure 3.19. Reticulation network of the Waterworks Company in 1894. (Cosser 1990, 67)

particularly in financial circles that would ultimately have to sponsor a comprehensive water project, were not entirely in favour of the Vaal River scheme. Consequently, the focus shifted to the other sources of water.⁴⁹⁷

The Drought of 1895

In 1895, the Waterworks Company became a full subsidiary of Johannesburg Consolidated Investments (J.C.I.) – a major gold mining company on the Witwatersrand. The Waterworks Company was an integral part of Johannesburg's business environment in which strong competition was the order of the day. It implied that its activities would be affected by the frequent feuds in which the local captains of trade and industry were involved. This state of affairs had a detrimental effect on the provision of water for Johannesburg. The Waterworks Company claimed in 1895 to have a daily supply of

⁴⁹⁷ Tempelhoff 2000, 111–12.

6,800 cubic metres to meet a demand of 4,000 cubic metres per day. Nevertheless, in the spring Johannesburg experienced very severe drought. The rains were late and the situation was serious enough for the Waterworks Company to introduce rationing on the 23rd October: mains were turned on only for an hour each morning and afternoon. Water had to be supplied by mule carts to the higher parts of the town. Such water was sold at two and a half shillings per bucket. In most households soda water had to be used for cooking purposes. The cost of living was also very high; bread cost one shilling and a bag of mealie meal five pounds. The drought broke on the 5th November.⁴⁹⁸

Mining pioneers recollected that, in October, the Waterworks Company failed to supply water, and whatever water was available from springs had to be distributed by watercarts round which families gathered – father with a bucket, mother with a bedroom jug, children with kitchen utensils and even mantelpiece ornaments, and the Black servant “Jim” with the old paraffin tin. (See picture 3.17) The rich washed themselves in soda water and the manufacturers, having their private wells, reaped a harvest; at least a couple of dozen bottles were necessary for a bath. Many public works were stopped and factories were closed down. Rumour had it that the brewery was at a standstill, but the beer drinkers heaved a sigh of relief when the comforting announcement was made that no such calamity had befallen; the institution had its own well which had not failed.⁴⁹⁹ One traveller remembered later that in one hotel he was staying, the hand basins were left full of dirty water and notices were put over the basins saying: “Please do not pull the plug as there is no water”.⁵⁰⁰ At that time, 51,000 Europeans lived in town. The story is told of a man who paid half-a-crown apiece for a dozen bottles of soda water for washing purposes; and another, of the man who rode on his horse twice a week to Pretoria and back to get his bath. During this drought, an experiment was made which, it was hoped, would make the clouds discharge their moisture – the firing of small explosive bombs at the clouds from the Wanderers Grounds by the officials of the Waterworks Company.⁵⁰¹

Louis Cohen wrote about the drought:

*Although at times there was enough water in the town to float a ship, at other periods there was not sufficient to drown a flea – except at prohibitive prices – and a good wholesome bath was generally out of question.*⁵⁰²

L.E. Neame retold the story of the daughter of the British Agent in Pretoria who was staying at a Johannesburg hotel:

She found the dust and dirt very trying after the happier conditions in Pretoria and seeing a bath full of clean water standing in a room in the hotel she slipped in and locked the door and had a bath. While so engaged there was a violent banging at the door; but she took no notice

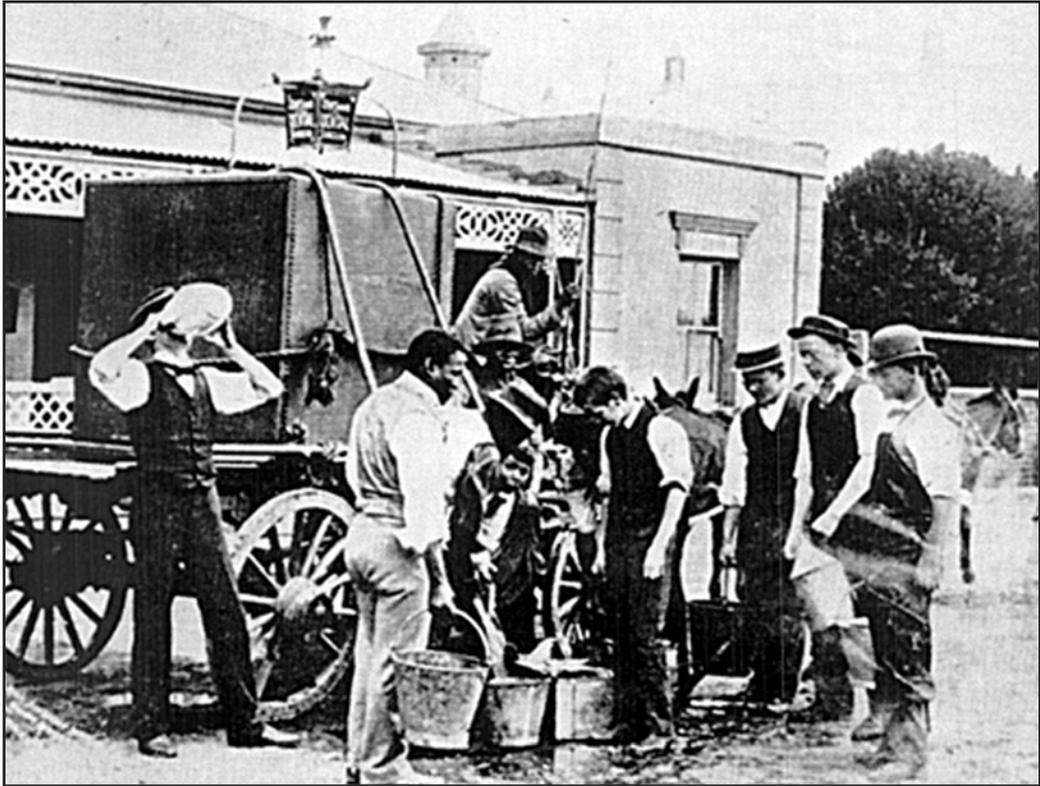
⁴⁹⁸ Tempelhoff 2003, 32; Leyds 1964, 53; Neame s.a., 51; Shorten 1970, 169–70; Palestrant 1986, 56.

⁴⁹⁹ Draper 1925, 1; Jacobsson 1936, 172–73.

⁵⁰⁰ Henochsberg 1933, 34.

⁵⁰¹ Chilvers 1929, 259.

⁵⁰² Quoted in Callinicos 1985, 65.



Picture 3.17. Selling water from water-cart in 1896. (Source: Rosenthal 1974, 121)

and eventually emerged much refreshed. Outside she found a furious proprietor. “Do you know what you have done?” he cried. “You have used the only water we have for drinking! And what is worse you have used soap!”⁵⁰³

Problems with the Water Supply

Not only was the quantity of water insufficient but the quality was also frequently the cause of complaint to the Sanitary Board. These persistent complaints caused the Government to appoint a commission in 1895 to examine in what way Johannesburg could be provided with good and pure drinking water. The principal recommendation of the commission was that any works for the water supply should belong to the public authorities, and their management should be in their domain. The political disturbances following the Jameson Raid at the end of the year however stopped any progress on implementing the recommendation.⁵⁰⁴ Since the *Uitlanders* had come to Johannesburg

⁵⁰³ Neame s.a., 52.

⁵⁰⁴ Report of the Government Committee appointed to report on the water supply for Johannesburg in 1895. In Report of the Witwatersrand Water Supply Commission 1902, Appendix B. 164–170; Sander 2000, 33.

primarily for business reasons, it took many years before they began to act collectively against the government. The Jameson Raid and a revolt in Johannesburg would never have been brought about by injustices like the administration of the liquor and dynamite monopolies. Nor would the sickness and the high death rate resulting from the lack of a clean water supply and adequate sewerage system have been sufficient incentives for action. According to John Hays Hammond it was the combination of various irritations that fired the hostilities in 1895.⁵⁰⁵

The refusal to grant Johannesburg a proper municipality had far-reaching consequences. In the first place, it caused dissatisfaction among the Johannesburgers, which led to heightening tension between Johannesburg and Pretoria. The efforts to gain greater independence stimulated the Johannesburger's political consciousness, binding them together. The fact that the local governmental body constituted an important point of contact between Pretoria and Johannesburg is of great significance. Through meetings with the government by the Digger's Committee, the Sanitary Board and the *Stadsraad*, as well as the correspondence with the Pretoria authorities the *Uitlanders* learnt to know their opinions, the points of view, and prejudices. The struggle for greater municipal responsibility was a valuable training for the greater struggle for franchise. The attempts, in 1886–1897, to obtain a full-fledged municipality were followed by a press, which did disguise its hostility. Unsuccessful attempts to obtain greater autonomy were used as the points of departure for attacks on the government. By heightening the image of an autocratic government, the press created an atmosphere of implacable hostility to the state.⁵⁰⁶

In 1895, the Medical Officer of Health, Dr. T.C. Visser, urged the laying of pipelines to the locations so that the inhabitants could have safe water. His recommendations were supported by the Sanitary Superintendent who considered the matter urgent, stating that it was an "absolute necessity that some provision be made to supply these natives with good drinking water, otherwise typhoid and other diseases are bound to set in".⁵⁰⁷ No attention was paid to this request. The inhabitants were forced to rely on shallow wells and a few natural springs. The Medical Officer of Health recognized that the killer disease of the stomach - enteritis - struck down most of its victims in households that drew their water from unprotected wells, which had been contaminated by animals and people. There were uncertainties in the Sanitary Board's authority. Water supply remained in the hands of the Johannesburg Waterworks Company. The fact that it could not cope with the increasing demands caused dissatisfaction. The manifesto's of the National Union, as

⁵⁰⁵ Hammond 1935, 314.

⁵⁰⁶ Appelgryn 1984, 128.

⁵⁰⁷ Quoted in Shorten 1970, 169.

well as the editorials of the press owned by the mining houses, turned this dissatisfaction against the Government.⁵⁰⁸ However, the mere threat of disease emanating from their living conditions was insufficient to spur the Board into action.

One real grievance existed for the whole population, the rental of five shillings per month for a water meter. It meant that the meter was paid for in one year, yet remained the property of the Waterworks Company. As its life was at least ten years, the company made 100 per cent profit per year on this item. The houses situated on the higher parts of town were also supplied only with air, but were charged by the company according to the meter reading, which had registered the current of air instead of water. The government had granted the concession to the Johannesburg Waterworks Company and it was held responsible for this extortion. In 1896, the first attempt at a scientific census was made and the total population of Johannesburg was found to be nearly 102,000, of whom almost exactly half were White. The recent and artificial origin of the urban community is shown by the fact that, as far as the White population over 16 years of age was concerned, men outnumbered women by two to one. In the same year, the Medical Officer of Health reported that during the year 129 Whites had died of typhoid, a figure that represented an index of 36 per 10,000 in this racial group and was a ready reflection on the extent to which the town's water supply had become contaminated. Some improvement was noted in 1897 when the index dropped to 28.⁵⁰⁹

At public meetings on the 13th, 14th, and 15th February 1896, Wonderfontein Scheme and no less than 11 others were laid before the ratepayers of Johannesburg. A big majority voted for the expansion programme submitted by the Johannesburg Waterworks Company, while Wonderfontein was the second choice. However, this alternative had to be withdrawn on the first day when the Board received a letter from the State Secretary stating that the Government withdrew its permission to proceed with the scheme owing to the large number of people dependent on the water. The following negotiations between the Sanitary Board and the owners of the concession also came to nothing.⁵¹⁰

In October 1896, an artesian well was sunk in the northwest corner of Joubert Park. The hole was drilled to a depth of 45 metres and then a tapering tower of steel girders was erected to carry the winding wheel and vane. The pump was worked by a long rod connected by a crank and gears to the shaft of the wind wheel. The windmill was a great success. Given a fair wind, it could deliver 32–36 cubic metres a day and kept a large tank always full. Water was distributed to points required by means of huge water carts drawn by donkeys. Sometimes unfortunate householders, when the cart began to empty,

⁵⁰⁸ Callinicos 1985, 79; Leyds 1964, 31.

⁵⁰⁹ Draper 1925, 2; Leyds 1964, 90–91; Maud 1938, 39; Shorten 1970, 490.

⁵¹⁰ Shorten 1970, 168; Maud 1938, 127–28; See also Cunningham 1989, 41–42.

received more mud than water. In about 1896, the Waterworks Company acquired the farm Wolvekrans. It, however, was never utilized, as the company found that Zuurbekom could supply enough water for their needs at that time.⁵¹¹

3.4.4 The Creation of the Municipality

Johannesburg was finally in 1897 established as a municipality. In this Chapter, municipal history from this moment until the establishment of the nominated Town Council in 1902 will be examined. Attention is paid to different attempts to find new water sources before the South African War started in 1899. The war brought the problems of the water supply in Rand and with the Waterworks Company to a new level. Under examination in the end of the Chapter is the new regime's solution for the problems, the Rand Water Board, and how it was established.

Stadsraad

When Johannesburg had surrendered to the government in January 1896, the President Paul Kruger had expressed the intention of converting the Sanitary Board into a municipal council. The government published a bill to this effect at the same year, but it did not become the law until September 1897. It established an elected *Stadsraad*, which was to consist of not more than 24 members, one-half of whom were to be elected by the comparatively small number of born and naturalized burghers living in the town. The Raad had the wider powers of the local government than the Board, which it replaced, though the central government could still keep a close watch upon its proceedings. The government also appointed the *Burgomaster*, who was the ex officio chairman of the Raad and its principal executive officer. The first and only *Burgomaster* was Johan Zulch de Villiers⁵¹², who succeeded in maintaining friendly relations with the Raad. The Raad's prestige was further enhanced when, in the last session before the war, the second *Volksraad* passed a measure extending its right to levy local taxes.⁵¹³ President Kruger was careful to put in place the necessary mechanisms to control Johannesburg's independence and to guarantee the loyalty of the *Stadsraad*. Half of the new Raad's members had to be burghers elected by burghers and the central government reserved

⁵¹¹ Adlam 1985, 69; Graumann 1936, 70; Zangel 2004, 14.

⁵¹² 1845–1910. Landdrost of Pretoria 1881–85, of Barberton 1885–90. Burgomaster of Johannesburg 1897–1899.

⁵¹³ The area of Johannesburg was also extended to include Spes Bona, Wolluter, North Doornfontein, Old Doornfontein, Fox's Reserve and New Doornfontein. See Figure 3.20.

to itself the right to appoint the *Burgomaster*. Given the predominance of Uitlanders in the voters roll, this decision turned the Raad into a less representative body than the Sanitary Board had been.⁵¹⁴

This change, nevertheless, marked a new stage in the growth of self-government in Johannesburg. The town now, for the first time, boasted a clear form of municipal government. It was a more independent form of local governance than had existed in the Transvaal, up to that date. The powers of the *Stadsraad* were definitely wider than those of the former Sanitary Board had been. As Johannesburg developed, committees and sub-committees had been set up by the Sanitary Board, which also undertook further reorganisations and established additional departments, so that, by 1897 nine main departments of local administration existed. The Secretary's and Treasurer's Departments now functioned as separate entities; so, too, did the Sanitary Department while Public Works, the office of the Medical Officer of Health, the Fire Brigade, the Lighting and Assize Departments, and the office of the Inspector of Natives and Town Traffic were accorded a similar measure of status.⁵¹⁵

Municipality Plans to Take Over the Water Supply

The *Stadsraad* saw an improved water supply as an immediate objective. In his first report as the *Burgomaster*, J.Z. de Villiers mentioned the four most important matters for Johannesburg, of which the first two were a sufficient water supply and better sanitary regulations.⁵¹⁶ The takeover of the Waterworks Company by the Johannesburg Consolidated Investment Company (J.C.I.) in 1895 had brought an improvement for water supply, but it was not enough. On the 1st December 1897, the Raad decided to negotiate with the company about taking over the water supply itself. When the Raad intimated that it might open its own waterworks, the J.C.I. directors agreed to discuss with them. The murder of Woolf Joel⁵¹⁷, the J.C.I. chairman, however, caused the negotiations to be broken off.⁵¹⁸

By 1897, piped water was available in the streets where 164,000 cubic metres a month were utilised to help allay the dust nuisance. The annual expenditure for this purpose was four times the amount allocated to the town's cleansing services and an uphill struggle was being waged for conditions that were more hygienic. Tests on samples from the reservoirs of the Waterworks Company revealed that only half of the

⁵¹⁴ Marais 1961, 135; Ramsden 1985, 48; Lange 2003, 49.

⁵¹⁵ Maud 1938, 44; Shorten 1970, 450.

⁵¹⁶ Report of the Burgomaster and Mr. E. Hancock as Chairman of the Late Gezondheids-Comite for the Year ending 31st December, 1897, 3.

⁵¹⁷ 1864–98. Mining magnate. Nephew of Barney Barnato.

⁵¹⁸ Johannesburg Water Supply 1887 to 1899. MJB, 4/2/71, A548. TAB.

sources delivered water fit for drinking. Dr. T.C. Visser reported that conditions at two of the reservoirs were “simply disgraceful”, while the state of water in the wells was even worse. Analyses in these instances revealed only one sample in nine as safe for human consumption.⁵¹⁹ Dr. Visser also described impure water as the principal cause of the deaths of children in Johannesburg during that year. Of 1,077 deaths recorded, 408 were infants under the age of one. In the following year, the figures were 810 and 340, respectively.⁵²⁰ In Parktown, most house owners had initially to bore for water and had a pump, with water tanks on high trestles, but the township also had its own water supply pumped from a spring and dam near Sans Souci. (See Figure 3.17) From here, the water was pumped to two high water towers standing in Ridge Road. They stood there from about 1897 to 1907, when they were demolished. The water towers were a visible landmark, because Ridge Road was the highest part of that neighbourhood. Sewerage took the form of a bucket system although presumably some residents installed French drains.⁵²¹

New Water Sources for the Town

Since 1894, water had been extracted from the farms Klipriviersoog and Zuurbekom. The latter was situated at the source of the Klip River some 27 kilometres southwest of Johannesburg. In July 1896, Barnato Brothers – as the part of the Johannesburg Waterworks Estate and Exploration Company Ltd. – acquired it. Before they could start to construct the pipeline to Johannesburg, they had, however, to buy out another concession; Emanuel Mendelssohn⁵²² obtained, in June 1897, the right to lay a pipe between Zuurbekom and town. Mendelssohn was willing to change the concession to shares in the company formed to develop Zuurbekom.⁵²³ The *Stadsraad* busied itself during 1897–98 with inquiries about the possible new sources of water supply. During 1897 three new boreholes were sunk in the town area, which all yielded water.⁵²⁴ In 1899 it had definite schemes under consideration, when the South African War broke out and prevented further progress. However, during 1898 the position had been fundamentally improved. In August of that year, the Waterworks Company began pumping water from Zuurbekom, from which an abundant supply of excellent water proved to be permanently obtainable. A considerably larger quantity of water, which could be drunk with distinctly less danger to health, was now available in Johannesburg.⁵²⁵

⁵¹⁹ Health Department, Annual Report, 12–13. In Report of the Burgomaster, Johannesburg, 1897.

⁵²⁰ *Ibid.*, 1–2.

⁵²¹ Leyds 1964, 160; Saul 1992, 23–24.

⁵²² 1850–1910. Newspaper proprietor. Founder of *the Standard*. President of the first Rand Jewish Congregation.

⁵²³ Tempelhoff 2003, 63–64; Mendelssohn 1991b, 85; about the finding of Zuurbekom see Draper 1925.

⁵²⁴ Annual Report of the Public Works Department, Johannesburg, 1897, 13. JARCH 200B, JMA.

⁵²⁵ Maud 1938, 128.

In 1898, temporary pumps were in use at Zuurbekom and by 1899 when the pumping station was completed, the source could provide all the existing needs of Johannesburg. Of importance was the fact that the source provided clear water that under no circumstances was pumped from surface storage reservoirs or dams. Essentially, it appeared as if the proposed Vaal river project would finally be shelved. However, this was not the case. Despite the prospect of an abundant supply of water from Zuurbekom, an engineer, Michael Whitty, in April 1898 explained to the government that the mining industry on the Witwatersrand would soon face severe water shortages. The Vaal River was the only source of water that could possibly provide the need. He let the government know that he was the representative of a group of American and European entrepreneurs who had sufficient resources to take on the projects of this nature. At the time, the Vierfontein Syndicate, a major supplier of water to the industry, provided 23 mines on the Witwatersrand with water. These mines had approximately 2,500 crushing-mills that relied on a liberal supply of water. The prevailing growth trend suggested that more large quantities of water would become essential in the near future.⁵²⁶

In 1898, there was a scheme for collecting waters falling on and running off a small catchment area of eight square kilometres in extent at Vierfontein. A dam construction was started and the foundation was constructed for the 37 metres high Vierfontein Dam, which was most probably the first South African attempt at a large arch dam. However, before it was finished, the syndicate became aware that it would be better to get water from the dolomite formation further to the south, and the dam was not completed.⁵²⁷ At this point, the syndicate engaged Thomas Stewart to make an examination of all the sources within 80 kilometres of Johannesburg. This investigation continued until the beginning of the South African War in October 1899.⁵²⁸

In April 1898, at the time of an apparently revived interest in the Vaal river scheme, the Pretoria-based firm of Lewis & Marks informed the government that they were aware of a dire water shortage developing on the Witwatersrand area. The company requested permission from the government to provide a service with water from the Vaal River. It was prepared to invest money in the project and put up its farms for the development.⁵²⁹ At the time, other propositions were also made to the government, but it appeared as if Lewis & Marks were in the best position to make the project materialise. By June, the company's engineers were busy surveying the route along which the pipeline was to be laid between the Vaal River and Johannesburg.⁵³⁰ Mining circles also showed signs

⁵²⁶ Laburn 1979, 3; Leyds 1964, 54; Tempelhoff 2003, 65.

⁵²⁷ Sancold 1994, 129; Browne 1905, 141; see also 'Visit to Vierfontein Dam' 1898–9; Bonner & Lekgoathi say that the construction was stopped because of the outbreak of the war. Bonner & Lekgoathi 2004, 28.

⁵²⁸ Report of the Witwatersrand Water Supply Commission 1902, 88, 155.

⁵²⁹ A. Crawford, Pretoria to State President and Members of the Executive Council, Pretoria, 30 Apr. 1898. SS7164, 5115/98, 75–76. TAB.

⁵³⁰ A. Crawford, Pretoria to State Secretary, 3 June 1898. SS7164, 5115/98, 83–84. TAB.

of interest. On the 27th May, a delegation of the Chamber of Mines held talks with the government in Pretoria. Earlier the chamber had indicated that the provision of water from any proposed scheme had first to be cost-effective. It was explained that a number of mines were facing imminent closure because of water shortages. The chamber wanted the government to assist them in locating satisfactory resources. By the 8th July an agreement had been reached. For a while, it appeared as if the scheme would go through. The major stakeholders in the project were well focused on their ultimate objective. Unfortunately, Sammy Marks could not get the backing of the Wernher Beit mining house. Because of their stalling, the scheme had to be withdrawn.⁵³¹

Problems with the Waterworks Company

No traveller who arrived in Johannesburg between 1890 and 1900 could have found the town either beautiful or comfortable. Gas and electricity only became available in 1891. Until well into the first decade of the 20th century, drinking water in many areas was still supplied through wells and the disposal of night soil was as primitive as it could be. Most newcomers remarked on both the lack of beauty and the newness of the town.⁵³²

At the outbreak of the South African War, many British subjects were forced to flee Johannesburg, often at very short notice, and under the most arduous conditions. Under these circumstances, many failed to notify the Waterworks Company, which continued to impose the minimum charge for water usage despite the absence of the owners. When the owners returned to their homes, and disputed their obligations to pay, the company argued that in some cases caretakers responsible to the owners used the water. In other cases, the company denied that consumers had given notice to discontinue the provision of the service, when they had in fact done so.⁵³³

In the terms of services, the floods and the lack of potable water were serious problems in Fordsburg. Part of the neighbourhood fell outside the jurisdiction of both the Waterworks Company and the Braamfontein Water Company, while some people could not afford to pay for the service in the areas that fell within the water companies' jurisdiction. During the early 1900s, most of Fordsburg's water came from wells located in dirty yards and polluted by animals. In 1901 the Medical Officer of Health, Dr. Charles Porter reported that from 28 samples of water taken in the area 16 were polluted.⁵³⁴

In 1902, very crowded conditions in the African Location placed a severe strain on water availability. The Africans, finding themselves with no alternative, were using the stagnant pond water, which was unfit for human consumption. The manager of the

⁵³¹ Tempelhoff 2003, 66; Mendelsohn 1991a, 83–84.

⁵³² Lange 2003, 102.

⁵³³ Zangel 2004, 16.

⁵³⁴ Lange 2003, 103-104.

locations appealed to the Medical Officer of Health to provide them with water. The Council decided to allow them to draw water from the pipe, which supplied water to the main municipal compound. Because of an oversight on the part of the Council, no arrangements were put in place for charges to be made for the water, with the result that the Council eventually paid the Waterworks Company for the water. It is interesting to note that whilst no water was available to the residents in the location, in November 1902, 102 cubic metres of water was used for road making, and a further 11,900 cubic metres for street watering.⁵³⁵

The situation with the Waterworks Company was brought to the attention of Major W.A.J. O'Meara⁵³⁶, who was controlling local affairs in Johannesburg after the British conquest in 1901. He was an engineer and became aware that in Johannesburg the supply of water was not satisfactory. O'Meara's "Notes on Proposed reconstruction, Johannesburg Municipality" written in April 1901, observed that the company holding the waterworks monopoly had "raised quite a storm" by its high-handed "actions in the past. It possessed unusual powers over the streets in the town and used meters, which tended to record inaccurately in its favour. That aspect required immediate attention, said O'Meara, but it should be recognised that the springs in the area were inadequate and unreliable. The long-term solution would have to be a regional scheme to bring water for both the towns and mines from the Vaal River. O'Meara was convinced that there had to be a public utility that could act in a responsible manner when it came to providing water to the fastest growing region in Southern Africa. The water supply was also important for another reason. The British command in Transvaal was instructed to ensure that the mining industry could be brought into full operation as soon as possible. Large amounts of water were necessary for extracting the gold from the rock. Consequently, a reliable water supply was of crucial importance. Special attention was given to providing the necessary infrastructure. Some mines could provide for their own needs, but overall there were constant fears that water was in short supply.⁵³⁷

Nominated Town Council

The nominated Town Council, which was created on the 8th May 1901, was given a limited sphere of operation and a few provisional powers directly inherited from the old *Stadsraad*. These were mainly concerned with convenience rather than with the health of the town – with streets, gas, and electricity, as examples. Water was also mentioned, and this was a matter of importance. Hitherto the town had been obliged to rely on the

⁵³⁵ Zangel 2004, 172–73.

⁵³⁶ 1863–1939. Acting Mayor 1900–1903. Chief Engineer of the British Post Office 1907–22.

⁵³⁷ Mandy 1984, 24; Tempelhoff 2003, 72.

ambitious scale. In short, the Council was given the power and duty to plan and develop the town, but policing and education were left in the hands of the central government of the Transvaal.⁵³⁸

The Town Council soon appointed its committees. Water and sanitation issues belonged to the Engineer's Department, which went under the supervision of the Works Committee. The clearance of the insanitary area, the development of electricity and transport undertakings, and the initiation of a sewerage scheme, however, would have put too much strain on this committee. Therefore, in 1902, a new committee was constituted, and in 1904, this was divided into two committees, the Tramway and Lighting Committee and the Parks and Estates Committee. Water wandered for some time from one committee to another, until 1910, it found a companion in the fire brigade.⁵³⁹ One question demanding the earliest attention of the Council was that of municipal area. Discussions were going on about the enlargement of the area of the Johannesburg by including, for instance, mining areas on the southern side of Witwatersrand. Lionel Curtis⁵⁴⁰, acting Town Clerk, made a memorandum and this led to discussions between the Town Council, the Chamber of Mines, which was against the enlargement, and the central government. Water, sanitation, and drainage issues were important in these discussions. Mining companies had to give up in the end. The central portion of Johannesburg, included under the jurisdiction of the *Stadsraad*, was about 13 square kilometres, and this was increased in 1901 to approximately 205.⁵⁴¹ (See Figure 3.20) In 1906, the area was increased by another seven square kilometres by including the area of Klipspruit sewerage works and the neighbouring black township.⁵⁴² The Municipal Corporations Ordinance of 1903 removed the appointed town councils and health boards in Transvaal and established 11 elected municipal councils in their place.⁵⁴³

Commission to Inspect the Water Resources

In 1901 the price charged by the Waterworks Company, though lower than it had been, was still high; and the estimated daily consumption at that time was only 55 litres per head. The mining companies had hitherto made their own arrangements for getting water, which was indispensable for their operations, by the construction of a number of

⁵³⁸ Maud 1938, 57–58; Ramsden 1985, 48; Beavon 2004, 72.

⁵³⁹ Maud 1938, 231–32.

⁵⁴⁰ 1872–1955. Secretary of Lord Milner 1900–1901. Town Clerk 1901–03. Assistant Colonial Secretary of Transvaal 1903–07. Member of the nominated Legislative Council of Transvaal 1907–09.

⁵⁴¹ By the inclusion of Mayfair, Parktown, Berea, Yeoville, Bellevue, Judith's Paarl, Lorentzville and Bertraux.

⁵⁴² Report on the Work of the Town Council for the Period from May 8th 1901, to the 30th June, 1903, 6; Curtis 1951, 257–314; Johannesburg 1986, 280.

⁵⁴³ Green 1957, 72; Councils were established in Johannesburg, Pretoria, Potchefstroom, Boksburg, Germiston, Heidelberg, Klerksdorp, Krugersdorp, Middelburg, Pietersburg and Standerton.

dams. Consultations now took place between the Chamber of Mines and the nominated Town Council. In September 1901, the Council made a suggestion to the Transvaal government that a new public body should be created, the representative of the mining interests and the Rand municipalities, to provide the constituent authorities with a bulk supply of water at cost. In principle this suggestion was a development of the ideas, which had been expressed by the 1895 commission of inquiry. Consequently, on the 4th November 1901 the Transvaal military government appointed the Witwatersrand Water Supply Commission.⁵⁴⁴ The Commission had instructions to investigate specific issues. It had to report on the available sources of water on the Witwatersrand and make proposals as to how an unfailing water supply for the towns and mining operations on the “Reef” could be provided. Special attention had to be given to future water requirements. The Commission also had to consider the potential establishment of a public body to take the responsibility of supplying the Witwatersrand with water. On the 26th February 1902, the Commission reported in favour of the Council’s plan.⁵⁴⁵ The government appointed a committee, which included the members of the Council and of the Chamber of Mines, and which settled further details later that year.⁵⁴⁶

The Commission clarified a number of issues. An authority responsible for the supply of water had to focus on the regional dynamics of the Witwatersrand.⁵⁴⁷ The gold and water literally determined the future region. Admittedly, Johannesburg was the major point of growth, but the Witwatersrand, spanning a geographical region from east to west, shared one major common denominator – the gold mining industry. However, the successful mining of gold was subject to the availability of water. It thus made sense to the Commission that the envisaged water undertaking had to be a regional institution providing water to the Witwatersrand, from Randfontein to Springs.⁵⁴⁸ There were two schools of thought in evidence presented to the Commission on the Vaal River. A leading engineer told the Commission that the Vaal River was suitable for damming. He did have reservations on technical grounds. Another engineer was more positive. He even worked out a scheme to pump water uphill to the Witwatersrand from two places near Vereeniging. In its final report, the Commission was critical of the Vaal River. The members gave preference to the customary extraction of water from available sub-surface dolomite areas. Not even a guarantee by the supporters of the Vaal River scheme that the river could provide c. 136,000 cubic metres of water at a relatively cheap price could change the Commission’s mind.⁵⁴⁹ One consideration that also made the Vaal

⁵⁴⁴ Maud 1938, 128; Tempelhoff 2003, 72.

⁵⁴⁵ Memorandum. Witwatersrand Water Supply. GOV, 112, GEN244/02. TAB.

⁵⁴⁶ Chamber of Mines, Report 1902, 106.

⁵⁴⁷ Report of the sub-committee appointed to draft and ordinance conferring borrowing power on the Rand Water Board. J. St. John Carr, Johannesburg 27 Apr. 1904. LTG, 73, 80/12, 3. TAB.

⁵⁴⁸ Tempelhoff 2003, 73–74.

⁵⁴⁹ Report of the Witwatersrand Water Supply Commission 1902, vii-xii.

River scheme unattractive at the time was that public water utility for the Witwatersrand had to be established within the framework of the region's existing water infrastructure. In 1902, the existing water resources, operated by a number of private companies, could provide c. 64,000 cubic metres of water daily. Anticipation was that a need for additional sources would only arise by 1908. Preliminary projections set the population at 280,000. The British authorities were intent on addressing the growing need for water in a consolidated manner.⁵⁵⁰

The government agreed in June 1902 to the appointment of consulting engineers from Britain to investigate the proposed water supply for the colony. The consultants had to be experts in the field of water supply engineering.⁵⁵¹ In particular, they had to be familiar with the London Water Authority. The proposed Witwatersrand water supply utility would then have a role model. The conditions in the interior of South Africa were different to those in Britain and so local expertise had to be made available to the consultants.⁵⁵² In 1903, shortly after the Rand Water Board started its operations, the firm of Middleton, Hunter & Duff of London were appointed to undertake the consultancy. The report was completed in April 1904. In this report, the Vaal River again failed to feature prominently. The major problem now was that, because the river at Standerton was situated too far from Johannesburg, the pumping costs would be too high. It was pointed out that the water had to be pumped uphill. The experts were also concerned about the high concentrations of silt washing down the river during the flooding season and its shallowness in areas where reservoirs could be built.⁵⁵³

3.4.5 The Time of the Rand Water Board

In this Chapter, the development of water supply in Johannesburg will be examined from the establishment of the Rand Water Board to the decision to build the Vaal Barrage. Attention is paid to the division of the properties of the older companies between the Board and Johannesburg. The extension of the supply area of Johannesburg municipality is also examined. Most of the Chapter concentrates on the developments that led to the Vaal River as Witwatersrand's water supply source.

⁵⁵⁰ Memorandum of Witwatersrand water supply, W.E. Davidson, 28 Apr. 1902. GOV, 112, GEN244/02. TAB.

⁵⁵¹ Copy of executive council resolution, 15 July 1902. GOV, 112, GEN244/02. TAB.

⁵⁵² Secretary of State, London to Governor, Johannesburg, 13 June 1903. LTG, 73, 80/12. TAB.

⁵⁵³ Tempelhoff 2003, 76; Tempelhoff 2001, 252.

Mining Companies and the Establishment of the Rand Water Board

The government decided to create a co-ordinated water supply for the Rand by taking over the various private suppliers of water and by placing them under a single public authority. The issue was of great importance to the mining industry, as this was so dependent on an ample supply of water that the mining houses had gained the control of all the major local water sources. It was estimated that the mining industry was likely to consume four fifths of the Rand's water supply. Some mining houses, and in particular Robinson's, flatly opposed the scheme, fearing that an integrated water scheme would raise the cost of water. However, other mining houses were more pragmatic, and were prepared to make concessions on the issue. Under their influence, the Chamber of Mines did not ultimately oppose the scheme and concentrated its efforts into capturing the control of the new Water Board. It proposed that the mining industry be represented on the Water Board in the proportion to its consumption of water. The Johannesburg Town Council, however, wanted the Rand's town councils and the mining industry to have an equal representation on the Board, under a neutral chairman. This was utterly rejected by Robinson's, which did not want the Johannesburg Town Council to have any powers over anything affecting the interests of the mining industry. When the Government appointed a committee to settle the issue of representation, Robinson's mining house dismissed the committee as a façade because the Government had already made a decision. This cynicism seemed to be justified when in due course the Government allocated representation on the Water Board exactly on the lines the Town Council proposed. Though Robinson's tried once more to whip up opposition to this decision, and even threatened to leave the Chamber over the issue, the Chamber resolved once more to accept the Government's decision.⁵⁵⁴

An ordinance, establishing the Rand Water Board, was passed by the legislature in 1903. The Board contained the representatives of the municipalities and of the mines in equal numbers, with a chairman appointed by the government. Three of the five municipal members represented Johannesburg; East and West Rand appointed the other two. At the time of the establishment of Rand Water Board, the public water supply in Johannesburg was obtained from two companies, the Johannesburg Waterworks Estate and Exploration Company and the Braamfontein Estate Company. The main source utilised by the former concern was six deep wells at Zuurbekom. Water from these as well as a supply from a spring and uplands at Weltevreden was brought to a reservoir at Paarlshoop, 6 kilometres west of Johannesburg. From there supplies were pumped to

⁵⁵⁴ Chamber of Mines, 1904, 193–99; Mawby 2001, 292–93.



Picture 3.18. Old pump house at Zuurbekom. (Photo: Petri Juuti)

the high and low level service reservoirs at Yeoville and Doornfontein respectively. The latter company, which supplied Parktown, drew its needs from a large well in Auckland Park; from there water was pumped to the onion-shaped reservoir on Ridge Road. For the most part, the mines supplied their own water, which was collected in dams.⁵⁵⁵

Initially the Rand Water Board management operated on the assumption that it would be possible to provide water from these existing sources in and around Johannesburg. Among these, Zuurbekom, a natural underground reservoir of water, supplying as much as 34,000 cubic metres of water per day since 1898, was the major source. (See picture 3.18) It was situated southwest of central Johannesburg in the corner of a catchment area of 468 square kilometres. It had been said that the establishment of the Board saved these underground water sources, because if the water supply had remained in the hands of the separate municipalities and mining groups, they would have drawn their supplies unchecked. This natural reservoir, however, was now regulated by the state.⁵⁵⁶

⁵⁵⁵ Maud 1938, 129; Tempelhoff 2003, 73; Shorten 1970, 571; Cartwright 1965, 191; Laburn 1970, 4–5.

⁵⁵⁶ Tempelhoff 2001, 252; Laburn 1979, 4; Worsfold 1913, 126.

The First Years of the Rand Water Board

In 1905, the Rand Water Board finally assumed the ownership of the earlier concessions. The principle of expropriating the private water-concerns involved the Rand Water Board in an expenditure of nearly 2,300,000 pounds. The three companies that had to be bought out – the Johannesburg Waterworks Company, the Vierfontein Syndicate, and the Braamfontein Company – claimed between them a purchase price of over 4,700,000 pounds. The Board therefore could not negotiate an agreement by mutual consent, and the question was fought out in an arbitration court. J.H. Balfour Browne made an implication that the slow progress of the matter was a deliberate tactic from the companies.⁵⁵⁷ The Board got the control over water sources, which could produce some 11,000 cubic metres a day in April 1905. The Johannesburg Waterworks Company's reservoirs and distribution system were handed over to the Town Council, the Board retaining the control of the pumping stations at Zuurbekom and Paarlshoop, the rising main from Zuurbekom to Yeoville, and the wells and pumping plant at New Doornfontein and Staib Street. With regard to the Braamfontein Company, there were two rising mains from the engine house at Parktown to the reservoirs; the latter had been handed over to the Town Council, the Board retaining only the pumping station and the rising main. The pumping station proved to be very costly to operate and it was abandoned in 1914. The Vierfontein Syndicate had a pumping station on the Klip River at Olifantsvlei, with a pipeline delivering water over Turffontein Nek into a dam at Booyens. These were not in a condition to yield an appreciable supply of water and the pumping was discontinued in 1907. Weltevreden station was closed in 1905.⁵⁵⁸

The future problems with supply could already been seen at that time:

*Not only is water a necessity in a place where the roads get up and blow in your face, in a country where it is always sunshine, and where the sanitary arrangements would be greatly improved by water-carriage of refuse and proper sewage disposal, but water is as essential to the mines as labour is. Even now, the mines will require for use something like 54,000 m³ of water a day, and that demand, both for mines and for domestic purposes, will go on increasing. The position of Johannesburg also makes the problem of water-supply a very difficult one. All the water that is supplied has to be pumped. It is not possible here to make large storage reservoirs and to allow the water to run down to the town.*⁵⁵⁹

The price for water was cheaper than any price charged in Johannesburg before. All the constituent authorities were charged at a uniform rate, which was sufficient, in the board's estimation, to cover the loan charges as well as the cost of delivering the water to the purchasing authorities. Soon afterwards, the price was reduced with a

⁵⁵⁷ Browne 1905, 208–209.

⁵⁵⁸ Mason 1925, 8–10; Laburn 1979, 6.

⁵⁵⁹ Browne 1905, 142–43.

rebate to large consumers; and in 1906, it was brought down again. On the face of it, this progressive reduction of price was satisfactory to the purchasers, and it seemed to justify the board's existence. Unfortunately, other results were less pleasing, at any rate to the Johannesburg Town Council. At the end of four years, the board was selling little more than 13,600 cubic metres a day, of which the mines were buying less than one-fifth. As all the authorities concerned were charged at a uniform rate, the proportion of loan charges borne by each authority corresponded exactly to the proportion of the total water consumption that each consumed. This meant that while the mines were only paying some 20 per cent, of the total loan charges of the Rand Water Board, the municipalities were paying 80 per cent, and almost the whole of this was being paid by Johannesburg. The Board could hardly have been expected to foresee this result. In evidence before the commission in 1902, the Chamber of Mines had stated that by 1908 the industry would need 91,000 cubic metres a day, in addition to the water it could obtain itself. The Town Council, assuming that by 1906 the population of Johannesburg would have reached 280,000, of which 200,000 would be Whites, had estimated that about that time it would be needing 86,500 cubic metres a day. Fortunately, these guesses proved to be extremely over estimated for by 1908 the total available resources of water were barely 36,000 cubic metres a day. What seriously upset the calculations was that in 1909, instead of taking rather more water than the municipalities the mines were taking less than half as much. Clearly, the method of charging for water had to be drastically altered, if the injustice from which the municipalities were suffering was to be corrected. An act was accordingly passed by the Transvaal legislature in 1909. This enabled the board to divide the burden of all the fixed charges between the municipalities and the mines in equal shares, regardless of the amount of water purchased, and to charge a uniform rate for water actually taken which was only sufficient to cover working costs. By 1908, the Rand Water Board's sources of supply to Johannesburg were as follows: two unused wells at Milner Park, a well at the Staib street depot of the board and three boreholes at New Doornfontein. The rest of the water was drawn from Zwartkopjes and neighbouring properties in the Klip river valley, in addition to Zuurbekom.⁵⁶⁰

Extending the Service Area to the Suburbs

In 1903, most of the White residents of both Vrededorp and Fordsburg obtained their water still from wells, which were sunk in soil that was constantly seriously polluted with slops, and which did not have any adequate protection from additional contaminated effluent flowing into them during the rains. Many of the residents were unable to afford

⁵⁶⁰ Maud 1938, 130–32; Tempelhoff 2003, 94–95.

the costs of private water pipes leading from the mains as supplied by the Johannesburg Waterworks Company. Thus, on the occasions when the residents were ordered to close their wells by the Council, they had no alternative but to draw on water from neighbour's wells, many of which were as contaminated as their own.⁵⁶¹

*There were some taps from which we were sometimes able to get water, but this was often in short supply. We were mostly dependent upon wells from which we drew water in a bucket by windlass [...] If the yards were small, the water was often polluted by the close proximity of a pit-lavatory. Dysentery, fever and even small-pox were prevalent and as time passed, so the yellow small-pox warning flags increased.*⁵⁶²

The result of the use of the contaminated water was the recurrence of typhoid fever. There were 40 reports in Fordsburg and 11 in Vrededorp between November 1902 and February 1903. Of the Fordsburg cases, 18 had obtained their water from shallow wells, whilst all the sufferers in Vrededorp were supplied from these sources. The Medical Officer of Health recommended that an additional 25 standpipes be supplied to Fordsburg, and 14 to Vrededorp.⁵⁶³ Correspondence with the Waterworks Company ensued, with the result being that the company was not prepared to lay mains to the area, despite having committed to the project in 1901. The number of the cases of typhoid fever continued to rise, and most continued to be attributed to the use of contaminated water. Eventually the Council decided to lay the water to the area themselves, and to purchase the water in bulk from the Waterworks Company. By the end of 1903, several streets in Fordsburg received water from the Rand Water Board.⁵⁶⁴ Ophirton and Booyens were residential areas occupied by working-class residents. By 1904, water was still not piped to these areas. The Johannesburg Waterworks Company was approached in respect of this matter, and stated that they were prepared to supply the Council with water in bulk at the termination of their present mains, which were situated opposite the Robinson Deep property. Water pipes were laid from this point to others, where the Council provided water tanks. Water vans were used to take the water from there to the individual consumers. Each consumer was allocated a daily allowance of 246 litres.⁵⁶⁵

On the 31st March 1905, the Town Council took over the water distribution systems within the municipal area. With this, the Council also inherited several serious problems needing attention. The reticulation was greatly improved and many old and defective mains were taken up and replaced. The important question was the principle upon which the extensions were to be made to new districts not yet connected to the distribution system. The problem was complicated by a considerable distance of many of the

⁵⁶¹ Johannesburg Health Committee Minutes, 24 Mar. 1903. MJB, 1/4/5. TAB.

⁵⁶² Ralls and Gordon 1975, 34.

⁵⁶³ Johannesburg Health Committee Minutes, 24 Mar. 1903. MJB, 1/4/5. TAB.

⁵⁶⁴ Johannesburg Health Committee Minutes, 31 Mar. 1903. MJB, 1/4/5. TAB.

⁵⁶⁵ Johannesburg Health Committee Minutes, 23 June. 1904. MJB, 1/4/9. TAB.

recently formed townships from the centre of the town. The problem was that only a very limited amount of money existed for extensions and applications were received from many districts calling for an instant supply. The only solution for the Town Council was to ask the Legislative Council to give them the power to levy a special rate in districts to which the water system was to be extended.⁵⁶⁶ Melville and Auckland Park presented their own special difficulties, due mainly to the rough and irregular nature of much of the ground. In some instances, this meant that the water tank could not reach certain houses. The Council granted a monetary concession to these residents. The remainder were required to install tanks at their homes, each tank to hold 234 litres of water, and located in a position to allow easy access by the water van for the purposes of filling them.⁵⁶⁷

In 1906, there were problems with the Braamfontein wells. During the early months, the bacterial findings led Dr. Charles Porter, the Medical Officer of Health, to condemn the water as unhealthy. As a result, from the middle of April the Parktown supply was drawn from the Yeoville Reservoir.⁵⁶⁸ The next year in a Committee hearing, Dr. Porter said that he had never seen a properly lined well in South Africa.⁵⁶⁹ Another big problem was with No. 1 Reservoir in Berea. Under the reservoir, there were a number of springs, which broke through the floor and walls causing a considerable leakage. The concrete bottom had to be renewed, and the whole reservoir made watertight by covering it with brick. Drainpipes were laid under the concrete to collect the water from the springs and led it to a new tank constructed at a lower level. This water was used for street watering nearby.⁵⁷⁰

In December 1906, the commission was appointed to inspect a scheme to supply water to the North-Western suburbs.⁵⁷¹ There was some resistance amongst standholders in the area but the commission did not accept this. In report, commissioners wrote, "Any one is entitled to risk his own health; no one is entitled to risk the health of his neighbour; and the man who insists upon drinking water which is or is likely to become loaded with germs of infectious diseases does risk the health of his neighbour". According to the commission and Dr. Porter there just were too many surface wells in the area. Anyway, the commission recommended the exclusion of Auckland Park, Braamfontein Werf, Sunnyside, and Burnbrae from the scheme.⁵⁷²

⁵⁶⁶ Mayor's Minute, Johannesburg, 1905, 11–12; Grant & Flinn 1992, 118.

⁵⁶⁷ Johannesburg Health Committee Minutes, 23 June 1904. MJB, 1/4/9. TAB.

⁵⁶⁸ Report of the Medical Officer of Health. In Mayor's Minute, Johannesburg, 1906, 119–20.

⁵⁶⁹ North-Western Suburbs Water Supply Commission. Evidence. January 7th and 8th 1907, 85. TPB, 189, 571. TAB.

⁵⁷⁰ Annual Report of the Town Engineer. In Mayor's Minute, Johannesburg, 1906, 26.

⁵⁷¹ Auckland Park, Melville, Richmond, Sunnyside, Burnbrae, Braamfontein Werf, and Brixton.

⁵⁷² Report of the North Western Suburbs Water Commission, 4–5. TPB, 189, 571. TAB.

The extension of the supplied area was growing in the early 20th century. In 1908, mains were laid in Bezuidenhout Valley, Bellevue East, Johannesburg, Jeppe, Kensington, Malvern, North Western Suburbs, Parktown, Parkview, Regents Park, Rosettenville, Rosettenville Extension, and Vrededorp. A new covered reservoir was also built at Brixton holding c. 5,700 cubic metres. All the North Western Suburbs, Vrededorp, and Fordsburg were supplied from this reservoir.⁵⁷³ In 1910 schemes for the reticulation of Regents Park, Forest Town, Parkview, Malvern, Oaklands, Gardens, Orchards, Norwood, and the portions of Orange Groove and Mountain View were prepared.⁵⁷⁴ In 1912, all the North-Eastern Suburbs were supplied with water. In 1911, an estimate was prepared for the construction of a new reservoir at Yeoville. The large storage accommodation, however, was not considered advisable at that point, and, subsequently, the walls of the existing reservoir were raised and the reservoir lined with waterproof sheeting and brickwork.⁵⁷⁵ A new high-level tank was finally completed in February 1914. The tank was in the form of a sphere, with a diameter of about five metres and a capacity of 230 cubic metres. The bottom of the tank was 25 metres above the ground level.⁵⁷⁶

The Vaal Barrage

When the Witwatersrand's daily consumption of water rose to c. 11,400 cubic metres in 1905, the demand could still be met. More boreholes were simply sunk at the Zwartkopjes pumping station in the Klip River (See picture 3.19) as recommended by D.C. Leitch⁵⁷⁷, the Rand Water Board's Chief Engineer.⁵⁷⁸ Water was pumped into a reservoir on the Turffontein Nek and from there gravitated to a reservoir at Simmer and Jack and to a central pumping station at Village Main. From there water was again repumped to the Yeoville reservoir. Zwartkopjes' supply, however, started dwindling soon, from c. 25,000 cubic metres a day towards the end of the rainy season, to c. 6,000 cubic metres in the spring and early summer. In a desperate attempt to locate sufficient supplies, no less than 20 shafts and boreholes were sunk into the dolomite formation at Zwartkopjes. It all provided futile. By 1909, the water situation had changed considerably. The mining companies, after the passing of the Further Powers Act of 1909, required more water from the Board. They had been obliged to pay a proportionate share of the fixed charges of the Board's stock irrespective of the quantity of water that they used. The companies now found it convenient to take the advantage of the water supply service. Consequently,

⁵⁷³ Annual Report of the Town Engineer. In Mayor's Minute, Johannesburg, 1908, 20.

⁵⁷⁴ Annual Report of the Town Engineer. In Mayor's Minute, Johannesburg, 1910, 31.

⁵⁷⁵ Annual Report of the Town Engineer. In Mayor's Minute, Johannesburg, 1912, 32.

⁵⁷⁶ Annual Report of the Town Engineer. In Mayor's Minute, Johannesburg, 1914, 31.

⁵⁷⁷ Town Engineer 1902–05. Chief Engineer of the Rand Water Board 1903–10.

⁵⁷⁸ Preliminary Report on Water Supply to the Rand. MJB, 4/2/71, A548. TAB.



Picture 3.19. Old well in Zwartkopjes area. (Photo: Petri Juuti)

the consumption rose substantially. A severe drought of 1910 prompted the board to take steps to locate water supplies that were more reliable beyond the existing water catchment areas.⁵⁷⁹

It was not surprising that the Johannesburg Town Council passed a resolution, in the course of 1911, proposing the abolition of the Rand Water Board. However, that action did little to avert the crisis. The position was temporarily saved by the Zuurbekom, which eventually proved capable of producing some 34,000 cubic metres of water a day. Nevertheless, permanent solution could not be found until some new catchment area was developed on a larger scale. In 1913, there was again a shortage of water in Johannesburg. On several occasions, the supply to the town had to be curtailed because the Board had not sufficient water to meet the demands of the municipalities and the mines. According to the Mayor, there were two specific reasons why the secure supply was essential: fire protection and the waterborne sewerage. The Council was expressing that an additional water supply of at least 45,000 cubic metres per day was necessary.⁵⁸⁰ It was also feared that unless the rain seasons for the next few years were heavier the

⁵⁷⁹ Rand Water Board 1953, 11–12; Tempelhoff 2001, 252–53; Laburn 1970, 19.

⁵⁸⁰ Mayor's Minute, Johannesburg, 1913, x.

supply from existing underground sources would continue to decrease.⁵⁸¹ In view of the fact that the Rand's water supplies were declining, William Ingham⁵⁸², the new Chief Engineer of the Rand Water Board, was instructed early in 1911 to investigate the most suitable water catchments within a radius of 80 kilometres of Johannesburg. The objective was to find a new scheme of supply. In the press, the matter was described as an issue requiring great urgency due to the growth in the mining sector, the railway network, and the number of municipalities on the Witwatersrand. Johannesburg's town councillors were aware that the existing dolomite water storage facilities would be exhausted if drought conditions persisted. In addition, the ratepayers of the town expressed a strong desire for a sustained and reliable water supply.⁵⁸³

Ingham's investigations were extensive; as many as 21 different schemes were under consideration. The most important were Kuilfontein on the Zuikerboschrand River; the Mount Arabel Scheme, situated on a site just below the confluence of the Zuikerboschrand River and the Blesbokspruit; the Koppiesfontein scheme 75 kilometres upstream from Vereeniging in the Vaal River; and the Lindeque's Drift Scheme, below Vereeniging in the Vaal River. By 1913, it was apparent that the proposed Lindeque's Drift Scheme offered the best prospects. The catchment area of the dam was estimated to be near 31,600 square kilometres. The officials of the Department of Irrigation calculated that the scheme could yield as much as 1,900 cubic metres of water daily. The riparian landowners posed a major problem. They could only accommodate the water scheme as long as their land on the banks of the river was not swallowed up. Consequently, it was at first suggested that only a ten metres high wall be constructed to contain the required volume of water. Meanwhile, behind the scenes intensive negotiations continued. In exchange for the Barrage to be constructed at Lindeque's Drift, Vereeniging Estates offered the Rand Water Board a number of valuable facilities. These included free land for pumping sites, a cheap supply of coal, and the free grant of any company land necessary to fill the proposed Barrage area.⁵⁸⁴

The proposed Vaal River Scheme was approved at a special meeting of the Rand Water Board on the 26th September 1913. Acting on the proposals of a report submitted ten days earlier, the board agreed to the construction of a storage facility at Lindeque's Drift. (See Figure 3.21) The anticipated daily consumption of water from the Vaal River Scheme was set at 40,500 cubic metres, with a maximum of 80,000 at the Barrage

⁵⁸¹ Notes on the Rand Water Board and the Water Supply of the Rand, 18 Sep. 1912, 15. PM, 1/1/270, PM/139/2/1912. SAB.

⁵⁸² 1867–1924. Carried out water supply scheme for Port Elizabeth in 1903–07. Resident engineer on the Smartt Syndicate irrigation works 1909–10. Chief Engineer of the Rand Water Board 1910–24. As consultant, his clients included, for instance, Durban and East London.

⁵⁸³ Tempelhoff 2003, 101–02.

⁵⁸⁴ Maud 1938, 132–33; Laburn 1979, 11–12; Tempelhoff 2001, 254–55.

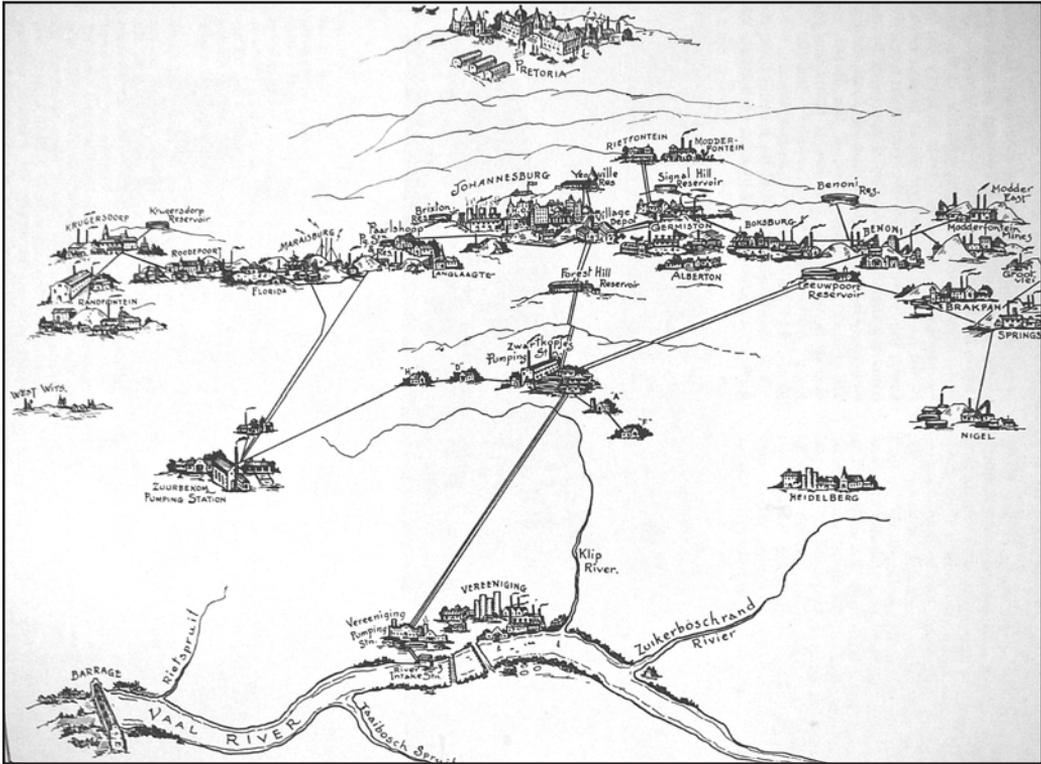


Figure 3.21. Area served by the Rand Water Board in 1930. (Macmillan 1936, 27)

site. Ingham visited water purification plants in Great Britain and Egypt in 1914. He also inspected the Aswan dam and several other barrages on the Nile River. The plans, however, were soon changed. Because of the increased demand, the Board decided in 1915 to develop further the potential for the storage of temporary water supplies. In March 1916, the Board approved a recommendation to increase the capacity of the Vaal River Scheme by 22,700 cubic metres per day. Until 1916 the First World War, however, prevented even a start from being made with the construction of a barrage, and the work could not be finished before 1923. While the barrage was under construction, a river intake station and main pumping plant were erected at Vereeniging.⁵⁸⁵

⁵⁸⁵ Mayor's Minute, Johannesburg, 1916, xv-xvi; Tempelhoff 2001, 256; Laburn 1970, 21; Maud 1938, 133; Leigh 1968, 73.

3.4.6 Water Supply without Municipal Control

Throughout the development of the water supply of Johannesburg, two main struggles can be seen in the late 19th century. There was the struggle over the control of water supply between the private concessionaires and the local authorities. The second struggle was in finding reliable sources with sufficient capacity for supplying the rapidly growing mining town.

The first struggle is also connected to the development of Johannesburg's municipal position. The government of the South African Republic at first considered Johannesburg only as a temporary mining camp, which would vanish when all the gold has been dug away. It was not until 1897 that Johannesburg got the official status of the municipality. During ten years of its existence, a Sanitary Board with quite limited powers governed Johannesburg. One missing power was the control over water supply, which was given away as a concession by the government in 1887. The Johannesburg Waterworks Estate and Exploration Company had a determining control of Johannesburg's water supply for over 15 years. It, however, did not have a monopoly, there were competing companies and schemes. The most important of these was the Braamfontein Water Company, which managed to corner itself a space in the northwestern suburbs of Johannesburg. The other competitor was the Vierfontein Syndicate, which was mostly supplying water to the mining companies. There were also other plans; most of them seem to have been more or less business-oriented ventures. You could even say that some of them were started only for to get the Johannesburg Waterworks Company to buy the competitors out of the market. The resistance of the government, local people using the water, or the Waterworks Company overthrew a couple of more serious plans.

The Sanitary Board had at times plans to start their own supply but these were never realised either because of the lack of money and power or because at the final stage the Government refused them. The Sanitary Board was in a difficult situation because it did not have any control over the Waterworks Company, it could only make proposals to the company hoping that they would be taken into the consideration. When Johannesburg got a *Stadsraad* in 1897 there was at first some hopes for a change in the situation. The Raad had more power than the Sanitary Board and it started negotiations with the Waterworks Company about taking over the water supply. It was only due to the unfortunate murder of the chairman of J.C.I., which owned the control of the Waterworks Company, that these negotiations ended.

Real change happened after the South African War (1899–1902) and the resulting British takeover. The new regime realised that the whole water supply system of the Witwatersrand area had to be reorganised. Economic interests were looming very

prominently behind this. The result was the establishment of the Rand Water Board as a bulk supplier for the municipalities and the mining companies. It took over the properties of the earlier water companies but gave reservoirs and distribution mains inside the municipal area to Johannesburg. From now on, Johannesburg could itself supply the water for the residents and decide how the network was developed.

The other struggle, from where to supply Johannesburg, also took sometime to solve. At first Johannesburg was supplied from local streams and wells but these soon became polluted. The Johannesburg Waterworks Company built reservoirs inside the town area and collected water from springs to reservoirs for distribution. Nevertheless, nearly from the beginning it was clear that a better source had to be found. Various schemes were investigated during the late 1880s and 1890s. The Vaal River was already mentioned as one possibility in 1889. Other early possibilities were the Klip River, Vierfontein, and Wonderfontein, but for various reasons none of these was realised at the time. The first important source that was used was Zuurbekom, pumping was started in 1898 and it was soon realised that it could satisfy all the needs of Johannesburg. In the early 20th century, the boreholes in Zwartkopjes augmented the supply but this supply started soon to dwindle. The population in the whole Witwatersrand area was increasing and other areas became supplied by the Rand Water Board. This combined with the growing needs of the mining companies and the drought of 1910 caused a crisis in water supply and made Johannesburg Town Council propose the abolition of the Board. The Board started extensive investigations for the suitable new sources in 1911. After two years and over 20 different schemes, the Vaal River was chosen in 1913. The construction, however, could only be started in 1916, mainly due to the First World War, and the Vaal Barrage was finished only in 1923. After that, the bulk of Johannesburg's water had come from the Vaal River.

3.5 Key Findings concerning Water Supply⁵⁸⁶

Considering the development of the water supply in the four cases, we have at first to understand that Johannesburg is a special case. It differs considerably from the other towns because it was established later and its growth was phenomenal, even on a global scale. Nevertheless, you can compare its development with the other cases, at least in the sense that in Johannesburg people had the knowledge from experience of previous developments. Still there was a very big difference in the sense that in Johannesburg water supply was at first under a private concession. This was totally in line with the normal policy of the South African Republic: to make concessions to get money for the government. There was, however, also the common presumption that Johannesburg would vanish as happened to so many other places where gold had previously been discovered. It is arguable that for the government the concession was the easiest way of trying to solve the water supply problem in Johannesburg. The town was just a mining camp so why to create heavy administrative or municipal structure.

In other cases water supply developed as a municipal enterprise, although in all of them the option of private concession was discussed or even established for a while. In Cape Town, the Water Company was formed in 1847 but it did not get the trust of the residents and proved to be a failure. In the 1850s, it was still under discussion if water supply should be taken away from the Board of Commissioners and a separate board established to control it, but these plans were never realised. The last attempt for a private company in Cape Town was the Table Mountain Water Supply Company that bought the rights to develop waters on Table Mountain in the early 1880s. The company existed in paper for some years but never managed to do anything and finally in 1887 it sold the rights back to Cape Town. In the 1860s, the option of a private company was discussed in both Durban and Grahamstown. In Durban, a report was made in 1861 about the Umgeni River as a source for water supply. The Town Council found the plan too expensive and the Mayor in his Minutes hoped that a private company could realise this plan. In Grahamstown, the public company was discussed in the Town Council meeting in 1865, after the need for the augmentation of water supply had become obvious. The Councillor presenting the idea even cited some English precedents. The majority of the Council, however, did not think that a private company was needed. After this in both cases, the option of establishing a private company did not proceed.

⁵⁸⁶ There are two tables in this chapter. In table 3, the important episodes, laws, administrative decisions and reports connected to water supply in case cities are listed. Table 4 contains the development of reservoirs and water schemes in case cities.

Table 3. The major episodes of water supply in case cities, 1836–1919.

	Cape Town	Grahamstown	Durban	Johannesburg	Legislations
1836		Municipality			
1840	Municipality; smallpox				
1850		Superintendent of Water			
1854	First Town Engineer		Borough of Durban created; first Mayor		
1859	Cape Town Water Supply Bill	First City Engineer			
1861	Parliamentary select committee to investigate water supply		First Inspector of Nuisances		
1862		First Mayor and the Corporation			
1863		Sanitary regulations			
1864					Cape of Good Hope Municipalities Act
1867	Cape Town municipal council act; First Mayor, Town Council	Sanitary Inspector appointed			
1870	Street keepers				
1874			First Medical Officer of Health		
1881	John Gamble's report on Cape Town water supply				
1882	Table Mountain Water Supply Bill		First Borough Engineer appointed		Cape Municipalities Act
1883	First Medical Officer of Health		Barnes' report on water supply		Public Health Act of the Cape Colony
1884			Durban Corporation Waterworks Law		
1885		Slaai Kraal Scheme accepted			
1886				Birth of Johannesburg; Diggers Committee	
1887	Cape Town and Wynberg Water Supply Bills; First Sanitary Engineer			Sanitary inspector, district surgeon and full-time secretary; Sanitary Board; Water concession granted	

	Cape Town	Grahamstown	Durban	Johannesburg	Legislations
1888				Johannesburg Waterworks and Exploration Company	
1889	Cape Town District Waterworks Company formed		John Fletcher appointed as a Borough Engineer	Barnato takes over waterworks company; First town engineer	
1890			Fletcher's report on water supply	First election of Sanitary Board	
1891					Natal Municipal Law
1892				Braamfontein Water Company	
1893	Cape Town Municipality Act			Water committee formed; Vierfontein Syndicate founded	First medical officer of health for the Cape Colony
1894				First Medical Officer of Health; <i>Volksraad's</i> commission on water supply	Public Health Bill of the Cape Colony
1895				Water poll	
1896		Grahamstown Water Supply Bill			
1897				Johannesburg Municipal Bill; Stadsraad constituted; First Mayor	Public Health Amendment Act of the Cape Colony; colonial public health department created
1898		First medical officer of health			
1899					Native Locations Act of the Cape Colony
1901	First full-time Medical Officer of Health; offices of City Engineer and Waterworks Engineer separated			Johannesburg council proclamation; Nominated Town Council; First full-time Medical Officer of Health; Witwatersrand water supply commission	Public Health Act of Natal; first health official for the colony
1902	Waterworks committee appointed to consider and report upon the water supply; Cape Peninsula Commission appointed	Grahamstown Municipality Act	Togt Labour Act		

	Cape Town	Grahamstown	Durban	Johannesburg	Legislations
1903	Joint committee of the Cape town and Suburban Municipalities appointed; Berg River Hoek Scheme adopted			Rand Water Board	
1904	Franchhoek Water Supply Scheme Bill approved (withdrawn later)				Native Location Act
1905				Property of earlier concessions divided between Rand Water Board and the municipality	
1906	Cape Peninsula Water Supply Bill; Water Works Department amalgamated with City Engineer's Department				
1907	Southern Suburbs of Cape Town Water Supply Act				
1910				Fire-Brigade and Water Committee	
1912	Cape Municipalities Act				
1913	Unification of suburban municipalities				
1916		Water committee formed			
1919			Water Engineer's Department created		Public Health Bill

At an organisational level, Cape Town as the oldest of the case towns already had some infrastructure and water supply organisation before becoming a municipality in 1840. The first iron water pipes in town centre had been installed in 1810 and the first small reservoir was built the next year. In 1812, the Inspector of Waterworks was appointed to survey these works; ten years later in 1822, the title was changed to the Superintendent of Waterworks. The first Town Engineer, however, was appointed only in 1854, 14 years after the establishment of the municipality. This was probably connected with the building of the new reservoirs in the 1850s. In Grahamstown, the first Town Engineer was also already appointed in the 1850s. The main reason for this appointment was the building of the Grey Reservoir. There had already had the Superintendent of Water from 1850 but this position was now connected with the Town Engineer. This

appointment, however, was apparently cancelled after the reservoir was finished and the new one was appointed only in 1908. In Durban, the Borough Engineer was appointed only in 1882, 28 years after the establishment of the Borough. Sole reason for this appointment was the need of a qualified engineer to supervise the building of the proper drainage and waterworks. In Johannesburg, the first Town Engineer was appointed very quickly after the founding of the town. The Sanitary Board already realised in 1889 that they need a qualified engineer for the growing town.

There were interesting developments in the work of town engineers in case towns. It has already been mentioned that Grahamstown was c. 40 years without one and even after 1908, there were problems. In 1912, the City Engineer was dismissed and he was replaced with the Superintendent of Works with reduced salary. However, the title was soon changed back to the City Engineer. It seems that they just wanted to get rid of the old one. In Cape Town, the workload of the Town Engineer had grown so much in the early 20th century that the office of the separate Waterworks Engineer was established. This separation lasted only five years and departments were again amalgamated in 1906. In Durban, they ended up into the same kind of decision in 1919. Here the separation between the Water Engineers Department and the Borough Engineers Department, however, lasted longer, 16 years. In Johannesburg, there were no experiments like these.

Interesting is also that in Cape Town the office of the Town Engineer appears to have been quite windy at least if we consider the number of the Town Engineers between 1854 and 1920. There appears to be at least 13 different persons as Town Engineers during this time period; most of them stayed only a few years in office. In Grahamstown, there was only four, but then the first one was in the office just a few years in the early 1860s and the other three were after 1908. In Durban, there were only three Borough Engineers between 1882 and 1920. In Johannesburg there were four individuals working as the Town Engineer between 1889 and 1920.

If we study at the circumstances affecting the development of the water supply in case towns, the population growth is important. As can be seen from the Figure 1.1 the population growth in three cases was considerable. Grahamstown is the only one where the population growth did not have any visible effect on water supply. In Johannesburg, it was remarkable; within just ten years, Johannesburg was the biggest urban centre in Southern Africa. This put enormous pressures on the people responsible for the water supply. The Sanitary Board and its successors tried to solve the problem but could actually do very little before the establishment of the Rand Water Board. If we consider the Johannesburg Waterworks Company, it can be said that they did not even try to solve the water supply problem. We have to remember that the concession given in 1887 did not include any obligation for concession holders to supply water; the holder just had

the right to do that. It seems that the Company and its owners were quite happy to supply water only in the central parts of Johannesburg and were very reluctant to spread networks into the suburbs. This attitude seems to be quite common even today amongst the private water companies, especially in developing countries. The municipality-owned companies that do not have any obligation to be profitable usually are more eager to spread their supply networks in poorer areas. Besides, being municipality-owned usually means that the company also had to listen the needs of the municipality.

In Cape Town and in Durban the population growth also forced the hands of the municipalities, only in a bit lesser scale than in Johannesburg. In Durban population growth really started to have an effect during the South African War in 1899–1902 when refugees began to pour into the town. This was, however, not a very big problem since they still had rivers to dam to augment the water supply and they could build more storage reservoirs. In Cape Town problem was bigger, there were immigrants moving in the area from Europe and from the other parts of South Africa. Moreover, since there were no great rivers in the immediate neighbourhood the water had to be acquired by building reservoirs. They could cope until the 1900s by water from Table Mountain, but by that time, the population growth in the suburbs of Cape Town had made the water supply in the whole Cape Peninsula problematic. There were, besides Cape Town, eight small municipalities. Of these only Wynberg and Kalk Bay were self-supporting considering the water supply. The result was that smaller municipalities were forced to merge with Cape Town in 1913, only Wynberg stayed independent; water supply and sanitation issues were central issues in this unification.

The other important factor influencing the development of the water supply was the municipal finance. This is especially clearly seen in Grahamstown, where the economical situation of the municipality affected every bigger decision concerning water supply. Many otherwise feasible plans were not realised because of the expenses. Decisions to build reservoirs were made only when the Town Council did not have anymore any other possibilities open. The first three bigger reservoirs were built over a ten year period, after that it took ten years to build the next one, Cradock reservoir in 1879. The acceptance of the Slaai Kraal Scheme came fairly soon after this in 1885 but the actual building started only in 1897. The Town Council was searching for cheaper alternatives for the whole intervening time. In Durban, municipal finance was affecting water supply mostly during the early years, the 1850s to 1870s. However, after the appointment of the first Borough Engineer and getting more freedom to take loans for bigger schemes the building works really started in Durban. Finance mainly affected to the order in which the different schemes were realised. None of the augmentation plans between the 1880s and 1920s were rejected due to the expenses.

In Cape Town, the effect of the finance is seen mostly in debates concerning different schemes or different municipal enterprises. There were discussions about which of the improvements were the most urgent to realise or which of the different augmentation schemes was the best for the city. After the victory of the “Clean Party” and the sanitary reform, which also included increased powers to take loans, no water supply scheme was rejected solely due to economic reasons. Of course, the expenses of the plans were discussed and the City Council in some instances tried to interfere with the plans so that scheme would have been cheaper, as happened with the building of the Woodhead Reservoir. In Johannesburg, municipal finance did not really affect the water supply until 1905 when the municipality took over the distribution system and reservoirs inside municipal area. After that, there really was not much discussion about the importance of spreading the network or building more storage reservoirs. The economy, however, was a principal motive in establishing the Rand Water Board.

In the building of the water supply infrastructure, the obvious difference is between Durban and other cases. In Durban, the water supply was based on wells and rainwater from the 1850s to the end of the 1870s. The building of the water pipe network was started only after the founding of the Currie’s Fountain in 1879. Moreover, after the Umbilo Scheme the water supply of Durban was based totally on surface water from local rivers. Storage reservoirs were built only for this transported water. In other cases, the building of the pipe network was started much earlier. In Cape Town, the first pipes were already installed in the 18th century and the main streets had water pipes installed in the 1810s. In Grahamstown, the first water pipes were installed in the 1840s and in Johannesburg, the Waterworks Company started to lay pipes immediately after getting the concession.

Cape Town and Grahamstown also used surface water for their water supply but since there were no big rivers in their neighbourhood, they had to build a big storage reservoirs to collect rainwater or water from small streams. In Johannesburg, the utilisation of different sources proved the most versatile. At first, they used water directly from local streams and springs, and then the Waterworks Company built storage reservoirs for collecting water from these. Very soon the search for a better supply was started. There were two basic possibilities: the use of groundwater from dolomitic formations or bringing surface water from the Vaal River. The groundwater option was utilised first because the sources were closer than the Vaal River, but in the beginning of the 1910s, it was realised that there was not enough water to supply the whole Witwatersrand area. The result was that they started to use mainly surface water from the Vaal River, although some groundwater sources, like Zuurbekom, continued to be utilised.

Table 4. The development of reservoirs and water schemes in case cities, 1836–1917.

	Cape Town	Grahamstown	Durban	Johannesburg
1836		Creation of Municipality		
1840	Creation of Municipality			
1842	Caledon Square reservoir			
1844		Iron pipes began to replace open furrows		
1850		Hope's Garden reservoir built		
1852	No. 1 Reservoir completed			
1854			Municipal Ordinance; Borough of Durban proclaimed; town pump	
1860	No. 2 Reservoir completed			
1861		Grey Reservoir opened	First Umgeni Scheme	
1867		Douglas Reservoir completed		
1868		Hamilton Reservoir completed		
1869	Intake and small filter beds constructed on the junction of the Platte Klip & Silver Streams			
1877	Building of Molteno Reservoir started			
1878			"Currie's Fountain"	
1879		Cradock Reservoir constructed		
1881	Molteno Reservoir finished	Repairs and enlargement of Grey Reservoir finished		
1884			Botanic Gardens storage reservoir	
1885		Slaai Kraal Scheme accepted		
1886	Repairs of Molteno Reservoir completed			
1887			Umbilo Waterworks opened	Sanitary Board nominated; Water concession granted
1888			Service reservoir built near Ridge Road	Johannesburg Waterworks and Exploration Company; Saratoga Avenue Reservoir; Vorstman concession
1889	Pumping stations erected at the Albion and Kommetje springs, serving reservoir constructed in the Newlands Estate			Vaal River concession; Barnato takes over waterworks company; Olifantsvlei pumping station

	Cape Town	Grahamstown	Durban	Johannesburg
1891	Tunnel constructed through the Apostles range and a pipe-line laid to the Molteno Reservoir		Umlaas temporary pumping plant	Wonderfontein Concession
1892	Building of Woodhead Reservoir started		Florida Road reservoir completed	Braamfontein Water Company; three service reservoirs built by Waterworks Company
1893				Vierfontein Syndicate founded
1894			Umlaas gravitation scheme opened	Yeoville high service reservoir and two other reservoirs built
1895				Weltevreden storage reservoir and Paarlshoop pumping station built
1896	Mocke Reservoir and the Sea Point Service Reservoir constructed; Victoria reservoir completed			
1897	Woodhead Reservoir completed			Johannesburg Municipal Bill
1898	Building of Hely-Hutchinson Reservoir started	Milner Reservoir built in Slaai Kraal		Vierfontein dam
1899				Zuurbekom pumping station
1900	Small storage reservoir constructed on the Muizenberg mountain			
1901			Camperdown temporary dam	
1903	Alexandra reservoir completed; Berg River Hoek Scheme adopted; Silvermine reservoir completed		Clear Water Reservoir completed	Rand Water Board
1904	Hely-Hutchinson Reservoir completed; Franchhoek Water Supply Scheme Bill approved (withdrawn later)			
1905			Umbilo Water Scheme abandoned	Weltevreden station closed
1906	Cape Peninsula Water Supply Bill	Jameson Reservoir opened in Slaai Kraal		
1907	Southern Suburbs of Cape Town Water Supply Act; De Villiers reservoir constructed	Grey, Douglas and Hamilton reservoirs used only in emergencies		Olifantsvlei station closed
1908	Kloof Nek Reservoir completed; Candy filters installed		Camperdown permanent dam	
1912			Coedmore Filters built	

	Cape Town	Grahamstown	Durban	Johannesburg
1913	Unification of sub-urban municipalities; Catchwater constructed on Table Mountain			
1914		Water Filtration Plant	Service reservoir at Congella	New Yeoville high level tank; Braamfontein station closed
1915			Service reservoir at Stella	
1916				Starting of Vaal Barrage
1917	Adoption of Steenbras scheme			

The effects of insufficient water supply were always felt first by the poorest classes. They were also worst affected and bore the real cost of the unsanitary state in terms of high mortality rates. For instance in Cape Town the poor were still dependent on the public fountains for water in the 1870s. In the neighbouring suburbs, especially in Rondebosch and Mowbray, the members of poorer classes were using water from the polluted Liesbeek River for drinking purposes in the 1880s. In Johannesburg, the Waterworks Company even as late as the early 1900s refused to build a pipe network to some residential areas occupied by working-class residents. In these areas residents had to use wells or fetch water from the municipal water vans. Even when a water pipe network was built in these areas, it did not necessarily improve the living conditions immediately because drainage and sewerage networks followed normally only some years later.

Based on these four cases some generalisations about the development of water supply can be made. There is an intricate network of issues, which are connected. Besides sanitation and public health, which are handled in the next chapters, there are physical environment, social framework, the availability of experts, and population growth that were influencing the development. The physical environment includes the availability of water. When the settlement is established in a place where there are abundant water sources in the surrounding territory, the building of a water supply infrastructure is not a very difficult question after other issues are solved, as can be seen with the case of Durban. After necessary laws, granting the municipality rights to borrow money, had been enacted and necessary experts appointed to make plans and direct construction work, the infrastructure building was achieved very rapidly.

Where there are problems with the availability of water the development path is more difficult, as can be seen in the case of Johannesburg. When we combine the rapidly growing population, social framework that does not support the settlement, and the problems with the availability of water, we have a worst-case scenario. This is also an example of private enterprise as a solution. In Johannesburg's case it was

not a result of a state policy preferring privatization, it was more of a case of the state financing its own administration by giving out concessions. In any case, if we look at the example of the Johannesburg Waterworks Company, we find ample arguments against private enterprise. During its lifetime the company did not show much consideration about residents needs concerning water supply, on the contrary it refused to make water available in some working class areas until the municipality paid for the water.

Size is also important in water supply. Bigger cities had bigger problems but on the other hand, it was also easier for them to finance the improvements and infrastructure building. A case point here is Grahamstown where the financing always proved problematic. In one case, the members of the Board of Commissioners even had to pledge their private credit to guarantee a loan. In other cases, getting the loan was not difficult, but getting the authorisation from ratepayers was, at least in Cape Town. Here we return to the availability of water. When there are problems with availability, water supply becomes a political issue. This happened in all the other cases except Durban.

When water supply becomes intertwined so much with municipal politics as happened in Cape Town, it tends to suppress the other issues involved. One could imagine that the improvement of the living conditions affecting directly to the public health, would have been something uniting the community behind needed improvements. This, however, did not happen. Instead, racial stereotyping, the accusations of corruption and self-interest, and other “mud slinging” became prevalent. Actually, in Cape Town, when examining the political battle over so-called sanitary reform, it could be argued that both sides were using somewhat dirty methods.

If we consider what the administration as a whole tried to achieve with the development of water supply, we have to make a distinction between municipal officials and municipal politicians sitting in town councils. Town engineers, the medical officers of health, and various other officials in general wanted to improve the living conditions in urban areas. Unfortunately, this desire did not often meet with economical or political reality. Municipal finance put some limitations on what could be done. And even when money was not an issue, municipal politics dictated what could be built and where.

4. Sanitation and Sewerage

4.1 Cape Town

4.1.1 Sanitary Conditions in the mid-19th Century

In this chapter, the sanitary condition of Cape Town from the 1840s to 1870s will be described. Problem with the drainage is raised as a key issue. Some attention is also paid to the differing opinions of the condition of the city.

Cape Town in the 1850s

The overcrowded conditions, already noted with the 1812 smallpox epidemic, persisted in Cape Town in 1840 when the next epidemic hit the town. Many of the inland slaves, on emancipation, had been coming to settle in the poorer districts of Cape Town, compounding the already existing problem of overcrowding. The general state of the streets of Cape Town was described as being full of putrid and putrefying filth and the blame lay squarely on the shoulders of the Governor, the Colonial Secretary, and all the other parties or persons who were responsible of the welfare of the town. Matters were particularly bad in the poorer areas where the streets and lanes were in a neglected and dirty state. One reason the contemporaries identified for the filthy conditions was the lack of an adequate water supply.¹ The picture that R.W. Murray² fifty years later painted about the conditions in the town was not very flattering:

Forty years ago [...] there was a broad open drain, about six feet [1.8 m] wide, running from the Government Gardens through Adderley Street to the Bay. This drain was the main sewer of the city into which all the dirt and offal were emptied, and with dead cats and dogs, and occasionally the remains of a deceased glandered horse thrown into it, sent forth an odour which diffused itself throughout the city – an odour to which all who lived in town had become

¹ Davids 1983, 56–57; Judges 1977, 63–66.

² 1819–1908. Journalist and newspaper owner. Editor of *The Cape Monitor* 1854–56. One of the founders of *The Cape Argus* in 1857. Founded *The Great Eastern* in Grahamstown 1863.

so accustomed that they did not find it unpleasant, and never dreamt of its being unhealthy [...] Slaughtering shambles were attached to the butchers' sale stores, and the drainage from the shambles – blood and offal – coursed along the margin of the bay, and a good deal of it was left in a state of putrefaction [...] The Crowd didn't care much about the state of the town, whether the drains were the receptacle for dead dogs and cats or not. The people of the city had come to be accustomed to publicity, and the noisome, pestilential perfumes of sewers and drains. They had not begun to realise that dirt and disease were related to each other, and no note was taken of death-rate, or any other rate but that levied by Commissioners and Wardmasters. Things grew worse and worse until in the fifties, when the press laboured its utmost to bring about Municipal reform, but even then with but little result.³

By the 1850s, three drainage systems had evolved in the town. Surface drains were laid in the streets in front of some of the houses but because of the shortage of water, slops and the contents of urinals⁴ were thrown into backyards. Secondly, the remnants of *grachts* acted as drains but in the dry months, they became the most offensive. Thirdly, brick culverts, which were laid along the sides of some of the streets, were connected to the houses but as the falls were slight, the drains became easily blocked and leaked copiously because of porous bricks.⁵

Water closets were first introduced to the Mill Street area in the 1850s. These discharged into open ditches leading to the main stormwater drains that connected with the primitive system of covered sewers in the town below to be discharged finally into the Bay; sewage went into the surrounding soil or it was dammed up in the drains by uncontrolled building alterations or the dumping of rubbish. It was estimated that there were about 200 water closets in town at that time. Many of them were not provided with water cisterns and were flushed by pouring the buckets of water into the pans. Most of them were connected to underground cesspits, many of which were imperfect or decayed. As a result, the contents of many of them flowed into the streets.⁶

In 1856, the first substantial loan was raised for the improvement of sanitary services; the general house and water rates and a mortgage on certain municipal property secured it. In 1858, when smallpox again made its appearance in the city, the sanitary conditions were even worse than in 1840. Again, the reactive approach of those in authority came to the fore. Medical officers and Wardmasters were commissioned to inspect the various dwellings in Cape Town and their reports made pitiful reading, telling of overcrowding, filth, poor ventilation, and inadequate drainage. The health conditions improved only after they made regular visits.⁷

³ Murray 1894, 2, 223.

⁴ Originally, a portable receptacle for urine. Later, a fixture attached upright to a wall, used by men for urinating, or a room or other place containing facilities for urinating.

⁵ Whittingdale 1982, 134–35.

⁶ Taylor 1984, 24; Whittingdale 1982, 136.

⁷ Shorten 1963, 240; Davids 1983, 58.



Picture 4.1. Coffee Lane on the waterfront. (Source: KAB, E7979)

In August 1858, the Board of Commissioners had a special meeting concerning the sanitary condition of the city. The following month regulations were issued, one of which obliged every proprietor or owner of property to provide a proper privy and drainage.⁸

⁸ Cartwright 1978, 54.

There were also municipal elections in September and the newspaper columns were filled with investigations into the conduct of the election. An editorial in the *Cape Argus* of the 2nd October makes a scathing comment on the workings of the municipality:

*There is no department in efficient working order. The supply of water is miserably scanty, the streets are in a wretched state, the sewers and gutters are filthy in the extreme, the city is not half lighted with gas.*⁹

In sanitary matters, Cape Town was in a lamentable state in the late 1850s. Above all, before the era of dam building, water was in desperately short supply. Allegations mounted of bad smells, the wretched state of the streets, and filthy gutters. Neither the colonial government nor the municipality was prepared to invest in sanitary services. The inevitable result was a mounting mortality rate to which the wealthier Capetonians could close their eyes since it went largely unrecorded.¹⁰ In *The Settler's Guide* from year 1858 Cape Town's condition is described:

*Considering how the coloured people burrow in cellars, and holes and corners, their filthy habits, and their intemperance, the sanitary condition of the town, generally, is surprising.*¹¹

This seems to be, considering everything else, a slightly coloured version for the benefit of possible immigrants.

In 1857, the Town Engineer had described the sanitary conditions of the lanes leading from Strand Street to the beach (see picture 4.1):

*They are nearly as well as can be expected under the present system of drainage. A working man with perhaps three or four shillings a day, has to pay [...] twenty or thirty shillings a month for rent [...] and to support his family out of the remainder. He has to carry all his water [...] from a distance of three or four hundred yards, and, under these circumstances you can hardly expect that his place will be kept perfectly clean; but where sober, honest people live, their places are kept as well as I should expect such people to keep them, under the existing system of drainage.*¹²

He also said that a few thousand inhabitants, about one thousand families, were suffering from this imperfect drainage. Another engineer would have recommended a system of tubular drainage if there only had been better water supply. Most of the people used tubs, only a few houses had water closets, and no public toilets existed. Dr. John Laing, surprisingly, was of the opinion that the cesspools caused no bad effects.¹³ This opinion was changed in 1888 when, in the hearings of the parliamentary committee, every doctor was stressing how cesspools were poisoning the environment and that they should be closed down as soon as possible.¹⁴

⁹ Cape Argus, 2 Oct. 1858.

¹⁰ Worden e.a. 1998, 179.

¹¹ Irons 1858, 25.

¹² CCP, SC7-1857, 11.

¹³ Ibid., 11, 42, 44, 76.

¹⁴ CCP, A9-1888, 2, 11, 20, 25.

During the 1850s very little was done to improve matters. A private company was under contract to the Board of Commissioners to do the street cleaning. The results were not impressive. The old canals or portions of them were still running through several streets. Open and half-covered sewers even in the centre of city were a common sight and a stench was common.¹⁵ The Board of Commissioners planned to build an underground drainage system but this came to nothing because the Board of Wardmasters was against it. The main reason given for this was that the town's water supply was not sufficient.¹⁶

Health and Sanitation

In the 1860s, the general appearance of Cape Town was that of a compact mass of white flat-topped buildings with the central area laid out with mathematical precision, the main streets forming parallel lines. This attractive description, however, should not disguise the fact that it was also, depending on the weather, a dusty or muddy, and often foul smelling city, with its unpaved streets and complete lack of adequate drainage.¹⁷ In 1861, the *Cape Argus*, in a series of articles, criticised both the unsanitary state of the city and the vacillating attitude of the Board of Commissioners to municipal reform. The *Cape Argus* advised that the first priority was the provision of water as the “want of water lies at the root of all mischief”. Furthermore, it suggested, “when we have as much water as we can use, we can carry out a proper system of underground sewerage [...] provide drinking fountains, and public benefits for the working class”. The system of drainage in Cape Town was condemned as “utterly barbarous”.¹⁸ The next week the *Cape Argus* warned that “underground drainage” without water would represent “the greatest curse to befall this city”. The paper went on to caution:

*Instead of scores of children dying in our back streets, we would have hundreds and hundreds of adults into the bargain [...] the only thing that has saved the city from typhus and cholera hitherto, has been the absence of underground sewerage [...] [because] we have never had water sufficient to flush such drains if we had them.*¹⁹

In 1861 an old man, Aspeling was engaged to remove daily refuse from the houses and shops. He employed a dozen Scotch carts each drawn by a single horse and superintended the work mounted on a grey horse. He became known as “Die Notaris te Perd.”²⁰

¹⁵ Picard 1969, 24.

¹⁶ CCP, SC2-1858, 45, 55.

¹⁷ Buirski 1980, 19.

¹⁸ Cape Argus, 26 Jan. 1861.

¹⁹ Cape Argus, 31 Jan. 1861.

²⁰ Tait 1947, 24.

The reputation of District Six as a slum inhabited by vagrants and criminals was entrenched almost at the time of its naming in 1867, when a reporter of the *Cape Argus* condemned the presence of “Prostitutes and thieves of the worst description, while of drainage there was none, of water not a drop”.²¹ The failure of municipal authorities to improve the rutted roads, inadequate water facilities, and refuse disposal raised the ire of residents. Negligible servicing, overwhelming population influx, and exploitative landlordism were prophetic of the future of the suburb. One of the problems was that the carts collecting faeces hardly ever visited the back streets of the District.²²

The first step of Cape Town towards the establishment of a health department was the engagement in 1870 of “street keepers”, whose duty was to see that thoroughfares were kept in a sanitary condition. A public meeting was convened to consider a loan proposition for underground drainage during April 1872; the proposition was rejected because no specification had been prepared. In 1875, the Town Council rejected the request of the Colonial Medical Committee that a trained Sanitary Inspector be appointed.²³ In the 1870s, Cape Town was far from being the panacea of health and tidiness. As Anthony Trollope put it, Cape Town was a “somewhat ragged” place. Edna Bradlow has this to say about Cape Town of 1876:

*Only the main thoroughfares were lighted. Inadequate street cleaning by private contractors; open drains; and sewage which discharged into the sea earned the town the title of “city of stinks”. Some 5000 householders paid a private contractor 2s per tub for night soil removal; in the poorer districts people cleared their own buckets.*²⁴

Interestingly some people did not think that the conditions were very bad. In 1877, the Town Clerk said in a hearing that he did not think there was reason for all of the complaints about the sanitary condition. According to him, the town was in a better condition than it had ever been.²⁵ This of course might have been true. In the same hearing, Dr. Philip Landsberg said that there was great room for improvement. According to him, the municipality should also clean streets instead of only cleaning gutters. He considered underground drainage as a mistake:

*It causes more disease than the open gutters would if they were kept properly clean [...] The rubbish accumulates in the underground drains, and putrefies, and gives forth exhalations and poisonous gases which are very detrimental to health.*²⁶

²¹ Quotation in Hart 1990, 120.

²² Bickford-Smith 1990, 40.

²³ Shorten 1963, 271; Laidler 1939, 354.

²⁴ Bradlow 1976, 4.

²⁵ CCP, A19-1877, 48.

²⁶ *Ibid.*, 49.

On the other hand, Dr. Ross thought Cape Town as a fairly healthy city. According to him, causes for high mortality were, “the over-crowding of the houses, the stupid nature of the population, and the mode of living”.²⁷ Later he specified his opinion about mortality amongst Blacks:

*I do not see how you can prevent the mortality amongst the black people. They die from dirt and ignorance, and vice, and drink, and their habits and surroundings are so odious that they repel all sympathy. Unless you compel them like slaves they will never improve.*²⁸

Typical of the attitudes of the people at that time, was the answer from Dr. Herman when he was asked if it was unhealthy for the town that refuse emptied into the Table Bay swayed backwards and forwards in the Bay. Dr. Herman said that this was the case in a certain extent, but that it had to be remembered that Papendorf, where some of the refuse was washed up, was on the other side of the town.²⁹

All in all the medical fraternity isolated main problem areas in these hearings. There was overcrowding because little house construction was being undertaken due to the depression, while many existing houses were falling into ruin. The bad drainage, lack of water, an inefficient sanitary disposal system, and the accumulations of filth in the streets were the most important causes of the high death rate. The people also had dirty personal habits. There was the erection of shanties anywhere in the ill-defined streets because of the absence of building regulations. Moreover, the Town Council was impotent and could not do anything for these problems.³⁰

4.1.2 Sanitary Reform

At first, in this chapter the sanitary situation of Cape Town in the early 1880s is described. After that, attention is shifted to the start of the sanitary reform and the composition and motives of the two parties fighting over it. Lastly, the situation in the end of the 1880s before the first comprehensive drainage scheme is presented.

The Bad Conditions of the Early 1880s

In the 1880s, Cape Town was in a shocking state. Unrestrained winter torrents gouged out the roads and flooded homes, while the sand raised by the summer south-easterly winds enveloped the city in the clouds of red dust. Fortunately, the “Cape doctor”³¹ helped to

²⁷ Ibid., 56.

²⁸ Ibid., 64.

²⁹ Ibid., 22.

³⁰ Ibid., passim.

³¹ Local name for the strong, persistent and dry south-easterly wind that blows on South African coast in summer. It is known as the Cape Doctor because it has long been held to clear Cape Town of pollution and pestilence.

purify the air of its noxious odours, for almost every activity in the city contributed to the offensive smell. Waste accumulated in the covered grachts and the resultant gases were released through “stink traps”. Human excrement was frequently poured into the streets. Refuse and night soil collection was inefficient since the Town Council was constantly at loggerheads with the contractors it employed. Slaughtering was still carried on at the shambles at the foot of Adderley Street and fish was cured at Roggebaai: in both cases, the result was nauseating. Animals roamed the streets and the superintendent of public works claimed scavenging pigs were being bred “by hundreds” in District Six. Even street watering contributed to the aroma. Horses from Roggebaai carried polluted seawater to the upper parts of the city. To all this was added a chronic shortage of water. The most neglected were the back streets. District Six quickly became a slum where houses were flung up hastily, uncontrolled by building regulations. In some of the more important streets, there were covered surface drains, which lead, together with open channels, to 15 outfalls into the Table Bay. The growth of the city and the increase in the sewage quantity had led to the serious pollution of the water in the bay.³²

In 1880, Dr. Philip Landsberg reported that the outbreak of disease was likely. This was because “in many parts of the town the drains are in a fearful state of filthiness, and some of the lanes, both private and public, are fearfully neglected”.³³ The Council was clearly responsible for sanitation, but its responsibility also included the question of overcrowding, because it was responsible for “every aspect of health and habitation”.³⁴

Mayor William Fleming notified in his minutes for 1881 that:

*the sanitary condition of this city claims the immediate attention of the Council. [...] are the citizens prepared to submit to the present abominable and disgusting system for removing the night soil, or the outfall of the sewage drain with its feeders in stench traps and street gratings poisoning the air and insidiously producing epidemics.*³⁵

He also commented on the situation in the small neighbouring villages:

The sanitary condition of these villages, with their cesspools and wells in close proximity to each other will sooner or later claim the penalty of typhoid and other endemic diseases.

He predicted co-operation between every one interested in the future water supply in the area and that Cape Town’s boundaries would extend in another 15 years from Sea Point to Wynberg. “What comforts, what health, what industries, we shall secure by having an abundant supply of water!” Essentially, he was correct but it took over 30 years to realise his prediction.

³² Worden e.a. 1998, 223–25; Pritchard 1888, 4.

³³ Cape Times, 26 Feb. 1880.

³⁴ Ibid.

³⁵ Mayor’s Minute, Cape Town, 1881, 2–3.

Call for a Sanitary Reform

Although the reformists' call for water and sanitation reforms was grounded due to concerns over health and trade, the philanthropic attitude concerning the effect on the city's lower class, which had been apparent in the 1850s, was almost entirely absent by the 1870s and 1880s. The lower class was now seen as a major obstacle to reform, as they were perceived to underpin the rentier class control of the Town House. The issue of class thus became an important factor in the battle for control over the Town House to implement water and sanitation reforms necessary for sustained economic growth.³⁶ The *Cape Times* saw the greatest threat to reform being the symbiotic political relationship that existed between the representatives of property, the "Dirty Party", and their working class tenants. The link between water supply and sectional racial interests became a dominant theme in the call for reform. It was suggested that while property owners did not want to augment water supply because of the impact it would have on property rates, the Coloured working class did not need it. The *Cape Times* inquired rhetorically:

*How moderate must be the requirements of Abdol, whose washings are chiefly of a ceremonial kind, and whose house is guiltless of the trace of the scrubbing brush. There are thousands of inhabitants in this city who could put up, without any sense of discomfort or want, with considerably less quantity of water than the present supply, and we may be sure that their voices will be heard [...] why should they be taxed for a commodity which they have never felt the need, and which they would not [...] use more freely than the present time?*³⁷

Despite these conditions, reform was slow, as it always seemed to be in these matters. The main features of the Cape Town government in the 1880s were lethargy and conflict. The Council meetings were sometimes abandoned due to the lack of a quorum. Underlying the reluctance of the councillors to invest in sanitary improvements were several issues. Reforms would have to be paid for by the ratepayers, hitting the property owners particularly hard. Many of them were Dutch; the strains of an emergent Afrikaner nationalism could be heard in their resistance to the British reformers. They also represented an earlier generation of business in the city, ousted by entrepreneurial immigrants. Their attitude to sanitation was old-fashioned, a view shared by the older English-speaking residents, like Ralph Henry Arderne³⁸:

*I believe dry dirt is comparatively innocuous, and I believe it is the waste of water in all the little lanes and alleys that has been a source of more annoyance and nuisance than anything else could possibly be. When these people had to go to the public pumps they did not waste the water.*³⁹

³⁶ Grant 1991, 70.

³⁷ *Cape Times*, 29 Sep. 1876.

³⁸ 1802–85. Director of the Equitable Fire Assurance Company and the Tramway Company.

³⁹ CCP, A13-1881, 68.

Merchants resident in the suburbs led opposition to the “Dirty Party”. The vested interest of the “Clean Party” lay in a thriving city, which could be successfully promoted on the London bond markets. According to the Clean Party, the neglected state of the town threatened residents with an epidemic and prevented visitors remaining in the city to benefit its trade and prosperity. By 1880, the “Clean and Dirty Parties” were locked in mortal combat. In the 1882 election, the “Clean Party” sent a spanking-clean “Van of Progress” round the city with a band inside playing “lively airs” in an attempt to garner votes.

It was a smartly painted conveyance, with the panels and wheels tastefully picked out with gilding. A bright white canvas awning protected the bandsmen, in their trim, new uniforms and freshly scrubbed faces, from the sun and rain. Not a speck of dirt defiled this smart turnout; and the pair of well-groomed animals in front pranced proudly along as if they knew that they were chasing away from Cape Town the demons of Slovenliness, Meanness and Dirt.⁴⁰

The result was to put the “Clean Party” into power.

The reformers were merchants or successful businessmen, possessing fluid capital, often living outside the municipal boundaries and with their stores and places of business in the centre of Cape Town. They stood to gain more than what a small increase in rates would cost them. Their businesses would benefit from all the development and improvement the Council could afford. Better communications and service would bring an increase in trade, and as most of the proposed reforms would enhance the centre of the city, the value of their business premises would be enhanced. The resentment of the “Dirties” towards the use of public money for these developments was understandable, but as the local English Press depended on the “Clean” business community for their advertising revenue, it suited them to have a field day with the “Dirties”. Once in power the “Clean Party” proceeded to entrench themselves by disenfranchising a large percentage of tenants who had previously had a vote and by introducing a multiple voting system based on wealth. Certainly, the “Cleans” did introduce improved sanitation – an extensive drainage system and improved water facilities – but they spent almost no money on housing or providing a park or swimming baths for an area like District Six. Most of the Council’s money, of course, was spent on the city centre where these merchants just happened to have their shops and stores.⁴¹

The Planning of Improvements

According to the District Surgeon in 1884, three systems should have been combined for drainage in Cape Town, the pit, the pail and the water system. The pit latrines should have been used on the outskirts of the city where each house had a large garden. The

⁴⁰ Cape Argus, 15 Aug. 1882.

⁴¹ Knox 1992, 98; Bickford-Smith 1990, 39.

pail system should have been used in the areas of lower class people. According to him, “earth closets in those localities would never be attended to, and water closets would always be choked with kitchen refuse and be never flushed”. The water system ought to be used “in those streets where the residents owing to their social position are in consequence more cleanly in their habits [...] and pay more respect to sanitary laws”.⁴²

In 1886, W. Clark Russell wrote about his visit in Cape Town:

*Why should such a town as this suffer from such conditions of uncleanness, from such complications of evil odours, from such gutters of black and creeping filth as would be utterly impossible in the very poorest village you can point at home? [...] why, then, not deal determinedly with this question of drainage, and with the aboriginal notions of the Malays and the bovine indifference of the Dutch, and so rescue a charming town [...] from the most disgraceful charge which, in these days of science, of soap, and of drainpipes, can be brought against a community?*⁴³

Mayor John Woodhead⁴⁴ reported in his Minute in 1887 on the new “Castle Drainage Scheme”, entailing the discharge of all the drainage of the districts Five and Six plus a portion of district Four into the current of Table Bay. Many other activities were also mentioned: street-cleaning, refuse-removal, the watering of 32 additional streets, and repairing of new streets. The water supply, however, was still inadequate in spite of the Molteno Reservoir and the acquisition of the Oranjezicht rights.⁴⁵

A Sanitary Engineer was appointed in 1887. The initiation of plans for a comprehensive drainage scheme in 1888, however, resulted only from pressure from reformers outside the Town Council. They succeeded in getting parliament to appoint a select committee to investigate sanitation. In their report, the committee begged, “urgently to call attention to the gravity of the situation disclosed by the evidence of the medical men examined”. As the causes for the low state of public health, the committee listed the want of an adequate supply of water, a defective system of drainage, defective sanitation generally, and the lack of any control for the erection of new buildings. Local doctors had already mentioned all these in 1877. In the suburbs, the situation was not so grave but all pointed to the almost total neglect of sanitary precautions in the past, “and to the danger of that preventable diseases will steadily increase unless early steps be taken to secure an adequate supply of pure water, and for the proper disposal of sewage”. The Parliamentary Committee recommended a comprehensive drainage scheme for the area and the creation of a Board of Works to unite the action of several municipalities for

⁴² District Surgeon, 1885, 12.

⁴³ Russell 1886, 210.

⁴⁴ 1832–98. Merchant. Mayor 1886–87, 1888–90, 1893–94 and 1896–97.

⁴⁵ Mayor’s Minute, Cape Town, 1887, 1–2.

obtaining adequate water supply. The Committee, however, regretted that “owing to the arrangements already made by the Councils of Cape Town, Woodstock and Wynberg, as to the water supply, this course is not now practicable”.⁴⁶

There was a lot to improve as James Easton wrote in 1888:

*Surface drains are the death traps of the slums [...] but I did not expect to find a sluice running through the inside of a house [...] This sluice was cut so as to run alongside the wall of the entrance passage until it terminated at what I may be permitted to call the sanitary arrangement at the other end of the passage. Perhaps the worst state of things I came across was a row of houses with no back yard to any one of them [...] in the court through which we had entered were three or four compartments placed in a row and a dilapidated wall was all that separated these sanitary arrangements from a family bedroom [...] the family admitted that through the wall the stench became unspeakably offensive and at times altogether unbearable.*⁴⁷

4.1.3 Drainage and Sewerage

In this Chapter, the focus is on the drainage and sewerage schemes of Cape Town in the 1890s. All the three stages, Pritchard Scheme, Dunscombe Scheme and the final plan by W.T. Olive are examined. At the same time, the conditions in the early 1890s in both Cape Town and its suburbs are described. Some attention is also paid to sanitary issues in municipal politics in the 1890s.

Drainage

The first designs for a sewerage scheme for Cape Town were sought in 1884, and several schemes were submitted. In many of them the sea outfall was supposed to be situated at the Salt River Mouth in Table Bay. The assessors, John G. Gamble and Charles J. Wood, However, could not recommend any of the schemes because of the great length of the outfall sewer with insufficient fall and because no observations had been made of the currents in Table Bay.⁴⁸

An English engineer, Edward Pritchard, submitted the first comprehensive drainage plan for Cape Town in February 1889.⁴⁹ In his report Pritchard condemned the Castle Drainage Scheme and said that the outfall should be further away from the town area; he recommended the southern mouth of the Salt River. Pritchard also recommended that the eastern suburbs should discharge their sewage to this same outfall. He condemned the pail

⁴⁶ CCP, A9-1888, iii–v; Bickford-Smith 1995a, 59.

⁴⁷ Quoted in Knox 1992, 48.

⁴⁸ D.E. Lloyd-Davies, Report on the Main Drainage of the Southern Suburbs, 1915, 2. PAS, 2/963, L18/C/22. KAB; Olive 1899, 4. 3194, ICE.

⁴⁹ Pritchard 1889; Pritchard wrote two articles for *the Birmingham Daily Post* about his trip to South Africa and made also a drainage scheme for the suburbs of Cape Town. Pritchard 1888.

system used as so imperfect “as to be a sanitary disgrace to the civilisation of the age.”⁵⁰ His scheme was accepted but still the Drainage Committee proposed that the Castle outfall should first be finished and then if the predictions of Pritchard were verified, the new one built according to his scheme. T.W. Cairncross, the City Engineer, however, realised that the line proposed by Pritchard was not practical because of the narrow streets and a hard surface. He proposed an alternative route that would be even shorter. After this, the City Council decided to send the City Engineer’s plan to Pritchard for his consideration. After his comments, the Council accepted the new modified scheme. Ratepayers meeting in June 1890, however, did not give the Council authorization to borrow needed funds.⁵¹

In 1890, a separate Sanitary Department was established and Joseph Corben was appointed as the first Chief Sanitary Inspector.⁵² The Colonial Medical Commission had already asked Cape Town to appoint one in 1875 but the request was turned down.⁵³ From the Corben’s first report one gets an impression that he was quite surprised how acute the conditions were in some areas of Cape Town, “a personal inspection of [...] the ‘Slum Property’ revealed a state of things so wretched, filthy, and deplorable, as to be beyond description”. Gutters were so broken that the very air was polluted. From many houses people had to walk nearly 200 metres, in some cases over 250, to get their water. He found the inside of the houses “in such a condition that I was totally unaccustomed to see”. Accordingly, he first directed his attention to this matter. Water was laid on to 165 premises and 273 defective gutters were remedied. According to Corben, these improvements were of immense value to the city, from a sanitary point of view. He also paid attention to the necessity of having public urinals in the town centre. “The necessity for these conveniences has been amply proved by the large number of respectable men who, when summoned before the Magistrate, protested that but for the lack of these conveniences they would not have been summoned.”⁵⁴ He had submitted designs for three to the Sanitary Committee. Apparently, the matter progressed because Cairncross also wrote in his report that “plans and specifications are being prepared for these. They will be constructed on the most modern lines, and every provision made for keeping them as clean as possible.”⁵⁵ The optimism of both officials was, however, premature because the next year Corben had to write in his report that “I regret nothing further has been done though repeated attention has been drawn on the subject by the Resident Magistrate”.⁵⁶ The first public conveniences were built only in 1895.⁵⁷

⁵⁰ Pritchard 1888, 5.

⁵¹ Mayor’s Minute, Cape Town, 1889, 1–3; Mayor’s Minute, Cape Town, 1890, 2–3.

⁵² Mayor’s Minute, Cape Town, 1891, 6; Shorten 1963, s. 271.

⁵³ Rosenthal 1977, 32.

⁵⁴ Chief Sanitary Inspector’s Report, for the year ending July 31st, 1892. In Mayor’s Minute, Cape Town, 1892, 27, 30.

⁵⁵ Annual Report of City Engineer. In Mayor’s Minute, Cape Town, 1892, 20.

⁵⁶ Sanitary Department. In Mayor’s Minute, Cape Town, 1893, 40.

⁵⁷ Report of City Engineer and Surveyor. In Mayor’s Minute, Cape Town, 1895, 44.

In connection with the Sanitary Department, the Sanitary Committee was appointed in 1891. The Sanitary Committees sphere was separated from the Public Works Committee and attending to the cleanliness of the city in general was defined as its duty. The Medical Officer of Health was made a permanent member of the Committee. The Medical Officer's duties were to supervise the City and take action against disease, report the neglect of sanitation, and attend to the Town House for instructions.⁵⁸

Robert Boyle, a visiting sanitary engineer, described the sanitary situation of Cape Town in 1891. According to him, the sanitation was the most defective. Only two badly constructed drains existed polluting the bay. Boyle was of the opinion that any system emptying into Table Bay would be a failure and that the drainage should be extended into the open sea. He also commented on the smells in Cape Town: "The smells experienced in Cape Town, arising from the existing drainage system, or rather want of a system, rival those of any Italian town, and the health of the inhabitants suffers accordingly." He also blamed, like so many others, Blacks living in the same quarters as Whites for breeding disease.⁵⁹

Campaign for Better Sanitation

Campaigning for better sanitation in Cape Town in 1890 and 1891 only had the limited aim of improving sanitation, not of helping the slum dwellers. Sanitary improvement did make headway with the adoption by the Town Council of a comprehensive drainage scheme, and the Council's insistence that all the houses should be connected to water supply. The campaign for better sanitation helped keep alive the issue of slums in the newspapers. The 1891 Clean Party candidates were prepared to initiate the ordering of the city along the lines of race and respectability and to take steps towards improving sanitation. The Public Health Bill of 1894 providing for the compulsory registration of births and deaths, as well as the 1897 Public Health Amendment Act, which gave the colonial government absolute powers in dealing with epidemic disease, were the products of the new regime introduced by the "Clean Party". The new Council was interested in ordering the city to make it commercially viable. The position of the poor Whites, who really were the only Whites mixing with other "races" in Cape Town, now became an issue. They were seen as the deserving poor requiring improvement, especially through preferential education. The advent of the "Cleans" meant that in the course of the 1890s, a major drainage and sewerage scheme for the city was undertaken and it eventually included even District

⁵⁸ Orman 1983, 42.

⁵⁹ Sanitary Crusade 1891, 8–9.

Six, but this did not solve the problem of overcrowded housing. Indeed bubonic plague⁶⁰ hit Cape Town in 1901 and the subsequent reports revealed that, if anything, the situation in this respect had grown worse. Perhaps the most dramatic case was a smallish house in Horstley Street, which had only one toilet and one hundred occupants.⁶¹

In January 1893, the *Cape Argus* ran a series of articles entitled “Unexplored Cape Town”. The first one described the area in the environs of Waterkant Street known as Waterside, the canteens, and the inhabitants living as contentedly “as pigs in a sty”. The article informed the reader that in this area the “poor whites and filthy blacks live side by side”. It concluded, “It might be a hundred miles from the Gardens to Waterside”.⁶² In the sequel, which described the east end of Cape Town, around Seven Steps, middle-class Cape Town was informed yet again of the “smelly and dangerous hovels tenanted by coloured folk”. They were overcrowded to an alarming degree and surrounded by filth, which would have to be cleared by picks and labourers. These were the usual images of lower class Cape Town, of Coloured Cape Town, the latter fact helping to explain the dirt, to rationalise the condition of the former. However, this article developed the concept of the “poor whites” in its predecessor, and said that there was “poverty to be sympathised with”. In Caledon Street and the lanes that intersected it, there lived the “poorer white” families of labouring men, they were compelled to reside there and were “degenerating by reason of their surroundings”.⁶³ In his first report as the Medical Officer of Health Dr. Edward Barnard Fuller⁶⁴ wrote that the enormous death rate of the Coloured people pointed very clearly to the bad drainage, overcrowding, dampness, and a general insanitary state in the homes of the majority of them. He also pointed out that until the water-carriage system of drainage was complete they could not hope to have anything approaching a healthy town.⁶⁵

In 1890, two memorandums were submitted, castigating the prevailing conditions in Cape Town’s suburbs. Dr. J.H. Meiring Beck⁶⁶ did the first about the sanitary conditions and the second by his brother, Dr. L.A.W. Beck, was about the spread of diseases in the area.⁶⁷ According to Dr. Meiring Beck, there was no question that the water supply was

⁶⁰ A contagious, often fatal epidemic disease caused by the bacterium *Yersinia pestis*, transmitted from person to person or by the bite of fleas from an infected rodent, especially a rat, and characterized by chills, fever, vomiting, diarrhea, and the formation of buboes. The most effective way to prevent it is the maintenance of adequate sanitary conditions.

⁶¹ Bickford-Smith 1981, 41–42; Deacon 1994, 72; Bickford-Smith 1990, 40.

⁶² *Cape Argus*, 4 Jan. 1893.

⁶³ *Cape Argus*, 10 Jan. 1893.

⁶⁴ 1868–1946. Part-time Medical Officer of Health 1894–1901.

⁶⁵ Annual Health Report, 1893–1894. In Mayor’s Minute, Cape Town, 1894, Appendix No. 3, 66, 82.

⁶⁶ 1856–1919. Had private practise in Rondebosch. Member of Legislative Assembly 1899–1910. Member of Senate 1910–19. Minister of Posts and Telegraphs 1916–19.

⁶⁷ Memorial by Dr. M. Beck: Sanitary Condition of the Suburbs of Cape Town, 29 Oct. 1890. CO, 4270, B69. KAB; Memorial by Dr. L.A.W. Beck: The Spread of Diseases in the Cape Town Suburbs, 18 Nov. 1890. CO, 4270, B80. KAB.

“a disgrace to any civilized community”. The supply was mostly from wells, which were “to be entirely condemned”. For the drainage, there was no provision at all and as a result, the soil was contaminated. Dr. L.A.W. Beck also mentioned faults in water supply as a main reason for the spread of typhoid in the area. He also demanded improvements for the drainage. Both said that what was needed was properly constituted “Government Sanitary Department”, which should control all the matters affecting public health in the whole country.

Dunscombe Sewerage Scheme

A London consulting engineer, Clement Dunscombe, was invited by the Cape Government to plan a waterborne sewerage system for Cape Town after the Pritchard scheme had failed. In his report in 1891, Dunscombe wrote, “there was the most urgent necessity for the complete sewerage of the City with the least possible delay”.⁶⁸ He anticipated no difficulties in building this. He believed in sea disposal with separate stormwater disposal for seaports and considered Cape Town’s water supply sufficient for the purpose. Seawater, after being pumped to a height of 90 metres, was to be used for flushing drains, sewers, watering streets, and extinguishing fires. (See figures 4.1, and 4.2) The tub disposal system, then in use, provided 5,200 tubs for a population of 54,000. Mayor D.P. De Villiers Graaff called the scheme one of the most important steps ever taken in Cape Town. He said, “it will make Cape Town a place of noted purity [...] Our beautiful Bay will be kept free from contamination, while employment will be provided for a considerable number of labourers.”⁶⁹

At the same time, Dunscombe also made a plan for a sewerage system for the suburbs of Cape Town. In this, he recommended that Green Point and Sea Point should have its own sea outfall for sewerage, Woodstock should be connected to the Cape Town scheme, and Wynberg, Claremont, Newlands, Rondebosch, and Mowbray should have a land irrigation system. This suburban system should be carried out, if possible, concurrently with the Cape Town scheme.⁷⁰ In Green Point and Sea Point, the Town Council also had a competing scheme done by a local engineer, the main difference between this and Dunscombe’s scheme was the position of the sea outfall.⁷¹ In the eastern municipalities, there was lively discussion about how the scheme should be developed. Most of the municipalities wanted to have a combined effort but Wynberg having its own water supply also wanted to have its own sewerage system.⁷²

⁶⁸ CCP, G51-1891.

⁶⁹ Mayor’s Minute, Cape Town, 1891, 4.

⁷⁰ CCP, G2-1891.

⁷¹ CCP, A1-1892, 13.

⁷² CCP, A20-1892.

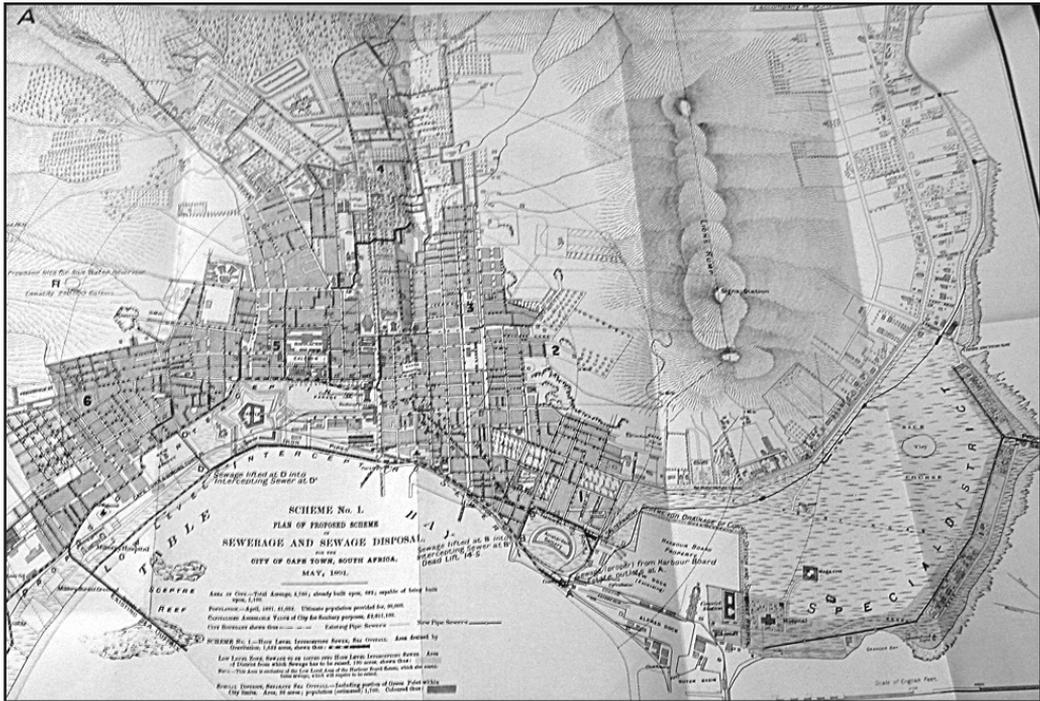


Figure 4.1. Sewerage and sewage disposal plan for Cape Town in 1891. (CCP, G51-1891)

De Villiers Graaff's second Mayoral Minute radiates the writer's satisfaction that the drainage scheme would now materialise. The Council had adopted the Dunscombe Plan and work would soon start. The budget for Public Works specified in the Minute is very impressive. Whereas a few years earlier an expenditure of 20,000 pounds was thought very high, in 1892 the huge sum of 225,000 pounds was voted for the improvement of the city. The biggest single item was electric lighting – 60,000 pounds. The next highest were waterworks and town hall – both 50,000 pounds. Naturally, the Dunscombe Scheme occupied a substantial portion of his Minute.⁷³

In 1893, however, complications arose. In September, it was learned that tenders for carrying out works according to Dunscombe's plans were greatly in excess of the original estimate. To solve this difficulty the Public Works and General Purposes Committee held several interviews with Dunscombe. Three alternative schemes for the disposal of the sewerage were discussed: a sewage farm, a sea outfall, and precipitation. With regard to the first alternative, the conclusion was arrived that there was no suitable area. The annual cost for the precipitation scheme was deemed too great, so the sea outfall appeared to the Committee to be the most feasible. In October, the Town Council

⁷³ Mayor's Minute, Cape Town, 1892, 1–3.

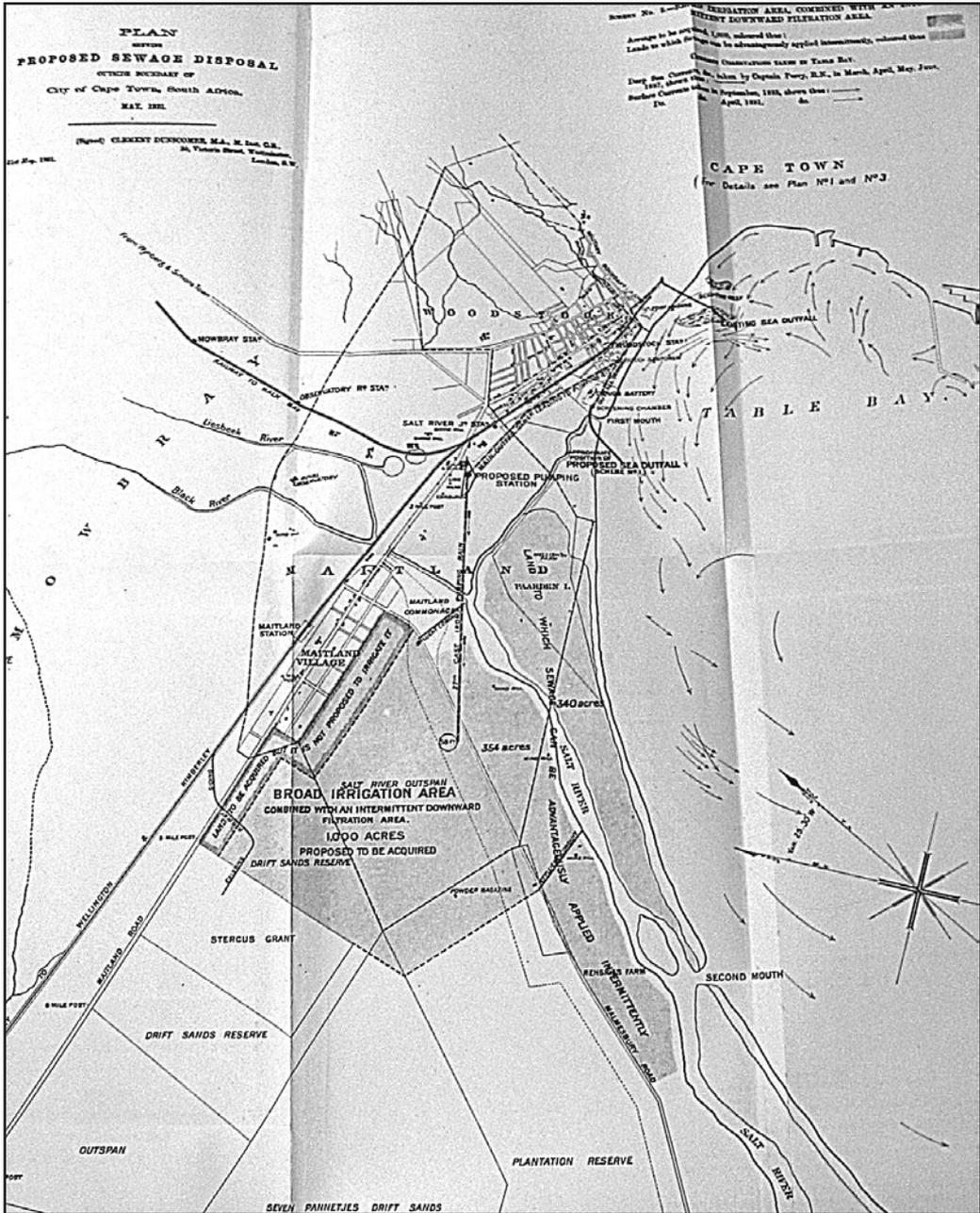


Figure 4.2. Irrigation area for the sewerage. (CCP, G51-1891)

decided to engage the marine surveyor to survey the currents of Table Bay. In December, the Council also decided that the drainage works in some of the higher levels of the city should be continued according to the plans.⁷⁴

⁷⁴ Mayor's Minute, Cape Town, 1894, 11-13.

Waterborne Sanitation

W.T. Olive was appointed as a City Engineer in 1895, primarily for supervising the waterborne sanitation scheme. The original scheme was Clement Dunscombe's but in 1896, the government decided that he was not needed anymore and Olive modified his plans. The scheme he designed for Cape Town was immense and costly for those days, as it demanded the laying down of nearly 140 kilometres of sewer leading. Two miscalculations were made in the Dunscombe's original plan. First was the choice of the wrong kind of toilet fittings, which had to be replaced, involving double expenditure. More serious was the decision to locate a sewage farm on the Cape Flats. Only after putting it into use, it was realised that under the sandy surface lay solid rock, threatening to turn the area into a huge cesspool. The pipe installation was laid in tunnels hewn through rock and a sea outfall was led to Green Point and was completed in 1905.⁷⁵

In his annual report, Olive wrote:

*In the early part of the year considerable attention was given to this matter with a view to devising method for dealing with the sewage of Cape Town. The cheapest mode of sewage disposal for a seaport is undoubtedly to send a sewage direct to the sea without chemical treatment or land filtration, as is done in Europe in the cases of both large seaports and seaside health resorts; and, by recommending this proceeding in the case of Cape Town, I considered a very large expenditure would be saved to the City, which would otherwise have been entailed by pumping and the establishment of sewage farm, both of which would have involved a very considerable annual charge, and the latter have been a source of constant trouble.*⁷⁶

In 1895, only 34 kilometres of the new waterborne sewerage system had been completed. In that year, Dr. E.B. Fuller reported the occurrence of 199 cases of typhoid fever in the town – a figure that in his words indicated, “the disease has manifested itself more or less as an epidemic”. In Fuller's opinion, the only effective preventive measure against the disease was the completion of the already commenced system of underground sewerage.⁷⁷

In 1895, the municipalities of Green Point and Sea Point and Kalk Bay also carried out sewerage schemes. In these areas, some 130 kilometres of sewers were laid down. In Green Point and Sea Point, all the houses were connected to the scheme in 1903. The sewerage undertakings of these small local authorities laid the foundation for the up-to-date system extending over the length and breadth of the whole of the built-up

⁷⁵ Mayor's Minute, Cape Town, 1896, 15–16; Perkins 1911, 65–72; Slinger 1968, 13; Shorten 1963, 150, 336; Rosenthal 1977, 31–32.

⁷⁶ Annual Report of City Engineer and Surveyor, for the year ended 30th June, 1896. In Mayor's Minute, Cape Town, 1896, Appendix 3, v.

⁷⁷ Reports of the District Surgeons. In Reports on the Public Health, 1896, 236.

area of the Cape Peninsula.⁷⁸ The most vivid description of the sanitary conditions in the Peninsula is provided in the 1895 health report of Dr. H.C. Wright, District Surgeon for Wynberg. Wright noted an epidemic of typhoid fever on the Cape Flats at Klipfontein and ascribed its origins to contaminated water provided by an inadequate water supply. Wright noted further that the pail system for the collection of faeces was frequently defective, there having been regular complaints of leaky pails. He also considered this system as responsible for the spread of the disease. The next year he commented about the disposal of night soil: "Still the horrible pail system exists, which people are pleased to call the earth system, but in which no earth is really ever put".⁷⁹ According to Wright, an inadequate water supply was the principal cause of the 1895 epidemic. Water supplies were short throughout the Peninsula at the time. This situation must be viewed against the background of an exceptional population increase. Over the years 1891–1902, the population of the Cape Peninsula increased by 110 per cent. In the suburbs, the population increase was even more dramatic with an increase of 184 per cent. Some of this population could be attributed to the people escaping the South African War 1899–1902.⁸⁰

Thomas Stewart designed a waterborne scheme for Wynberg in 1898. The Acting District Surgeon called the pail system that was used at the time as disgusting. According to him "the pails when cleaned have an overpowering odour and not to be brought anywhere near a house." Stewart's scheme consisted of septic tanks, percolating filters and land treatment. The final effluent found its way into Princess Vlei that overflowed to discharge into the sea in False Bay. However, due to the South African War, the construction of the scheme started only in 1902 and sewage arrived at the works only in January 1905. Wynberg was the second town in South Africa where the municipal sewage treatment was put into operation; the first was Bloemfontein in November 1904. Afterwards the carrying out of the scheme received some criticism from the Medical Officer of Health for the Colony, who said that with more careful consideration a considerable savings for the municipality would have resulted.⁸¹

⁷⁸ Shorten 1963, 150, 336; Kagan 1975, 49–50.

⁷⁹ Reports of the District Surgeons. In Reports on the Public Health, 1895, 184–85; Reports of the District Surgeons. In Reports on the Public Health, 1896, 159.

⁸⁰ Buirski 1983, 130.

⁸¹ CCP, A17-1898, Appendix D, iv–x; District Surgeons Report. In Reports on the Public Health, 1898, 148; Report of the Medical Officer of Health for the Colony on the Public Health, 1906, viii–ix; Murray 1987, 24; see also discussion on this matter in PAS, 4/447, A63X. KAB.

4.1.4 Housing and Conditions in the Early 20th Century

The conditions in Cape Town and its suburbs in the early 20th century are described in this Chapter. Attention is paid to the housing, health, drainage, and sewerage situation during the period. Special attention is paid to the hardening attitudes against the non-White people living in the city area.

Housing and Health in the 1900s

While Whites were moving out of the city into more spacious suburbs, the growing Coloured population was crowded into the decaying buildings still close to the centres of work. Jewish immigrants from Lithuania and the other parts of Europe also moved into these slums. Even when the houses were relatively new, as in District Six, the lack of building regulations and overcrowding ensured that they were death traps. Although water was laid on and a sewerage system existed, neither one was adequate to cope with a situation in which several families lived in a single house or, in extreme circumstances 10 or 15 people inhabited one small room. The poor quality of urban housing was demonstrated by the turn of the century in the rising incidence of tuberculosis, which began to alarm the medical profession.⁸²

The description of W.M. Macmillan⁸³ of the living conditions in Stellenbosch in the 1890s would probably match the conditions in South African towns in general at the time:

*[The Cape Coloured people] were scattered all through the villages, higger-mugger with their white neighbours; their houses must have been crowded, and were certainly insanitary – but at any rate European sanitation was no better.*⁸⁴

A solution to the problem of the slums was no nearer in 1898, because as the *Cape Times* wrote “We’re dealing with coloured people” who know no laws of cleanliness, who like “to herd together”. Accordingly, Cape Town’s difficulty was worse than that exposed by the “Bitter Cry” because of the “filth” in the city. Large numbers of the people were not poor but “wasteful, indifferent, and, worst of all, filthy”. Similarly, Blacks from distant parts would “swarm into the [...] city and make the inforcement of sanitary regulations impossible”.⁸⁵ This was because they liked to crowd together; they were gregarious,

⁸² Simkins & van Heyningen 1989, 91.

⁸³ 1885–1975. Later Professor of History in University of Witwatersrand and one of the most famous South African history researchers.

⁸⁴ Macmillan 1975, 21.

⁸⁵ Cape Times, 15 Apr. 1898.



Picture 4.2. Dr. A. John Gregory inspecting old stormwater sewer at the junction of Castle Street and Adderley Street in 1897. (Source: Mayor’s Minute, Cape Town, 1897, Appendix 14)

“The more they were crowded the more they liked their existence”.⁸⁶ With such easy explanations, the appalling conditions of Blacks in Cape Town could be rationalised by the middle-classes as long as they wanted the status quo to continue. When they wished Blacks out of the city, they could use the evidence of those very conditions to justify the action.⁸⁷

In 1899 the Medical Officer of Health, Dr. E.B. Fuller, recommended the appointment of female sanitary inspectors and ordered a campaign against tuberculosis. He estimated that tuberculosis caused one out of every nine deaths among Whites and one out of every seven among the non-Whites. The infant mortality was reported to be 155/1000 amongst Whites and 261/1000 amongst Coloureds.⁸⁸ At the same year Fuller reported that the living conditions of the Africans in the town were “very undesirable”, both from

⁸⁶ Cape Times, 2 Sep. 1898.

⁸⁷ Bickford-Smith 1981, 45.

⁸⁸ E. Barnard Fuller to the Street Regulation and Sanitary Committee, 26 Jan. 1899. In Annual Report of the Medical Officer of Health, for the year ending 30th June, 1899. In Mayor’s Minute, Cape Town, 1899, Appendix 10, xcvi; Slinger 1968, 14; Shorten 1963, 272–73.

the point of view of sanitation and socially, “by bringing uncleanly, half-civilized units into intimate contact with the more cleanly and civilized portion of the community”. The Africans, therefore, he concluded, should, instead of being allowed to house themselves “indiscriminately over the City”, be confined to a location as in Eastern Cape towns.⁸⁹

During the 1890s negotiation followed negotiation, costs expanded, but slowly sewerage and drainage were built. Loans for improvements were only sanctioned after the new system of plural voting enabled the larger property owners to override the vote of the poorer men. An outbreak of typhoid in 1898, which killed Mayor Herman Boalch, also encouraged reform. Thus by 1899 Cape Town had many of the amenities of a modern city, including a professional bureaucracy, an adequate water supply, waterborne sanitation, and efficient drainage.⁹⁰ Waterborne sewerage system was rapidly extended so that by as early as 1902, the Peninsula Commission was able to report:

*There are now 9,794 houses in Cape Town, nearly all of which are connected with the main sewerage system. The Chairman of the Council's Water Committee says: “I think there are only about 20 houses which are not connected”.*⁹¹

The Peninsula commission noted that no sewerage system was in operation in the southern suburbs, singling out Woodstock and Maitland as amongst the most insanitary regions.

*In some parts of the rapidly congesting Woodstock a state of things exists which is a crying evil. In the vicinity of Maitland again, the conditions are simply unspeakable owing to the freedom with which neighbouring Municipalities convey their filth and refuse thither.*⁹²

A Major municipal undertaking, stormwater drains were shared proportionately by Cape Town and Woodstock in 1904. These stormwater drains protected Woodstock and the central area of Cape Town from serious flooding that occurred two or three times every year as a result of the immense flow of water that came down the swollen streams of the mountainside after particularly heavy winter downpours. A particularly bad flood occurred in June 1904.⁹³

Sewerage and Sanitation in the 1910s

By 1914, only five sewage disposal schemes had been put into operation for inland local authorities, viz. Bloemfontein, Wynberg, Johannesburg, Pietermaritzburg, and Pretoria. However, before this in the early 20th century, sea outfalls had been constructed at Cape Town and Kalk Bay. In Kalk Bay, the combined municipal electricity and drainage works

⁸⁹ E. Barnard Fuller to the Street Regulation and Sanitary Committee, 15 Apr. 1899. In Annual Report of the Medical Officer of Health, for the year ending 30th June, 1899. In Mayor's Minute, Cape Town, 1899, Appendix 10, cii–ciii.

⁹⁰ Worden e.a. 1998, 226–27.

⁹¹ CCP, G21-1903, 52.

⁹² Ibid., 63.

⁹³ Shorten 1963, 337; about 1904 flood, see Cape Town Under Water 1904.

were opened on the 3rd August 1907. The plants were sufficient to cater for the needs of 50,000 people. Frequent complaints from residents regarding the poor service offered by the local sanitary contractor had resulted in Council inaugurating a departmental system of night soil removal in November 1895. Piped water and waterborne sewerage were intended largely for the White inhabitants of the area. The majority of fishers had running water and water closets in their homes by the mid-1940s.⁹⁴

If Cape Town's water supply and sewerage situation improved in the years up to 1914, this experience was not matched in the southern suburbs. While by 1915, the suburbs of Woodstock, Maitland, Mowbray, Rondebosch, and Claremont were served with a more stable water supply from the Newlands Storage Reservoir, in respect of sewage removal, little had changed since 1895. Thus, they continued to be served via a pail system – the faeces being removed on a weekly basis. In Woodstock and Maitland moreover, there being no system of surface drainage, slop water was allowed to pass into the street gutter or on to adjacent land, and ultimately to find its way into neighbouring streams. In the other suburbs, slop water was collected in pails or tubs and emptied every day except Sunday, whilst other water and bath water was treated in the same fashion as in Woodstock and Maitland. Conditions were the most unsatisfactory.⁹⁵ In 1915, the City Council approved a sewerage scheme for the Southern Suburbs. Work was begun during the next year and it was completed in 1923. The First World War caused a rise in the prices of materials and made it difficult to find skilled labour so the works were delayed.⁹⁶ In connection with these works, the building of the Athlone sewage treatment works was started in 1921. Disposal works were completed in 1923 and the whole scheme completed in 1927.⁹⁷

In the latter part of 1918, Cape Town was booming. As a major port and transit station, four years of war had seen it prosper. Its population had grown rapidly since the incorporation of other Peninsula municipalities in 1913, and in 1918, it was crowded with people of all the races, crammed into inadequate and insanitary houses in its slums and its African locations at Ndabeni and the Docks. In fact, at a mass meeting on the overcrowding problem in September 1917, Canon Sidney Lavis had ominously predicted, "There are two ways by which the present state of affairs can be altered. One is an epidemic and the other was to carry out a wise scheme of Municipal housing".⁹⁸ Spanish Flu arrived in 1918.

⁹⁴ Wall 1998, 5; Kirkaldy 1996, 48–49.

⁹⁵ Buirski 1983, 132.

⁹⁶ D.E. Lloyd-Davies to the Chairman and Members of the Streets and Drainage Committee, 16 May 1920. PAS, 2/963, L18/C/22. KAB.

⁹⁷ Morris 1970, 6.

⁹⁸ Cape Times, 10 Aug. 1917.

4.1.5 Sanitary Reform for Whites

The sanitary conditions in Cape Town in the 19th century developed slowly. The sanitary condition of Cape Town after it became a municipality in 1840 was nearly as bad it could have been. There were still open drains or grachts in main streets running to the Bay. The covering of these improved the situation somewhat but without proper water supply, there was not very much that could be done. There were still cesspools and the removal of refuse was done on a contract basis. From the 1840s to 1870s, there was not much improvement, yet there was some hope for a better future. From the 1860's onwards, local newspapers started to pay attention to the conditions. Some local doctors also started to demand improvements. Unfortunately, the profession was not unanimous in these demands and most of the people did not see any problem dumping their wastewater and refuses in the open gutters or to the Bay. Real improvements started only after the building of the Molteno Reservoir and improved water supply in the 1880s.

In the beginning of the 1880s, the sanitary situation in Cape Town was thought to be so bad that finally enough people decided that something had to be done. In 1882, municipal elections there were two parties fighting over the control of the municipality. These parties represented different groups and interests. The "Dirty Party" represented the "old money" and their tenants, whereas the "Clean Party" represented mostly so called "new money", successful merchants and businessmen. The battle ended in the victory of the "Clean Party". The victors started the slow process of improving both the water supply and sanitation, which continued long into the 20th century. They also immediately modified voting laws to entrench their position in power. Still the sanitary situation at the end of the 1880s was not much improved from what it had been in the beginning of the decade. Proper drainage and sewerage systems were still needed.

The new regime, however, managed to increase the powers of the municipality and in the end of the 1880s, it could already be seen that the water supply was going to be so much improved that the planning of a proper drainage system could be started. This, however, proved to be more difficult than it was thought. The first comprehensive scheme was made in 1889. The English engineer who made the plan, however, did not pay enough attention to the local conditions and the City Engineer had to modify the plans. Moreover, in the end the ratepayers did not give the City Council the authorisation for borrowing money for the scheme. The new engineer, Clement Dunscombe, was invited from London to make a new plan. His report was ready in 1891 after which he also made a plan for the suburbs. This time the City Council got the authorisation but after adopting the plan, the problems materialised. Apparently, the estimates of the cost had been too low. Finally, in 1896, the City Engineer modified the plans and these modified plans were

realised after some further problems. It still took nearly ten years to complete the system. In the suburbs only Green Point and Sea Point and Wynberg built a sewerage system and neither one of them did it by following Dunscombe's plans. Actually, Wynberg was the first in the Cape Peninsula area to finish a waterborne sewerage scheme.

In the beginning of the 20th century, the inhabitants of Cape Town could enjoy their new improved sanitary conditions. This was, however, not for all. In the areas where the non-Whites and poor Whites were living the conditions were the same as they had always been, if not worse, because of the improved water supply. According to the Peninsula Commission, nearly all the houses were connected in to the waterborne sewerage system in 1902. This was based on information the Commission had received from the Cape Town officials, so you could question this. Anyway, the houses in the poorer areas continued to be overcrowded and dangerous for the health of the residents for a long while. Real improvements came only after the disaster in 1918.⁹⁹ In the eastern suburbs of Woodstock, Maitland, Mowbray, Rondebosch, and Claremont the situation also improved only after the municipal unification. Sewerage scheme for these areas was completed in 1917. Kalk Bay, which had also joined the Greater Cape Town, instead had already built its own sewer works in 1907.

⁹⁹ This was a common order how these things happened. According to Myllyntaus, the phenomenon has to be a recognised and socially meaningful for it to become a social problem and a subject for political struggle. Environmental problems develop to social disputes especially if the proposals for their solution affect the economical and other interests of population groups. The scientific and technological solution for instance to water supply problems was possible already in the end of the 19th century, but socially the solution was difficult because of the real and imaginary conflicts of interests between population groups. Myllyntaus 1994, 12–15.

4.2 Grahamstown

4.2.1 Cesspools and Health

In this Chapter, the development in Grahamstown before the Public Health Act of 1897 will be described. Special attention is paid to cesspools and the efforts to abolish them during this period.

Early Living Conditions

The general sanitary living conditions in the 1840s in Grahamstown presented a variety of problems. Apart from the discomfort of dust and rubbish in the streets, there were manure heaps and dead animals in the streets, washing in public streams, overflowing cesspools, which would impregnate wells and streams, and the stench of offal from the slaughterhouses. The Town Council seriously considered ways to improve the sanitary state of the city in 1867. The Council was well aware of the need for the exercise of preventive medicine in the control of insanitary living conditions that could lead to the spread of disease. The Police Committee, under which the public health matters at this time belonged, recommended the appointment of an official Inspector of Nuisances or Sanitary Inspector. This Inspector would inspect all the slaughterhouses and tanneries, all the meat for sale and butcher shops. More particularly, he would have the authority to inspect private dwellings on the reports of overcrowding and insanitary living conditions. The new Inspector was appointed on the 4th October 1867.¹⁰⁰ The clauses describing the powers and duties of the Sanitary Inspector indicate clearly an understanding of the connection between overcrowding and insanitary living, dirt and disease, and the necessity of the role of civic responsibility in the protection of public health.

In the late 1860s and 1870s, the cesspools were gradually identified as the most serious threat to the public health in Grahamstown. The problem with the cesspools was that many had not been constructed properly nor cleaned out periodically, as they should have been. The most unhealthy conditions resulted when seepage from cesspools drained into wells, streams, and drains. In 1868, the Town Clerk presented a report on the matter. In this report, Grahamstown's main disadvantages were clearly stated: a lack of a proper drainage system and the limited water supply that precluded any thought of a waterborne sewage system. The report did not lead to any improvements. The cesspool nuisance gradually increased until in 1879 a full-scale investigation into the sanitary condition of the city was made. In the report of this investigation, the only

¹⁰⁰ Gibbens 1982, 187, 195.



Picture 4.3. Native huts in location. (Source: Grocott & Sherry's Album of Grahamstown 1898)

suitable system after the planned abolition of cesspools by the 1st January 1881 was felt to be the introduction of the pail system. All the doctors in Grahamstown approved the proposal. Unfortunately, when the report was debated by the Council, the proposal was only partly accepted; the principle of the abolition of cesspools and the medical evidence for the abolition was accepted but the majority just could not permit the financial outlay necessary for the introduction of an entirely new system.¹⁰¹ In 1883, a new motion for a dry-earth tub scheme was rejected, because it would have required a ½ penny increase in the town rate to meet costs.¹⁰²

By 1882, a new Municipal Location had been created adjoining both existing government locations, in an attempt to provide for more organised and better-supervised living conditions for the increased population that had congregated near Grahamstown, partly because of the aftermath of the war of 1877–78.¹⁰³ In the same year there was an article entitled “Thoughts about Grahamstown” in the *Grahamstown Journal*.¹⁰⁴ Visitor, as the writer

¹⁰¹ Ibid., 217–22.

¹⁰² *Grahamstown Journal*, 7 Sep. and 27 Sep. 1883.

¹⁰³ Gibbens 1982, 255.

¹⁰⁴ *Grahamstown Journal*, 5 Oct. 1882.

signed himself, criticised the conditions in the town and probably gave a more realistic picture than local writers gave. The entry from the interior was marred not only by the stench of the slaughterhouses, but also by the sight of the tin hovels and ragged huts of the “Hottentot Location”, whose filth and human inhabitants “in the lowest grade of existence would be a disgrace to the most lawless community”. The writer’s opinion was that this was the result of municipal negligence. Criticism was levelled at the municipality for doing so little to encourage the erection of buildings and provide a water supply for the locations. (See picture 4.3)

Cesspool Problem Raises its Head

In 1887, the sanitation of Grahamstown was fairly good. The cesspools were being slowly replaced by the pail system; the sewage was removed nightly and covered up with earth in rectangular pits three kilometres away from the city which when filled were planted with eucalyptus trees. In this way, a large plantation had already been formed in which the refuse organic matter was assimilated in tree growth for future use.¹⁰⁵ According to Robert Boyle the town was considered very healthy in the late 1880s, the sanitary arrangements were well looked after, and the water supply was good.¹⁰⁶

Despite all the usual comments on Grahamstown’s beneficial and healthy environment, some areas concerned local authorities. In 1887, diphtheria, typhoid, and scarlet fever were prevalent in the city.¹⁰⁷ Some councillors perceived the connection between filth and disease only tentatively. Only a few of them were willing to pay a high price for an effective sanitation removal system. The eclipse of the amateur health official, the streetkeeper, by the professional, the Medical Officer of Health, indicates a growing awareness of relationship between the quality of life and hygiene and the absence of disease. The threat of epidemics played a part in precipitating this, although Grahamstown escaped the ravages experienced by many other colonial towns. Of the smallpox epidemics of 1882, 1893, 1898, and 1900, only that of 1893 affected it to any significant extent. Between 1901 and 1904, Grahamstown was entirely unaffected by plague that reached South Africa during the South African War.

The cesspit system of excrement disposal was a major health hazard. Leaking cesspits threatened to contaminate drinking water from wells and underground tanks on which a number of citizens relied. Expense, organisational problems, and local opposition to change delayed the abolition of cesspools and the implementation of a new sanitation

¹⁰⁵ Souvenir of Grahamstown 1887, 39.

¹⁰⁶ Sanitary Crusade 1891, 32.

¹⁰⁷ Grahamstown Journal, 13 Aug. 1887.

system.¹⁰⁸ In the 1890s, the indecision on sanitation standards was exacerbated by local disagreements on the replacement programme for cesspools. The disposal of refuse and noxious matter was left to the householder. Urine was generally thrown into the riverbed or gutters, as there was provision for slop removal.¹⁰⁹ This was also a common problem elsewhere and the problems in achieving a solution were similar.¹¹⁰

4.2.2 Improvements in Sanitation after 1897

Most of the Grahamstown was still using cesspools in the mid-1890s. In this Chapter will be described how they were finally got rid of after the Public Health Amendments Act of 1897 gave more powers in health matters for municipalities. The attempts of the municipality to take over night soil collection are also examined.

The Abolition of Cesspools

In his report of 1896, the District Surgeon made some recommendations for improving the conditions in Grahamstown. He said that a health officer was much needed, that all the cesspits should be done away, that some public method for removing slop-water should be entered, and that the better water supply was urgently needed amongst other things. Grahamstown was quick to take advantage of the Public Health Amendments Act of 1897 to accommodate these recommendations. In the Act, the local authorities were given the power to deal, for example, with water supplies, the prevention of the spread of contagious diseases, and the African locations. Equally important was the right given to the local authorities to appoint their own Medical Officers of Health. The next year, Dr. James T. Bays (later known as Bruce-Bays) became the first one in Grahamstown. The District Surgeon, nevertheless, was wondering if the new health officer might grow weary of reminding the municipality of the condition of the town.¹¹¹ The Act also created some consideration of a revised sanitation programme. The long-term plan had been for the abolition of cesspools, their replacement by a tub sanitation system, and the provision of regular refuse and excrement removals. The alterations would be gradually implemented. The Sanitary Committee framed a bi-weekly slop removal system. The proposed annual charge, however, provoked the opposition of the local artisan class, and was ultimately responsible for the abandonment of the project in 1898.¹¹²

¹⁰⁸ Grahamstown Journal, 16 Aug. 1888, 5 Sep. and 26 Sep. 1889.

¹⁰⁹ Grahamstown Journal, 11 July 1895.

¹¹⁰ See for instance Juuti & Wallenius 2005.

¹¹¹ District Surgeons Report. In Reports on the Public Health, 1896, 11; District Surgeons Report. In Reports on the Public Health, 1898, 11; Couch 1976, 41.

¹¹² Grahamstown Journal, 20 Sep. 1898.

By the end of the 19th century Grahamstown was considered a very healthy city, with a fine climate, pure air, “well looked after sanitary arrangements”, and good water supply.¹¹³ Every bigger institution had a slop water system and refuse was transferred away from the city. Dr. Bays, however, was paying attention to the high death rate of coloureds living in the city. In his report of 1899, he said that the causes for this were general insanitary surroundings, deficient water supply, and the want of proper care and nutrition amongst the children. He was urging for the necessity of providing a water supply for the location. He returned constantly in his reports during the next seven years to this matter.¹¹⁴ Another issue that Dr. Bays returned in every report during the years 1899–1906 was the disposal of night soil. According to him it was:

*a great pity that so excellent a manure should be wasted in the manner it is by being buried deeply and uselessly in the soil, instead of being used for the purpose of fertilising it. The dung of horses, cattle and birds is used as manure, and human excrement is equally valuable for the purpose. After being deposited in shallow trenches for a time the ground should be ploughed up and sown with some cereal or vegetable. After reaping which the ground could be again manured, and in this manner the same ground would last indefinitely, while its fertility would be increased, and a considerable saving to the ratepayer would be effected.*¹¹⁵

He was complaining about the heavy expenses caused by pit digging, when in other towns it had been turned to a profitable account.¹¹⁶ In 1903, Dr. Bays said that he had always been in a favour of depositing night soil in shallow trenches, and growing trees upon the ground.¹¹⁷ Still in 1906, he wrote, “the waste of so much good fertilizing material is a great mistake, especially, in a land where any amount of manure is required”.¹¹⁸

With the cesspools the threat succeeded where persuasion failed. Epidemics during the South African War provoked disease prevention programmes. In Grahamstown, a special Sanitation Inspector was appointed in 1901 to work under the Medical Officer of Health. The alarm led finally to the abolishment of the cesspool system in October 1901. A project for municipally controlled excrement and refuse removals was placed before the Town Council in 1902. The Council, however, decided to start the system on a contractual basis. The monopoly of sanitation removals was granted for a three to five year period from the 1st January 1903.¹¹⁹ The passing of sanitary measures through the Council was one of the reasons why the Municipal Bill for Grahamstown was introduced in 1902. The important change in the new bill was to decrease the number of Councillors from 24 to 16. According to Mayor Daniel Knight, it was impossible to get any progressive

¹¹³ Atherstone 1886, 159–62.

¹¹⁴ Report of the Medical Officer of Health for the Year ending March 31st, 1899, 3.

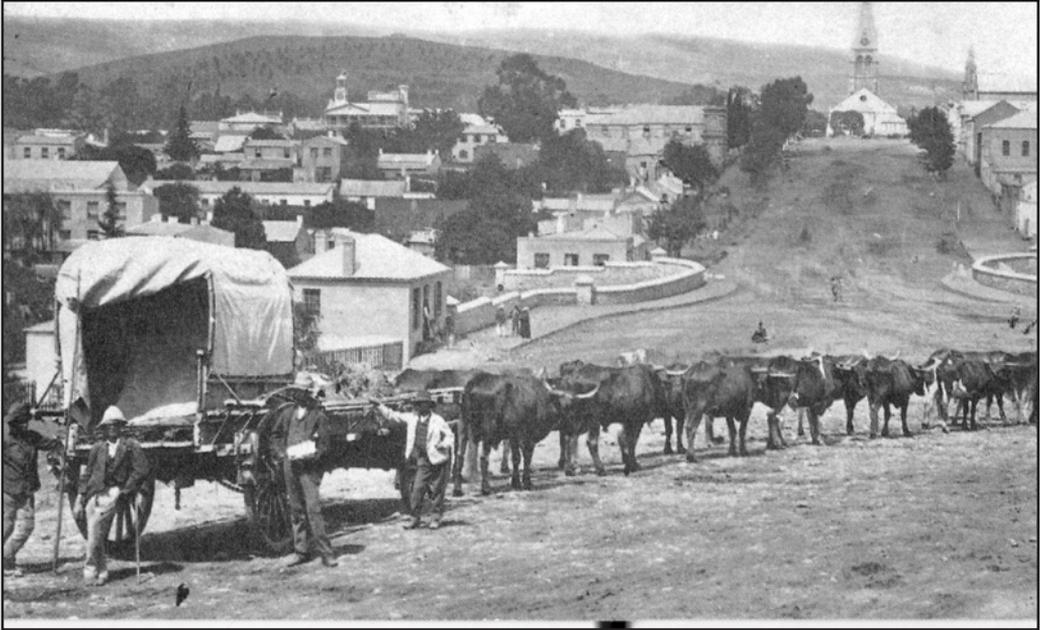
¹¹⁵ *Ibid.*, 5–6.

¹¹⁶ Report of the Medical Officer of Health for the Year ending March 31st, 1901, 5.

¹¹⁷ Fifth Annual Report of the Medical Officer of Health, Grahamstown, 31st March, 1903, 9.

¹¹⁸ Eight Annual Report of the Medical Officer of Health, Grahamstown, 31st March, 1906, 11.

¹¹⁹ Sellick 1983, 126–28; Conditions of Sanitary Contract for the improved Sanitation of Grahamstown. MS 9594, Cory Library.



Picture 4.4. High Street from the Railway Station. (Postcard)

measures through with such a large number of councillors. As an example, he used a sanitary scheme they had been endeavouring 3–4 years earlier. According to him, “we have had to overcome immense opposition, though it is a scheme that all the town has been crying for, but owing to it being so very easy to get into the Council, we have found it very difficult indeed to pass any progressive measures”.¹²⁰

In his report of 1902, Dr. Bays congratulated the Council on having nearly completed the clearance of cesspits from the town. During the last four years, in all nearly 400 cesspits had been closed. Dr. Bays thought this was a great improvement for the sanitary conditions in the town.¹²¹ In 1903, the last cesspits were emptied and closed. The District Surgeon saw this as an improvement, but wanted the municipality to get a proper system instead of the faulty bucket system then in use.¹²² In 1904, Dr. Bays in his annual report said that a great want existed for public sanitary conveniences for the White population and visitors. According to him, it was remarkable that in a city of that size, no such accommodation was available, and that while lavatories for Blacks were provided all over the place, no provisions were made for Europeans.¹²³ In 1905, this deficiency was removed, when two public urinals were built on the dry sawdust principle. Dr. Bays wrote in 1906, “This system has been in use for some months, and gives an excellent sanitary

¹²⁰ CCP, A8-1902, 2.

¹²¹ Report of the Medical Officer of Health for the Year ending 31st March, 1902, 5.

¹²² District Surgeons Reports. In Report of the Medical Officer of Health for the Colony on the Public Health, 1903, 8.

¹²³ Sixth Annual Report of the Medical Officer of Health, Grahamstown, 31st March, 1904, 10.

result with the least amount of trouble.”¹²⁴ Over ten years earlier, the District Surgeon had written about Blacks committing nuisances in the ravines about the town, because no latrines existed for Blacks coming into town from the locations.¹²⁵ There had been such latrines in the market place, but, as the Chairman of the Sanitary Committee told to the Parliamentary Committee in 1894, they had to be taken down, because Blacks declined to use them. According to him, they did not understand sanitation.¹²⁶

Problems with Night Soil Removal

Besides the contract system of regular removals, the Town Council performed further health reforms. Business offices outside the location were required to provide conveniences that were served once in every other week. A municipal slop water cart was acquired. New regulations for ordure closets stipulated that they should have removable pails, impermeable floors, and a weekly disposal service. The system of payment for night soil collecting was altered from a set fee paid quarterly to a charge per pail, which was collected by the nightman himself. Riverbeds were also cleaned out. Only abattoirs, protected by the powerful butchers lobby in the Council, remained unaffected by the new standards of cleanliness demanded.¹²⁷

A major defect of the sanitary regulations, however, was that no provisions for the systematic and compulsory removal of slop water and refuse were made. A number of private contractors undertook this work, but the failure in the regulations was not conducive to public health.¹²⁸ In 1905, the proposal was made that the City Council should take over the sanitary work in order to rectify the defects.¹²⁹ The Sanitary Committee, however, decided that the work should continue to be done by the contractors.¹³⁰ Still in 1906, after there had been over 50 complaints concerning the neglect of the contractors, a new regulation was drafted, which provided that licensed nightmen neglecting or refusing to perform their duties should be the guilty of offence, and liable to conviction.¹³¹

W.M. Macmillan later remembered the sanitary system:

For all its pleasant setting and its importance as an educational centre, the Grahamstown of those days sorely needed cleaning up. The public water-supply was of wretched quality and very deficient in quantity. The rainfall was not bad but very uncertain, and the low-lying parts were imperfectly drained, with the result that typhus and diphtheria, and in the native parts

¹²⁴ Eight Annual Report of the Medical Officer of Health, Grahamstown, 31st march, 1906, 11.

¹²⁵ Reports on Public Health, 1892, 6, and 1893, 8.

¹²⁶ CCP, A3-1894, 36.

¹²⁷ Sellick 1983, 129–30, 290.

¹²⁸ Report of systematic inspection on 14 and 15 Aug. 1908, J.A. Mitchell, A.M.O.H. for Colony. MOH 102, L2C, 16. KAB.

¹²⁹ Grocott's Penny Mail, 19 May 1905.

¹³⁰ Grocott's Penny Mail, 14 July 1905.

¹³¹ Grahamstown Journal, 20 Sep. 1906; Grocott's Penny Mail, 14 Sep. and 21 Sep. 1906.

*typhoid, were almost endemic. In these low-lying parts the household slops merely went out of the window into nearest gutter. The obvious evidence of lack of sanitation was the notorious night-soil cart. Sometimes only once a week, the dreadful buckets were carried off by hand to a most unsatisfactory depositing-site. If on your evening walks you saw the cart anywhere near, you took a long way round to escape the appalling smell. Dreadful as it was, this service was quite expensive and the burden [...] fell particularly on the schools and hospitals.*¹³²

In 1909, the City Council decided that the night soil removal would be undertaken departmentally from the beginning of 1910.¹³³ The Sanitary Committee drew up a scheme for the removal under the “Duplicate Pail Covered System”. This scheme was introduced to the City Council, and permission was requested to draft similar scheme for the removal and disposal of slop-water.¹³⁴ The Council finally accepted the scheme during the fourth meeting it was discussed.¹³⁵ A new depositing site at Goodwin’s Kloof was selected, but there was a petition, signed by 172 residents, against this site.¹³⁶ The petition together with opposition within the Council caused delays and, as a result, the Council postponed the departmental undertaking until the 1st July 1910.¹³⁷ Dr. J.A. Mitchell, the Assistant Medical Officer of Health for the Colony, conducted an enquiry into the site and recommended against it.¹³⁸ The Sanitary Committee condemned Dr. Mitchell for his superficial knowledge of conditions and refused to accept the site he recommended because of its proximity to the railway station, the location wells, and the main road from King Williams Town. The Council endorsed this decision and emphasized further the suitability of Goodwin’s Kloof.¹³⁹ There followed a state of deadlock and in May, the City Council agreed to invite tenders for the removal of night soil under the duplicate pail system, as well as for slop-water and refuse for the whole city.¹⁴⁰ This marked the end of the hope of the Council taking over of the sanitary work of the city for the immediate future.

Dr. J.T. Bruce-Bays resigned in February 1911, and Dr. F.A. Saunders was appointed as a Medical Officer of Health in his place. The first annual report of Dr. Saunders was a comprehensive and far-reaching document, and pointed to many weaknesses in the city’s sanitary arrangements and general well-being. The report showed that Grahamstown’s death rate was considerably higher (29.286 per 1,000) than that of Kimberley (19.68) and Port Elizabeth (18.93), and was markedly higher amongst Blacks. Dr. Saunders did not

¹³² Macmillan 1975, 118–119.

¹³³ Grocott’s Penny Mail, 12 Mar. 1909.

¹³⁴ Grocott’s Penny Mail, 21 May 1909.

¹³⁵ Grocott’s Penny Mail, 11 June 1909.

¹³⁶ Grocott’s Penny Mail, 12 Aug. 1909.

¹³⁷ Grocott’s Penny Mail, 8 Oct. 1909.

¹³⁸ Grocott’s Penny Mail, 22 Oct. and 12 Nov. 1909.

¹³⁹ Grocott’s Penny Mail, 21 Jan. 1910.

¹⁴⁰ Grocott’s Penny Mail, 6 May 1910.

give any one reason for this state of affairs but argued that a city such as Grahamstown, which was rural, educational and non-industrial in character, ought to be healthier than a mining town and an industrial seaport. He called for proper abattoir facilities, a public washhouse, attention to housing, improvement in the water and milk supply, the proper isolation of patients suffering from infectious diseases, and the systematic medical examination of children to improve the situation.¹⁴¹

4.2.3 Discussions about Locations and Sanitation

In this chapter, two themes are presented. Firstly, the conditions in Grahamstown's locations in the end of the research period are examined. The second theme presented is the discussion about the sanitary situation and sewerage system in 1915–1916.

The African Locations in the Early 20th Century

There is evidence that the living conditions in the locations at the end of the 19th century had become worse than they had been, for example, 20 years earlier. Overcrowding, grossly inadequate housing and the absence of adequate pure water and a suitable sewerage disposal system, made the areas breeding grounds for disease and extremely hazardous to public health. The shortage of municipal revenue was probably an important determining factor in the Council neglect. Municipal authorities ignored the evidence indicating that the disease caused by the accumulation of filth was a reason for the high mortality rate in the location. The Medical Officer of Health gave the figure of 41 Black deaths per 1,000 head of population in 1905. He also stated that 376.5 per 1,000 Black children died before reaching the age of five.¹⁴² He blamed this on the fact that:

*Into their minds have not yet been inculcated those elementary principles of hygiene [...] The native is ignorant of the value of light and fresh air and their purifying attributes; he is content to take his rest in a squalid, ill-ventilated hut, where bacteria and microbes can multiply at an alarmingly rapid rate.*¹⁴³

The locations were virtually entirely lacking sanitary facilities and a sanitary removal system. In 1908, only five ordure closets, which were daily emptied, served all three locations. No system of slop or refuse removal existed.¹⁴⁴ In his Minutes, the Mayor paid

¹⁴¹ Mayor's Minute, Grahamstown, 1911, 18; Grahamstown Journal, 18 Apr. 1912; Grocott's Penny Mail, 19 Apr. 1912.

¹⁴² Grocott's Penny Mail, 21 Sep. 1906.

¹⁴³ Ibid.

¹⁴⁴ Report of systematic inspection on 14 and 15 Aug. 1908, J.A. Mitchell, A.M.O.H. for Colony. MOH 102, L2C, 17. KAB.

attention to this situation and commented that unless the supply of water in the locations was not augmented it could not be expected that Blacks would use water for cleansing purposes.¹⁴⁵ In 1912, the *Grahamstown Journal* commissioned a special report about the living conditions in the location after Dr. Saunders had described it in his report as a “human dung heap”.¹⁴⁶ The report described the grossly insanitary state of affairs, filthy drains and ruts, in which cesspools developed, and roads in a bad state. The overcrowding of the huts gave also rise to many questions about health. The Special Investigation Committee supported the findings of the *Grahamstown Journal*, and spoke of extremely unhealthy living conditions:

*The sick and dying crawl out and defecate as near as possible to the hut they live in, and when they get beyond the strength of that they lie in their filthy clothes, or use rags which are then thrown out into the streets.*¹⁴⁷

In 1913, the City Council introduced a slight measure of reform by agreeing to install thirteen concrete dustbins for the streets of both the government and municipal locations.¹⁴⁸ In October, the City Engineer submitted plans for five communal latrines for men and five for women for the use of Blacks in the locations; the City Council, however, objected to this.¹⁴⁹ Two months later after some relevant information was obtained from Kimberley, it was agreed to construct the latrines but only to the Municipal Location.¹⁵⁰

The Tuberculosis Commission of 1914 told that the Special Committee appointed by the Town Council of Grahamstown in 1912 had reported about the sanitary conditions of the locations:

*There is no proper system of sanitation carried out. The use of pails and the removal of night soil is optional. And where there are infectious diseases, there appears to be no regular method of removing or burying the excreta, or of supplying and using disinfectants [...] No places have been set aside for the deposit of filth, rubbish, litter, etc., as provided for in Clause 20 (of the municipal regulations). The consequence has been that the occupiers of the Government and municipal locations have regardlessly thrown all their rubbish into the streets.*¹⁵¹

The responsible official told in his evidence to the Commission:

*Well, it (the removal of refuse) has not been done regularly. Occasionally the Council would vote the sum of £5 for the Location Inspector to arrange for a cart to go round and collect the tins and rubbish: but it is not done regularly. This slackness and neglect is not due to the officials of the town; it is the “powers that be”; we point out what is required and ask for authority to do these things, and we are sat upon for our trouble. We cannot get anything done in the Locations.*¹⁵²

¹⁴⁵ Mayor’s Minute, Grahamstown, 1908, 3.

¹⁴⁶ *Grahamstown Journal*, 18 July 1912.

¹⁴⁷ *Grocott’s Penny Mail*, 8 Nov. 1912.

¹⁴⁸ *Grahamstown Journal*, 17 July 1913.

¹⁴⁹ *Grahamstown Journal*, 2 Oct. 1913.

¹⁵⁰ *Grahamstown Journal*, 11 Dec. 1913.

¹⁵¹ Quoted in U.G., 34-14, 134.

¹⁵² *Ibid.*

The Mayor admitted to the Commission that reliable authorities had attributed the great occurrence of tuberculosis in the locations to the fact that the dwellings and conditions were insanitary and that overcrowding occurred. The Mayor was bound to admit that the locations were in a bad condition and had been so for many years past.¹⁵³

The former Medical Officer of Health, Dr. Saunders, criticised the City Council most openly. He told the Commission “you will get nothing done here so long as there is a municipality”. He called for the removal of responsibility for public health matters from the local authority. He favoured the introduction of a Sanitary Committee consisting of the Resident Magistrate, the Chief of the Police, the District Surgeon and two or three officials, “instead of [...] the most ignorant class they could find, shopkeepers who had made money without scruples as to how they got it.” He described the locations as “a disgrace to civilisation.”¹⁵⁴ Saunders’ remarks caused uproar in Grahamstown’s administrative circles and a special committee was appointed to investigate his allegations. The Committee interviewed the Sanitary Inspector, the Superintendent of Works, and the Location Inspector, who all condemned Dr. Saunders for ignoring positive features. The Committee’s report dismissed the allegations as “unfounded and untrue” and concluded that the evidence was “incorrect, untrustworthy, biased and malignant”.¹⁵⁵

In 1918, living conditions in the location were still very insanitary. Many of the dwellings were the “pondokkies” of wattle and daub huts. The biggest sanitary improvement the Municipality had done was the eradication of the prickly pear bushes during the 1914–1918. This, however, could not solve the sanitation problems; in 1918, there were four public latrines in the municipal locations and four in Fingo Village.¹⁵⁶ The *Grocott’s Daily Mail* revealed the flimsy nature of many of the shelters in the locations in 1928; the water tanks erected by location residents were described as being stronger than the houses.¹⁵⁷ Streets in the location remained in an appalling condition, and extremely inadequate provisions were made for the supply of water and sanitation facilities. Grahamstown was still dependent on gas lighting and the bucket system of sewerage removal, as plans for modern facilities such as electrification, a new water scheme, and waterborne sewerage, had not come to fruition.¹⁵⁸

¹⁵³ U.G., 34-14, 134.

¹⁵⁴ Grocott’s Penny Mail, 24 Mar. 1913.

¹⁵⁵ Grahamstown Journal, 17 Apr. 1913; Grocott’s Penny Mail, 21 Apr. 1913.

¹⁵⁶ Grocott’s Penny Mail, 8 Feb. 1918.

¹⁵⁷ Grocott’s Daily Mail, 16 Feb. 1928.

¹⁵⁸ Torlesse 1993, 6, 8.

The Sanitation and Sewerage Discussions of 1915 and 1916

In 1915, the introduction of a waterborne sewerage system was discussed. Dr. G.C. Purvis, the Medical Officer of Health, had taken the matter up by mentioning the advantages of this scheme in his report for the previous year.¹⁵⁹ In May, the Health Committee recommended that the Council undertake the removal of faeces, slop-water, and rubbish departmentally. This was accepted in the Council after a debate on the advantages of a departmental system compared with a contractual system.¹⁶⁰ Conservative councillors, however, requested that the Health Committee continue to investigate contractual agreements, because of the revised offer submitted by the contractors.¹⁶¹ This offer was turned down, and the Health Committee continued exploring a departmental system.¹⁶² In July, the Health Committee finally dismissed the introduction of a waterborne sewerage system because of an insufficient water supply, the lack of time to borrow money, and the time needed, two or three years, before such a scheme could be fully operational. Because of the shortage of time to effect organization for departmental system and because of high expenditure needed, the Health Committee concluded that it would be preferable to renew a contract with the present contractors for a further three years. After a lengthy debate, the Council accepted the Committee's recommendation.¹⁶³ This contract was renewed for further three years (1919–1921) in 1917.¹⁶⁴ The Council was at that time not in a position to carry this work departmentally because of the strains caused by the First World War.

In September 1915, W.M. Macmillan published a study on the economic conditions in Grahamstown. He was mostly concerned about poverty and its effects on people. About poverty and health, he wrote:

*We must combat the fatalistic notion that diseases like tuberculosis or even typhoid and diphtheria, almost endemic with us, are in the necessary order of things. It has been proved repeatedly that poverty and its evitable accompaniment of reduced physical efficiency, together with the squalor and overcrowding which are their lot in certain areas even of roomy Grahamstown, make the poorer classes singularly liable to disease.*¹⁶⁵

According to him, the slums were the problem:

There are blocks, if not streets, in a condition that is a menace to health and decency [...] I speak especially, not exclusively, of the area [...] very commonly along the river beds. There are to be found, if not "back-to-back" rooms, then certainly "crowding on space" (surely

¹⁵⁹ Report of the Medical Officer of Health. In Mayor's Minute, Grahamstown, 1914, 29.

¹⁶⁰ Grocott's Penny Mail, 7 May 1915.

¹⁶¹ Grocott's Penny Mail, 28 May 1915.

¹⁶² Grocott's Penny Mail, 11 June 1915.

¹⁶³ Grocott's Penny Mail, 30 July 1915.

¹⁶⁴ Grocott's Penny Mail, 14 Dec. 1917.

¹⁶⁵ Macmillan 1915, 5.

*inexcusable in Grahamstown) also houses leaking and in disgraceful general disrepair; a few, in the almost total absence of proper drainage, are dangerously below the level of the road [...] The river beds and gutters are fly-and-mosquito-infested open sewers.*¹⁶⁶

Macmillan had four suggestions for urgent improvements. Firstly, that in the interest of health a serious attempt should be made to address the slop and rubbish nuisances. Secondly that more water for the purposes of personal hygiene was needed. Thirdly that the Sanitary Inspector needed help, the area was too large for one man. And lastly, that the abattoirs should be improved and that the meat inspections should be more thorough.¹⁶⁷

In 1916, sanitary conditions caused lengthy discussions when the former member of the Town Council, J.J. Vroom complained about them in a letter to Dr. J.A. Mitchell, the Assistant Medical Officer of Health for the Union.¹⁶⁸ In an answer to Vroom's accusations, the Sanitary Inspector of Grahamstown wrote a report to the Health Committee in which he denied all the accusations.¹⁶⁹ He also wrote a letter together with Dr. Purvis to the Acting Secretary for the Interior in which they again said that Vroom was wrong and told that the surprise or official investigation of the "disgraceful sanitary affairs" in Grahamstown would be welcome.¹⁷⁰ The matter was left to rest after this.

4.2.4 Money and Sanitation

In the 19th century, the biggest sanitary problem in Grahamstown was the existence of cesspools, which were leaking into streams and wells and so polluting the water. The first report considering this problem was already done in 1868 but a real full-scale investigation was done only in 1879. A recommendation was made that the cesspool system should be abolished from the beginning of 1881 and be replaced by pail system. The financial reasons, however, prevented the reform and the situation continued to be same in the 1890s. Nevertheless, there were some improvements. In 1867, the Town Council appointed the first Sanitary Inspector. In the 1880s, attention began to be paid the conditions of locations and the municipality was mostly blamed for this. The awareness of the connection between filth and disease started also to be perceived amongst the decision makers. Still municipal finance prevented real improvements in sanitary conditions just as it had hindered improvements in water supply.

¹⁶⁶ Ibid., 14–15.

¹⁶⁷ Ibid., 15.

¹⁶⁸ J.J. Vroom to Dr. Mitchell, Medical Officer of Health, Pretoria, 13 Nov. 1916. GES, 607, 92/13. SAB.

¹⁶⁹ Report submitted to the health committee by Sanitary Inspector, 4 Dec. 1916. GES, 607, 92/13. SAB.

¹⁷⁰ R.J. Cogan, Sanitary Inspector, and G.C. Purvis, M.O.H., to the Acting Secretary for the Interior, Pretoria, 23 Dec. 1916. GES, 607, 92/13. SAB.

The Public Health Amendments Act of 1897 was important for sanitary conditions in Grahamstown in two senses. First, it made possible to appoint a Medical Officer of Health for Grahamstown and actually, the first officer, Dr. J.T. Bruce-Bays, happened to be very active in sanitary matters. Secondly, the Act indirectly helped in the abolition of the cesspools in 1901. The municipality introduced the pail system to replace the cesspools. Originally, it was proposed that the City should itself remove all the refuses but the City Council decided that this work should be contracted out just as the emptying of the cesspools had been. This system caused many problems and there were discussions about departmental work nearly all the time. Unfortunately, each time the result was that it was easier to contract the work out and the departmental system could be realised only in 1921.

In the beginning of the 20th century there were two officials paying attention to sanitary issues. There was also growing awareness about the connection between filth and disease. This awareness, however, did not apply to the conditions in the locations, which had long been neglected and the beginning of the new century did not alter that situation. Municipal authorities were turning a blind eye towards any defects in the areas. Moreover, when they were reminded by either outsiders or one of themselves about the conditions and negligence, they usually first denied everything, and then said that the people making accusations did not know the local conditions or circumstances. They only yielded when presented with overwhelming evidence as happened with the Tuberculosis Commission in 1914. This yielding, however, did not usually lead to any action. The sanitary condition of locations stayed unimproved long into the 20th century; there were still pails in use in 1944 in all locations.

One reason for this was that the municipality did not have the money to improve conditions. In all the matters concerning sanitation, the final decision in the City Council was always made in terms of municipal finance; even more so than in water supply questions. The abolition of cesspools, municipal refuse removal work, improvements in locations and an adequate sewerage system were all postponed time after time due to economic reasons. The impossibility of waterborne system without proper water supply was mentioned for the first time in Town Clerk's report in 1868. The first real discussion about introducing the waterborne sewerage system was in 1915 but the want of money and the insufficient water supply became issues in this matter. There was enough water for a sewerage scheme only after the building of the Howieson's Poort Dam in 1930.

4.3 Durban

4.3.1 The Drainage of the Town Area

The development of sanitary conditions in Durban from the 1850s to 1870s will be described in this Chapter. Special attention is paid to the drainage work and night soil collection during this period.

Swampy Neighbourhood and Poor Drainage as a Sanitary Problem

From letters published in the *Natal Mercury*, it appears that the sanitary condition of Durban in the 1850s was unquestionably bad. The various correspondents referred to swamps, quagmires, fever, and death traps, pigs allowed to roam over all the parts of the borough, and other nuisances. The Town Council had restricted its endeavours in the way of public improvements to the drainage works of a primitive nature, but on a motion that tenders be called for the construction of a road crossing the Western Vlei, the one Councillor proposed that the money should be used for drainage instead of the new road. This amendment, however, was not carried, the resolution in favour of the new road being adopted.¹⁷¹

In 1855, a letter was received from John Milne¹⁷² suggesting that Cato's Creek be utilised for drainage purposes, but the Town Council took no action thereon. (See Figure 4.3) In 1856 the Umgeni River, swollen by heavy floods, overflowed its banks and swept across the Eastern Vlei and forced its way into the Bay at Cato Creek, doing vast damage to such primitive public works, roads, and bridges as then existed and setting back progress and producing an epidemic of sickness, following the extensive inundations. In 1857, the municipality set about filling in the swampy places, and invited tenders to erect an embankment across the head of the eastern vlei in the hope that this would keep the Umgeni within its banks. The streets could be used in wet weather, since the Council had constructed brick culverts to drain Pine Terrace and other thoroughfares. The Council communicated with Milne about the carrying out his suggestion of cutting a drain through the Eastern Vlei connecting with Cato's Creek. An earthwork embankment was first constructed above the brickfields as a protective measure, and in August 1857, a contract was entered for carrying out this work. Considerable difficulty was experienced, however, and eventually Milne consented to superintend the work, in which he was

¹⁷¹ Henderson 1904, 29.

¹⁷² 1805–77. Resident Engineer in Durban's Harbour 1850–57.

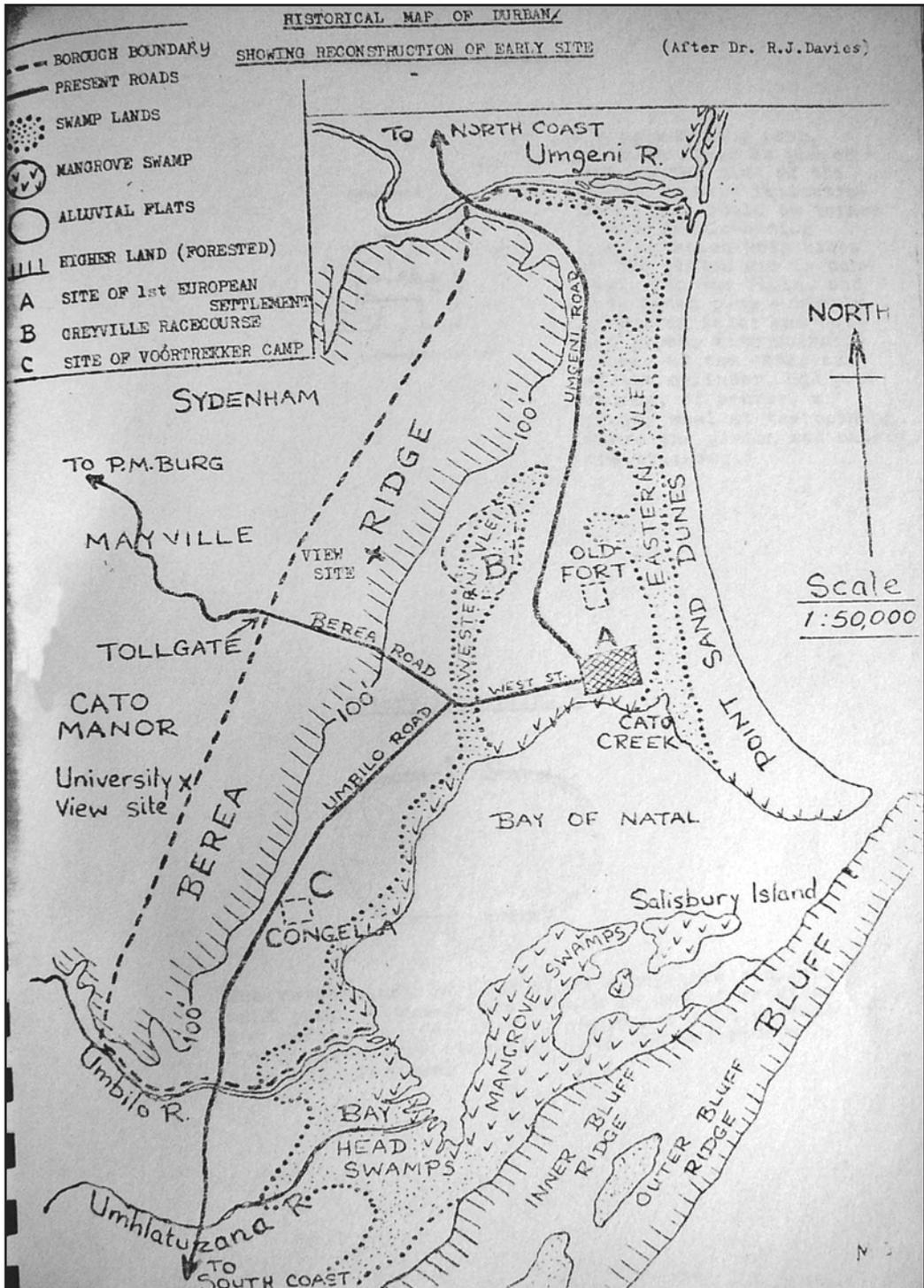


Figure 4.3. The reconstruction of the early site of Durban. (Bjorvig 1979)

assisted by the services of the local garrison. The embankment was completed in 1862, but the drain was completed only in 1874 and named after its originator, “Milne’s Drain”. This scheme effectively drained off water for years and made access to Durban easier. Furthermore, it improved the sanitary condition of the town.¹⁷³

In April 1858, the *Natal Mercury* reported on the Town Council meeting where councillor Hartley had brought forward a scheme for bettering the sanitary condition of the town, by requiring every house to remove the night soil every day to a place appointed outside the town. The *Natal Mercury* thought the scheme impracticable and unnecessary. In addition, as the paper wrote, “it would also involve a serious interference with the liberty of the subject in transacting his private business in his own way”.¹⁷⁴

W. James described Durban in 1858:

*In order to give a true picture of what Durban was like in 1858, I can best describe it as just a sandy flat. The Town gardens were an open piece of waste ground, the wind having full play on the fine sand, creating sand drifts. An open drain extended from vacant land, then called ‘the Flat’, across central West Street and emptying itself into the Bay. This was Milne’s Drain.*¹⁷⁵

The *Natal Mercury* complained about sanitary conditions two years later:

*The sanitary condition of the town has been disgracefully neglected of late [...] no attention whatever has been paid to the state of our drains which are mostly choked up, fallen in and utterly useless or worse than useless, for they have become cesspools of stagnant filth and hot beds of disease. The inhabitants are allowed to throw garbage of all sorts on unoccupied plots, and these, even in dry weather, have emitted horrible stenches. We may mention particularly the low central part of West Street, especially the south side [...] Pig sties, manure heaps, and open surface privies are allowed without check [...] every other improvement should give way to an instant effort to improve drainage.*¹⁷⁶

The Sanitary Department of the Borough was inaugurated in January 1861, when W. H. Stonell was appointed Town Constable, Street Keeper, and the Inspector of Nuisances. Extensive drainage works were carried out during 1861–62, notably of the Eastern Vlei, Field Street, Pine Terrace, and West Street. In connection with these works, the sub-soil removed in opening up drains was utilised for temporarily hardening the streets.¹⁷⁷

Durban’s first hospital, the Natal Government Hospital, was completed in 1861. There were no lavatories, but six privies were built 35 metres from the nearest ward. A running stream of water was diverted to wash the soil down to a nearby rivulet, which emptied itself into the swamp fringing the Bay. Rubbish was dumped in the bushes,

¹⁷³ Hattersley 1950, 209; Russell s.a., 322–24; Ellis 2002, 38; McIntyre 1957, 75; Bjorvig 1979, 56.

¹⁷⁴ *Natal Mercury*, 22 Apr. 1858.

¹⁷⁵ Quoted in Houghton 1972, 81.

¹⁷⁶ *Natal Mercury*, 16 Aug. 1860.

¹⁷⁷ Henderson 1904, 46, 48.

and amputated limbs and other operational relics were buried in holes in the hospital grounds.¹⁷⁸ *Natal Almanac and Yearly Register* 1863 described the improved sanitary condition of Durban in 1862:

*The sanitary condition of the town has also been much improved, by the extensive drainage operations under direction of the Municipality, which have had the effect of rendering available many portions of land contiguous to the town, formerly considered valueless, and also much improving the health of the town.*¹⁷⁹

Night Soil Removal and Drainage in the 1870s

An important sanitary reform was inaugurated during 1865 by entering into a contract for three years for the removal of night soil from privies, householders being required to supply boxes, while suitable conveniences were provided for Blacks. The importance of this step cannot be too highly estimated. As Henderson wrote there can be no doubt that had cesspools been permitted to be used for a longer period the public health would have been seriously affected, as under a sub-tropical climate with a growing population composed of mixed races had any infectious epidemic appeared the consequences would have been extremely serious.¹⁸⁰

As epidemic cholera was advancing from East Africa and a great smallpox epidemic was ravaging Cape Town in 1871, the Government of Natal charged Durban Corporation with a total lack of sanitary precautions. The Town Council, however, had already launched a committee and a public debate concerning the sanitary improvement of the town, but it made an important distinction between the governor's point and the response it now proceeded to make to the charges. To the Natal government the trouble was simply an accumulation of waste and refuse creating the conditions for epidemic disease. For Durban politicians and the White opinion generally, public health was not merely police work and public services, it was already being perceived as a question of "coolie habitation" – and of the limits imposed on the municipality by a combination of the law, finance, and the ethnic constitution of their community. The main result was the tight regulation of building standards in the town.¹⁸¹ Still the Committee saw the disposal of urine and kitchen liquids as the most unsatisfactory part of the sanitary question. As to a remedy for this, the only satisfactory solution, according to the Committee, was a thorough system of sewerage. It, however, was at that time beyond the financial means of the borough.¹⁸²

¹⁷⁸ Malherbe 1965, 111–12.

¹⁷⁹ Quoted in Houghton 1972, 82.

¹⁸⁰ Henderson 1904, 60.

¹⁸¹ Swanson 1983, 407–409; Popke 2003, 252–255; Mayor's Minute, Durban, 1871, 2; Mayor's Minute, Durban, 1873, 2.

¹⁸² First Report of the Town Committee on the Sanitary Improvements of the Town, July 26, 1871. In Mayor's Minute, Durban, 1871, 5.

During Richard Vause's¹⁸³ second mayoralty considerable progress was made in the laying of brick and pipe drains. At that time, a large open drain from the Eastern Vlei passed through what is now known as Mark Lane, running from there to the Bay. This drain, known as "Adlam's Drain", was a constant source of nuisance, and in order to cover it the strip of land was purchased.¹⁸⁴ The drain was not completed until 1877, considerable difficulty being experienced in agreeing terms with the owners of the properties through which the drain passed from the West Street end of Mark Lane towards the Bay.¹⁸⁵ Sanitary matters were considerably improved during 1875–76 by the use of 1,000 galvanised iron pails imported from England to replace the wooden boxes previously used. A site was purchased on the Eastern Vlei for use as a night soil depot, and permission obtained from the War Department authorities to lay a line of tram-trails from the town to the Depot over Ordinance Land. H. E. Ellis was appointed as the Inspector of Nuisances in 1875, and under his supervision, many improvements were effected with regard to the control of slaughterhouses, the removal of dust and refuse from the streets, and sanitary matters generally.¹⁸⁶

In 1876 the conversion of night soil, which up to that time had been treated as a waste product, into fertilising matter was commenced. The night soil was converted into a dry powder, and was believed to possess valuable manurial properties.¹⁸⁷ This treatment of the night soil continued until 1883, when owing to various reasons it was discontinued. The works had been for some time, owing to their situation, proving a discomfort to the Burgesses, while the demand for the product did not exceed one-half the production. In 1882, 500 tons had been manufactured, only one-half of which had been sold, although at the time of the stoppage of the works the fertiliser was declared 15 times stronger than that originally manufactured.¹⁸⁸

Although considerable sums of money had been spent during the preceding 15 years in drainage works, no comprehensive scheme for carrying off surface water from the Vleis and the centre of the town was adopted until 1876, when the Council accepted plans and specifications prepared by C.E. Gooch. The scheme consisted of two drains, both starting from Commercial Road. One was an egg shaped drain, built of brick and cement, passing under Pine Terrace, Mark Lane, across West and Smith Streets, and down Field Street to the Bay. The other took the route of what was known as "Moodie's Drain" until

¹⁸³ 1822–86. Publisher and business pioneer. Founder of the Natal Bank 1854 and of the Natal Chamber of Commerce 1856. From 1860 owner of the Natal Mercury and the Natal Times. Mayor 1870–71, 1874–75, 1878–79 and 1883–85.

¹⁸⁴ Mayor's Minute, Durban, 1875, 2–3.

¹⁸⁵ Mayor's Minute, Durban, 1877, 2–3.

¹⁸⁶ Report of the Sanitary Committee, July 3 1874. In Mayor's Minute, Durban, 1874, 8–9; Mayor's Minute, Durban, 1875, 5.

¹⁸⁷ Mayor's Minute, Durban, 1875, 5; Mayor's Minute, Durban, 1876, 6; Mayor's Minute, Durban, 1877, 7.

¹⁸⁸ Mayor's Minute, Durban, 1882, 8; Mayor's Minute, Durban, 1883, 3; Henderson 1904, 303–304.

it reached Milne's Drain, continuing at right angles and discharging itself into the Eastern Vlei. The work was satisfactorily completed in 1877. In 1878 H. Ramsay Collins, who had superintended the work, submitted valuable reports and recommendations concerning the drainage of the Eastern Vlei, embracing the deepening and improvement of Milne's Drain, the drainage of the town generally, and the disposal of sewage.¹⁸⁹ Letters to newspapers during 1882 were critical of sanitary arrangements. One reader of the *Natal Mercury* asked if it would be expecting too much of the Durban Corporation to fence the Currie's Fountain, "stagnant water, with filth of every description, and coolie dwellings, are permitted on a spot which ought to be kept specially free from all taint."¹⁹⁰

4.3.2 Sewerage and Lavatories

The sanitary development of Durban from the 1880s to the end of the century is described in this Chapter. The main points concentrated are the drainage, public health, waterborne sewerage system, public lavatories, and the night soil removal.

Drainage and Health

The municipal area of Durban did not have sewers during most of the 19th century. The conditions under which the first night soil boxes for solid waste were introduced in 1864, followed by night soil buckets in 1875, both collected and emptied in the Western and Eastern Vleis, gave many opportunities for the spread of diseases.¹⁹¹ Soon after his appointment as Borough Engineer in 1881, J.F.E. Barnes submitted two reports urging the Council to adopt the Shone's Pneumatic System.¹⁹² In his report of 1883, he recommended a combination of the pneumatic with the pail system.¹⁹³ In 1888, the Council again examined the system this time with the assurance that it was proving perfectly suitable in "Eastbourne, Henley, Warrington, Southampton and other important English towns."¹⁹⁴

In 1886, the Town Clerk sent an enquiry to three local doctors and to the Medical Officer of Health concerning the health conditions of Durban. Doctors J. Prince and W.H. Addison were in general approving the sanitary arrangements but still thought that the

¹⁸⁹ Mayor's Minute, Durban, 1876, 2; Report on Drainage of Eastern Vlei and Report on Drainage of Durban. In Mayor's Minute, Durban, 1878, Annexures A and B, 10–12.

¹⁹⁰ *Natal Mercury* 18 Aug. 1882.

¹⁹¹ Bjorvig 1994, 326–27.

¹⁹² Isaac Shone's Pneumatic Sewerage System was a "separate" system, with the sewage and rainwater disposed of by separated systems. Gravity delivered sewage to district collectors, then pneumatic ejectors raised sewage and delivered it to disposal points.

¹⁹³ Mayor's Minute, Durban, 1884, 11.

¹⁹⁴ Mayor's Minute, Durban, 1889, 10.

Inspector of Nuisances should do more direct inspections. According to them, the want of these inspections could be plainly seen in the town. They were of the opinion that all the urine, slops, and night soil should be removed alternate days and all premises should



Picture 4.5. John Fletcher, Borough Engineer of Durban 1888–1918. (Source: Henderson 1904, 144)

be inspected at least once every two weeks. Dr. Archibald Mackenzie was of the opinion that the pail system was not properly carried out and that there was a room for improvements in the sanitary conditions. Dr. Julius Schulz¹⁹⁵, the Medical Officer of Health, also had some minor complaints about the system.¹⁹⁶

In 1890, the Medical Officer attributed typhoid fever to soil saturated with organic matter. Such contaminated soil offered a suitable breeding ground for many of the diseases producing genes. Liquid sewage was also still carried away in huge open drains connected with the underground sewers in the town. The stench from such overflowing drains and connections of drains, despite being flushed every day, still overwhelmed the nostrils.¹⁹⁷

The Borough Engineer John Fletcher (see picture 4.5) submitted a stormwater drainage scheme in 1889. This scheme provided channelling for the principal roads in the central town and Berea.¹⁹⁸ In his minutes in 1890, the Mayor B.W. Greenacre¹⁹⁹ praised the climate of Durban and said that when this was combined with the new drainage system Durban would be “one of the most salubrious towns of the world, always providing we are able effectually to control the insanitary habits of our Indian population”.²⁰⁰ Robert Boyle wrote about this Indian community at the same year, “there are a very large number of Hindoos in Durban, who, from their filthy habits are, along

¹⁹⁵ Medical Officer of Health 1874–91.

¹⁹⁶ J. Prince and W.H. Addison to William Cooley, Town Clerk, 12 Apr. 1886, Arch. Mackenzie to the Sanitary Committee, 10 Apr. 1886, and Julius Schulz to the Mayor, 12 Apr. 1886. In Mayor’s Minute, Durban, 1886, 46–50.

¹⁹⁷ Bjorvig 1994, 326–27.

¹⁹⁸ Ibid., 320.

¹⁹⁹ 1831–1911. ‘Retail Prince’. Member of the Town Council at intervals from 1871 to 1897. Mayor 1875–76, 1889–92 and 1897–98. Member of the Legislative Council 1877–93, member of the Legislative Assembly 1893–97.

²⁰⁰ Mayor’s Minute, Durban, 1890, 5.

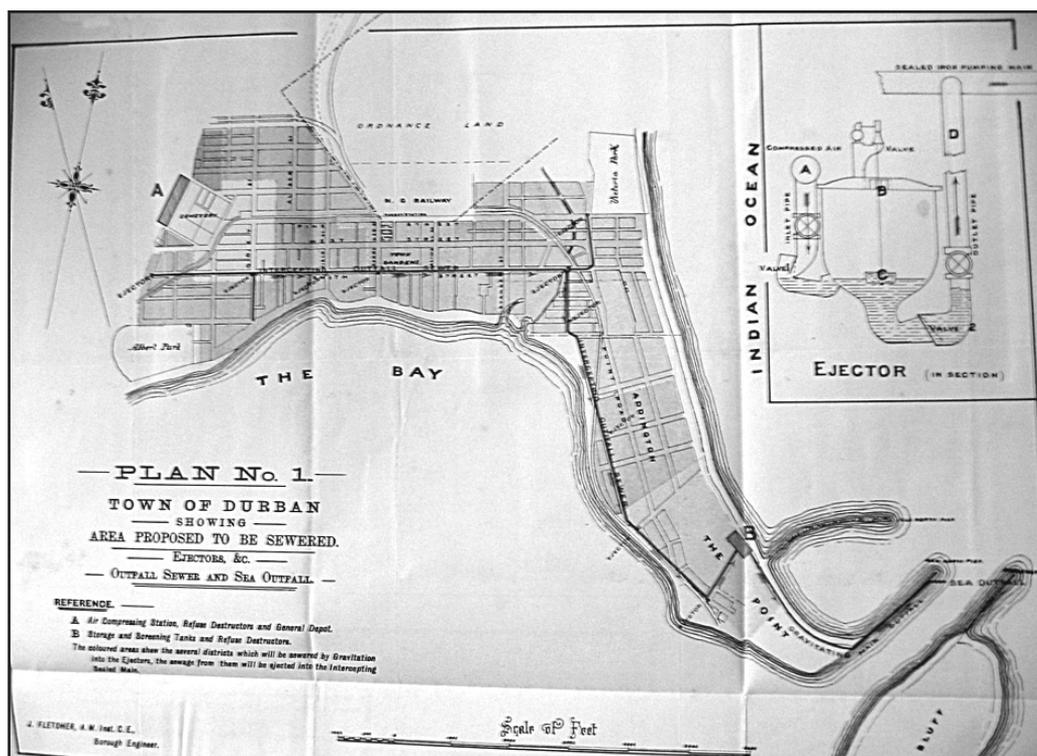


Figure 4.4. Area proposed to be sewered in Durban in 1891. (Fletcher, J., Report on the Sewerage of the Borough of Durban, Natal, January 1891. CSO, 1296, 1891/2422. NAB)

with the Kaffirs, a standing menace to the health and safety of the inhabitants".²⁰¹ Still, drainage was a main concern. Prior to 1893, the Town Council had done little to channel, kerb or construct underground mains for stormwater removal. The need to protect the hardened roads, especially on the steep Berea, from stormwater became urgent. To meet this necessity Fletcher in 1893 submitted a second stormwater drainage scheme. A 20,000 pounds loan was raised and work commenced in 1894.²⁰²

Waterborne Sewerage

On assuming office in 1889, John Fletcher had immediately called for the adoption of a sewage disposal system incorporating Shone's pneumatic ejectors and sea discharge. Actually one reason why Fletcher was chosen as a new Borough Engineer was his knowledge on this subject.²⁰³ Fletcher's report was published in the *Natal Mercury* of the 3rd March 1891 across two and a half pages of newspaper. Remembering that the

²⁰¹ Sanitary Crusade 1891, 27.

²⁰² Lynsky 1982, 29.

²⁰³ Mayor's Minute, Durban, 1890, 2.

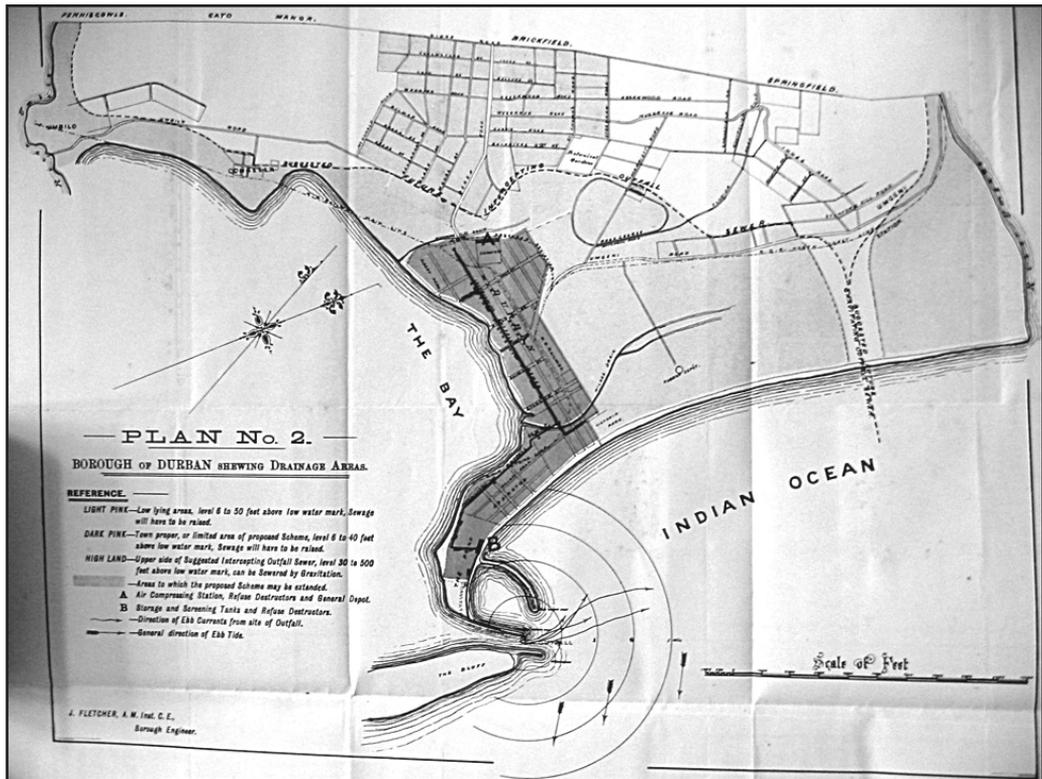


Figure 4.5. Drainage areas of Durban. (Fletcher, J., Report on the Sewerage of the Borough of Durban, Natal, January 1891. CSO, 1296, 1891/2422. NAB)

newspaper usually was only four pages long the importance of the scheme can be appreciated. (See figures 4.4 and 4.5) Subsequent editions were to carry numerous readers' letters criticising sea disposal.²⁰⁴ Now it is easy to be of the same opinion as Fletcher in the citation at the beginning of this work but at that time, his opinions were not widely accepted.

Robert Boyle also gave an approving estimation concerning Fletcher's plans:

*The business portion of Durban is situated on a sandy neck of land, the better class of residences being built on one side of a finely-wooded hill at the back, named "The Berea". [...] The pail-closet system is used in Durban, but it is proposed to adopt a complete water sewerage scheme which has been prepared by the borough engineer, Mr. J. Fletcher, C.E., and which seems to be a very perfect system, embracing all the latest improvements. Pneumatic ejectors will be employed, and the sewage have its outfall into the Bay Channel, where there is a very strong tide or race, which will carry the sewage with considerably velocity out to sea, and clear of the coast. It is proposed to ventilate the sewers by means of vertical shafts and ventilators, and plans and estimates of the Boyle system have been prepared.*²⁰⁵

²⁰⁴ Fletcher, J., Report on the Sewerage of the Borough of Durban, Natal, January 1891. CSO, 1296, 1891/2422. NAB; Lynsky 1982, 28.

²⁰⁵ Sanitary Crusade 1891, 25–26.

Plans and readiness to build the system already existed in 1891 but the building works were suspended until the Umlaas Water Scheme was in operation because “the present sanitary system is preferable in an imperfect and incomplete sewerage scheme”.²⁰⁶ An ample supply of water was needed for flushing the system. Fletcher also paid attention to the house drainage. He was advocating for a small exhibition of the best appliances, so that you could show practical examples for householders. According to him “this would be of great utility besides being profitable both directly, by avoiding the use of bad materials, and indirectly, by securing the best and simplest principles of house sanitation.”²⁰⁷ While developing sources of water supply Fletcher had been far from inactive in improving internal water distribution and sewerage system. In his official report for 1894–1895 Fletcher recorded with reference to the progress of various public works: “The three most important undertakings are Water Supply, Sewerage and Electric lighting [...]they are so much dependent upon each other that I regard them, for many reasons, as inseparable undertakings. The Water Works are remunerative in the sense that the supply of water is a necessity, and a valuable commodity; but without water there could be no Sewerage Works.”²⁰⁸

During the mayoralty of Robert Jameson²⁰⁹, the sewage station became operational in July 1896. An outfall sewer was situated along the side of the North Pier for waterborne household sewage, which was discharged into the sea during the first few hours of the ebb tide. The discharge of raw sewage into the sea via this pipeline continued until 1969.²¹⁰ In his report, Jameson said that Durban was fortunate in having the Indian Ocean to receive their sewerage “saving us as it does all further expenses and anxiety as to its disposal, the bugbears of so many inland towns”.²¹¹ Jameson had held for many years the position of the Chairman of the Sanitary Committee of the Town Council, and it was a happy coincidence that this most important scheme should be completed during his mayoralty.

Lavatories and Night Soil Collection

Lavatories were provided throughout the town in the 1890s. In the central part of Durban, there were two fitted structures with urinals, lavatories, and toilet-rooms. John Fletcher described one of the two built structures in 1898:

²⁰⁶ Borough Engineer’s Official Report, for Year 1892–3. In Mayor’s Minute, Durban, 1893, 24–25.

²⁰⁷ Borough Engineer’s Official Report, for Year 1893–94. In Mayor’s Minute, Durban, 1894, 30–31.

²⁰⁸ Borough Engineer’s Report. In Mayor’s Minute, Durban, 1895, 21.

²⁰⁹ 1832–1908. Mayor 1895–96. Chairman of the Sanitary Committee for over 20 years.

²¹⁰ Murray 1987, 27; Bjorvig 1994, 327–28.

²¹¹ Mayor’s Minute, Durban, 1896, 6.

*The most important public sanitary arrangements will be found in the new underground conveniences in Gardiner Street, when completed. This will form the only ornamental feature to be found in the whole works connected with our public sewerage system; but these underground conveniences I intend shall form an example of the most recent and decorative domestic sanitation - in fact, a modern "Temple of Hygiene."*²¹²

The other, housed in the first Town Hall, was opened in 1885 on part of the Market Square, and it boasted the first lavatories for women on the ground and first floor. For the Africans and Indians 31 conveniences were scattered through the town by 1904 and others were being erected for Whites and Coloureds. The system served the town so well that it was not until 1938 that the Council voted for funds to replace it.²¹³ The building of lavatories or sewers for the Africans and Indians had already been discussed in the 1890s, but in his report in 1898, the Inspector of Nuisances reported that, according to his departments experiences, they appreciated the improved system as much as and benefited more than the rest of population. There had been only some temporary difficulties and they were already diminishing.²¹⁴ John Fletcher in the same year wrote that they have disproved entirely the idea that modern sanitary appliances are unsuitable for a large African or Indian population.²¹⁵

In 1891, the pail system was extended to the suburbs of Durban. The Mayor was glad to report that the old system of cesspools was now a thing of the past in the suburbs "as it has long been in the town proper".²¹⁶ After the mid-1890s, the Sanitary Department took over from the night soil contractors in the central area. From 1897, the Borough Engineer's reports refer to the construction of sewerage mains throughout central Durban and extending to Greyville (1899) and the Berea (1904). By 1911, most of the developed areas within the Borough had been provided with sewers.²¹⁷ A limited slop water service was still in use at certain premises at Brickhill Road.²¹⁸

In 1899, both the Medical Officer of Health and the Inspector of Nuisances paid attention to problems in sanitation. The Medical Officer of Health blamed the contamination of soil as a cause for the prevalence of typhoid fever. Organic matter, such as excremental deposits, refuse from kitchens, and wastewaters from toilets and sinks, polluted the areas around the dwelling houses. The White householders and especially their Indian and African servants were carelessly disposing of the slop and wastewaters and in the some parts of the Borough even human and animal excreta. Preventing this was the duty

²¹² Borough Engineer's Official Report for the Year 1897-98. In Mayor's Minute, Durban, 1898, 25.

²¹³ Jackson 2004, 23-24.

²¹⁴ Sanitary Department. In Mayor's Minute, Durban, 1898, 57.

²¹⁵ Borough Engineer's Official Report for the Year 1897-98. In Mayor's Minute, Durban, 1898, 25.

²¹⁶ Mayor's Minute, Durban, 1891, 4.

²¹⁷ Lynsky 1982, 28; Kinmont 1952, 2.

²¹⁸ Sanitary Department. In Mayor's Minute, Durban, 1911, 206.

of the municipality by efficient drainage, the extension of sewerage system, and by the regular removal of solid refuse. The Inspector of Nuisances was questioning why the Town Council had not used the compulsory powers it possessed to enforce landlords who have failed, after repeated notices, to make the necessary sewer drainage and connections to their premises. He had to maintain the gangs of night soil collectors in districts where sewerage was available and this meant unnecessary expenditure, imperfect sanitation, and the use of labour, which could be better employed elsewhere.²¹⁹

4.3.3 Durban in the 1900s and 1910s

The main themes of the sanitary development of Durban in the early 20th century, continuing system building, attention to the Indians living in town area, and the drainage work, will be presented in this Chapter.

Continuing System Building

During 1901–02, the works carried out by the Public Works Department exceeded in magnitude those of any previous year, five kilometres of new roads were hardened, 9.43 kilometres re-coated, eight kilometres of new footpaths kerbed and channelled, 13 kilometres of storm-water channels laid, and seven kilometres of sewerage mains laid in the suburbs. In 1902–03 in the outer or suburban zone, including one-half of the houses of Berea, no slop or bath water was collected – these were disposed of on the premises. In some 293 houses, the garden burial of night soil was resorted to. For this purpose, the Council employed ten coolies supervised by a sirdar. Each man was said to be able to deal with the pail contents of 30 houses per day. The procedure adopted was to dig a hole in a secluded part of the grounds, to mix the pail contents with earth and to cover them with at least 30 centimetres of earth.²²⁰

In January 1906, European-style water closets caused problems in Durban harbour. One of the disposal pipes was blocked and the plumber found two bottles, one shirt, and two pairs of socks inside. This led to investigations that involved the Fort Captain, the Harbour Engineer, the Wharf Master, and even the water police. It is not known whether the offenders were found.²²¹ After only one month, the same closet was under discussion once more; the mechanical engineer proposed on the 5th February that the wooden

²¹⁹ Medical Officer's Report. In Mayor's Minute, Durban, 1899, 30; Sanitary Department. In Mayor's Minute, Durban, 1898, 59.

²²⁰ Henderson 1904, 200; Murray 1987, 23.

²²¹ NHD, 11/1/96, 106/1906. NAB.

seats should replace the iron ones.²²² In 1908, there were 11 public conveniences for Europeans and 24 for Coloureds. All but three for Coloureds were connected to the sewerage system.²²³ In 1910, there was one more for Europeans and seven more for Coloureds, and they were all connected to the sewerage system.²²⁴

Improved Conditions?

In 1903, the Medical Officer of Health was complaining about the presence of Africans and Indians in Durban. He said that they made the constant supervision of public health and sanitary matters a prime necessity. According to him, the Indians seemed to be wholly ignorant of the simplest laws of sanitation and domestic cleanliness. He was also putting some blame on European employers who did not educate these people on sanitary matters.²²⁵ In 1909, he was still complaining about the disheartening nature of the work because of the natural predisposition, especially of the Indians, of preferring insanitary to sanitary conditions.²²⁶ According to the Mayor, an important sanitary reform was made in 1905 when all the Indian squatters were removed from the Eastern and Western Vleis. He regretted that suitable accommodation was not found for them elsewhere but said that it was still an advantage that most of them had left the borough.²²⁷

In 1906, the sub-soil drainage and filling works were started to dry out the Vleis. John Fletcher even proposed forming a salt-water lake on the upper portion of Eastern Vlei. According to him, this was the least expensive way to eradicate “the swampy condition” of this area.²²⁸ The most difficult aspect of this drainage work were the old brick pits at Umgeni because they were so much lower level than the river. Some doubts also existed about what would happen if the mouth of the Umgeni River was not kept open and the water would seep into the newly filled areas.²²⁹ The flooding of this area was still a problem in 1912.²³⁰ In the years prior to the outbreak of the First World War, Fletcher still expressed concern over the stormwater draining into the Vleis. In 1912, he recommended that permanent canals be constructed: one from the Bay to the Racecourse and a second from the Victoria Embankment along Milne’s Drain. There was too much water in the vleis but not enough clean water in the Umlaas River.²³¹

²²² Mechanical Engineer G. Thomson to General Foreman of Engineers, 5 Feb. 1906. NHD, II/1/95, 28/1906. NAB.

²²³ Sanitary Department. In Mayor’s Minute, Durban, 1908, 171.

²²⁴ Sanitary Department. In Mayor’s Minute, Durban, 1910, 173.

²²⁵ Medical Officer’s Report. In Mayor’s Minute, Durban, 1903, 57.

²²⁶ Medical Officer’s Report. In Mayor’s Minute, Durban, 1909, 93.

²²⁷ Mayor’s Minute, Durban, 1905, 8.

²²⁸ Borough Engineer’s Report. In Mayor’s Minute, Durban, 1906, 38.

²²⁹ Borough Engineer’s Report. In Mayor’s Minute, Durban, 1907, 40.

²³⁰ Borough Engineer’s Report. In Mayor’s Minute, Durban, 1912, 58.

²³¹ Lynsky 1982, 39.

In 1910, the European birth rate in Durban was 28.3 per thousand, and the death rate 8.5 per thousand. The death rate was lower than any other town in South Africa, and it is interesting to record that the death rate in England and Wales in 1908 was 14.7 per thousand. According to Tatlow, the public health and the sanitary conditions were unsurpassed in any town of South Africa. The incidence of infectious diseases was vigilantly watched, and the remarkable diminution was proof of the satisfactory methods employed.²³² The Mayor was praising the work of Councillor Robert Jameson for this:

*It is given to but few mortals to inaugurate great works and see their fruition, but Mr. Jameson is a striking exception. When he first interested himself in the work of this Borough, he found the condition of things to deplorable. He has inaugurated and piloted through the Town Council and the Natal Parliament many schemes having for their object the improvement of the sanitation of Durban and now he has the extreme satisfaction of seeing the Borough equipped with the most up-to-date public health facilities in the way of pure water, perfect sewerage scheme, and excellently conducted Public Health Department, with the corresponding result of phenomenally low death rate.*²³³

4.3.4 When the Drainage is done

In Durban, the geographical circumstances forced the municipality to start drainage works quite early, already in the 1850s. There were vleis and swamps in the town area, and especially the Eastern Vlei was at a lower level than the Umgeni River, which increased the risk of floods. This made it necessary to drain swampy areas and build drains to get water away.

An important decision for the future was the first contract for the removal of night soil in 1865 because this led directly to the removal of the cesspools from the borough area. At the same time, wooden boxes for collecting the night soil were introduced. This system continued until 1874 when they were replaced by iron pails. There was also a seven years experiment for converting the night soil into manure. This was ended mostly because there was not enough demand. This way sewerage and drainage usually started also elsewhere.

In Durban there were a consensus concerning the need for sanitary improvements. This can be seen clearly during the 1880s and 1890s when the main drainage and sewerage schemes were built, there was no opposition against them and the Borough Engineer had relative freedom to realise these systems. Of course, the waterborne sewerage system had to be postponed until the Umlaas Water Scheme was built in order to guarantee sufficient water supply for flushing the sewers. One interesting

²³² Tatlow 1911, 57.

²³³ Mayor's Minute, Durban, 1910, 14–15.

development in Durban, in contrast to, for instance, Grahamstown, is that in Durban the town officials said that Africans and Indians benefited from the improved sanitary systems and that they were suitable for them. In Grahamstown, a common opinion was that Blacks would not understand the need for sanitation. Nevertheless, it was evident that there was increasing attention from the White inhabitants of Durban from the 1870s onwards to the problem of other races living within “their” city. The building of waterborne systems led quite rapidly to the spreading of the sewer network to the suburbs and to the takeover of the night soil collection from the contractors in the central Durban. Public conveniences were also built through the town.

In the early 20th century, the development of the sanitary conditions was slow. After building the waterborne sewerage system, there were no big works to be done anymore. The sewer network was slowly spreading to the whole Borough. The pail system continued in the suburbs and newly built areas until long in the 20th century. The number of public conveniences was increased. The Vleis were finally filled and drained. There were some rumblings about the presence of Africans and Indians in the town by the Medical Officer of Health but these did not lead to anything at this time. Overall, there was not much happening in the sanitary sense in Durban.

4.4 Johannesburg

4.4.1 Early Sanitary Arrangements

In this Chapter, the sanitary conditions of the early Johannesburg will be looked at. Special attention is paid to the early sewage removal systems and plans to establish comprehensive drainage and sewerage systems and why these systems did not materialise in the 19th century.

Early Conditions

In 1888, the Sanitary Board imposed charges for the nightly collection of sanitary pails and for the daily collection of rubbish and slop-water from all the private homes. Running dish- or bath water into the streets was not allowed. In every house, there was a tank in the backyard, where such slop-water was to be collected. These tanks were emptied twice a week when a large wagon with several tanks collected the slop-water. The use of this service was compulsory and non-payment was punished by imprisonment. Wemmer Pan and later Barrett's farm were used as disposal sites. These were both close to all three Black Locations near Ferreira's Town; the rich people lived at the other end of town in Bertrams and New Doornfontein.²³⁴ The night soil was placed in trenches and covered up, not always very efficiently, which caused a terrible stench and attracted myriads of flies.²³⁵ The town was adorned with large red letters, measuring about 30 centimetres in length, and they were placed in the most prominent spots. S denoted slop tank, D dustbin, and P for paid or pail respectively and the inspector would see them without any further trouble or delay.²³⁶

The District Surgeon Hans Sauer told a Sanitary Board meeting in July 1889 "Johannesburg is second only to the Panama Canal as regards the death roll".²³⁷ The climate was healthy yet the conditions under which the mass of the people lived made typhoid endemic. The condition of watercourses, their drainage, and the management of the town were as bad as they could be. The absence of supervision allowed every hollow to become a fever generating marsh and every watercourse a channel for miasmatic poison. The Town Engineer W.H. Miles thought the sanitary state of the town was deplorable at this time. In fact, his first public

²³⁴ Leyds 1964, 32; Biggs 1973, 225; Grant & Flinn 1992, 58.

²³⁵ Carruthers, <http://www.deltaenviro.org.za/background/index.html>; Leigh 1993, 13.

²³⁶ Autobiography of Mrs Ann Louw Walker, Cunningham 1989, 41.

²³⁷ Quoted in Neame s.a., 41.

work in 1889 was the planning of a circular seven-man urinal on the Market Square. He thought that it might also be necessary to add a separate two-man contraption for Blacks.²³⁸

The Indian (“Coolie”) Location (See Figure 4.6) had been laid out in 1889, because the government ordered it to be created.²³⁹ People were densely packed in the location. The surface area never increased with the increase in population. Beyond arranging to clean latrines in the location haphazardly, the Sanitary Board did little to provide any sanitary facilities, much less improve roads or lights. According to Mohandas Gandhi, who was working as a lawyer in South Africa, the Council was “hardly likely to safeguard its sanitation, when it was indifferent to the welfare of the residents”.²⁴⁰ From an environmental perspective, the location was not in the ideal position. The soil was soft to a considerable depth. Part of the district was low-lying, and, if not actually flooded, the ground water level was too high during the part of the year for the site to be used for residential purposes. It was probable that this could be remedied, to some extent, by drainage. The streets were irregular, unmade, unpaved, narrow primitive tracks, and ill planned.²⁴¹

An engineer, Robert Boyle, touring South Africa commented about Johannesburg in 1890:

*The sanitary condition of Johannesburg, though not yet all that could be desired, has been greatly improved within the last year or so [...] The pail-closet system is used. There is a splendid opening here for an improved dry-earth closet, as the system at present employed is very unsatisfactory. The water supply is not good, and care must be exercised in using it, especially for drinking purposes.*²⁴²

Frederick Young also paid attention to certain bad conditions in Johannesburg and wrote in a travel report to the Royal Colonial Institute:

*The extraordinary and rapid growth of this remarkable town had unfortunately produced the usual results, when an immense population is suddenly planted on a limited area without any proper sanitary arrangements being provided for their protection. From the elevated situation and naturally pure and dry atmosphere, Johannesburg ought to be a very healthy town. That it [...] is not so, and that the amount of sickness and death-rate from fever and other diseases is abnormal, must undoubtedly be attributed to the great neglect and other absence of an efficient system of drainage.*²⁴³

²³⁸ Laidler & Gelfand 1971, 407; Shorten 1970, 568, 569.

²³⁹ Dugmore 1993, 43; about Johannesburg and Indians see also Potgieter 1980.

²⁴⁰ Gandhi 1927, 240–41.

²⁴¹ Zangel 2004, 65.

²⁴² Sanitary Crusade 1891, 20–21.

²⁴³ Young 1889-1890, 17.

The Removal of Sewage

The disposal of the town's sewage was a problem that constantly vexed the Sanitary Board. The purchase of a new dumping ground became necessary when those living near the area hired by the Board complained of the insalubrious atmosphere caused by the refuse. In addition, the excavations on the Brickfields conveniently engorged much of the dry refuse.²⁴⁴ On the 26th February 1891, the Town Engineer laid a comprehensive report on the problem before the Sanitary Board. W.H. Miles put the total quantity at 81 tons a day. His report embodied a plan whereby solids might be separated from liquid waste, prior to being incinerated in special furnaces. Liquid waste could be disposed of by depositing it in the outer areas of the town.²⁴⁵ The Sanitary Board accepted the report and decided to carry out proposals as soon as the necessary funds were available. As a preliminary step in this direction, the Board resolved to ask for government assistance in buying 15 morgen²⁴⁶ of ground, the part of Turffontein farm. Being situated only three kilometres from the market square it was thought to be ideal for a dumping site. Moreover, lying as it did in a hollow to the southeast of Johannesburg the prevailing winds would not bring any undesirable odours to the town. The Board regarded complaints concerning the use to which the site was to be put as unlikely, for it bordered on the Wemmer Gold Mine and little development had taken place in that direction. After long consideration, the Executive Council decided to buy the ground on the behalf of Johannesburg.²⁴⁷

In 1895, Town Engineer Charles Aburrow began taking levels for a comprehensive drainage and sewerage scheme, and prepared a plan for a system of waterborne sewerage and a sewerage treatment plant. In November, three experts, G.R. Andrews, John Fletcher, and H.C. Verner, were called to give their opinion on Aburrow's recommendations. They submitted a written report and unanimously recommended the acceptance of the scheme.²⁴⁸ In their report, they praised the local conditions and recommended that they should use only the latest methods in the field:

*Your local conditions are such as will avoid gradual and expensive changes in the application of sanitary improvements; there are no primitive systems to undo; only the best and latest principles in sanitary science should be boldly adopted.*²⁴⁹

A start was also made on plans for a Town Hall as well as a fire station. The sewerage work, however, was not carried out, as, after tenders had been invited in 1898, the government gave notice that it intended taking the sewerage of the town under its own

²⁴⁴ Appelgryn 1984, 84.

²⁴⁵ The Star, 27 Feb. 1891.

²⁴⁶ A Dutch and South African unit of land area equal to 2.1 acres (8,500 square metres).

²⁴⁷ Andrews 1907–1908, 269; Appelgryn 1984, 84, 86.

²⁴⁸ Report of the Public Works Department, Johannesburg, 1895, 15–16. JARCH 200A. JMA.

²⁴⁹ Proposed Sewerage Scheme, Johannesburg, 21 Nov. 1895, 7. JARCH 272. JMA.

control.²⁵⁰ In fact, Pretoria intended letting out this service as a concession to Emanuel Mendelssohn, a prominent Johannesburg entrepreneur. The contract would have given Mendelssohn a 20 years monopoly to organise the town's sewage system. There was a major outcry: no tenders had been called for; no specifications published. In his memoirs Percy Fitzpatrick²⁵¹ called the concession notorious. A wrangle immediately began between the Local and Central authorities, councillors protested strongly against this concession, calling it scandalous and inefficient because the concessionaire sought immediate high profits and paid little attention to long-term planning and capital investment. The *Stadsraad* even had to compel the *Burgomaster*, J.Z. de Villiers, to pass on its objections by applying for an Order of Court, which compelled him to sign the necessary documents. President Paul Kruger capitulated in the face of this opposition but according to Fitzpatrick, he made no secret of the determination to find a substitute for the concession. However, the whole scheme was dropped with the approach of the South African War and only during the reconstruction period under Sir Alfred Milner a sewerage plan for the town was put into effect.²⁵²

Slop Removal and Health

The lack of sewerage or waterborne sanitation was a source of anxiety to the Sanitary Board. Through its small staff of health inspectors, it struggled to deal with the vexed question of rubbish and slop removal. Although the inspectors themselves had powers to enforce fairly wide and enlightened regulations, the Sanitary Board, hamstrung through a lack of revenue, was unable to deal adequately with the situation or to prevent the development of slums. Then, in 1893, an epidemic of smallpox killing 94 persons in Johannesburg caused a public outcry. Polluted water was the cause of a great deal of disease. In January, the Sanitary Inspector presented a report in which he said that the town was in a very dirty state. A large number of wells, especially in Ferreirastown and the Brickfields, (see picture 4.6) were unfit for use, and in the latter area, he did not think there was a single exception. The wells were all shallow, some of them being less than one metre deep, and received all the drainage from the surrounding filthy cesspools and garbage. In many cases, the water was nothing else but diluted sewage. In one case, a well had actually been sunk in a sewage-depositing site and people were drinking the water. Cattle kraals in the vicinity contaminated several other wells he inspected.²⁵³

²⁵⁰ Annual Report of the Public Works Department, Johannesburg, 1898, 24. JARCH 200B. JMA; Stark 1956, 354–55; Grant & Flinn 1992, 60.

²⁵¹ 1862–1931. Statesman and author. Partner of the firm Hermann Eckstein & Company 1898–1907. President of the Transvaal Chamber of Mines 1902–1907. Member of the Legislative Assembly 1910–20.

²⁵² Fitzpatrick 1899, 323–24; Shorten 1970, 570; Bulpin 1955, 290; Carruthers; Mendelssohn 1991b, 85–86.

²⁵³ Shorten 1970, 490; Neame s.a., 42.



Picture 4.6. Brickfields. (Source: Johannesburg: One Hundred Years 1886, 39)

Mule-drawn carts and wagons were used for slops and bathwater removals, which were undertaken three times a week from private houses and daily, including Sundays, from hotels, boarding houses, restaurants, and other places licensed to serve meals. In 1893, slops and bathwater removals amounted to 20,700 and 1,600 cubic metres respectively. An indication of the rapid growth of Johannesburg and the sanitary services in this period is reflected by the statistics for 1895. In that year 45,600 cubic metres of slops and 6,300 cubic metres of bathwater were carted away, 30 wagons and 36 carts were used for this service. The Health Department Report, 1895, commented: "We are the only place in South Africa which tries to carry on a good and systematic removal of slops without even a partial drainage system."²⁵⁴

By 1896, 700 people of all races were living in the Brickfields. Owing to the general conditions in the area, the sanitary department could not render an effective service, especially in relation to the removal of rubbish and slop water. This was mainly due to insufficient plant and mules on the part of the sanitary department. In addition, the residents did not have the necessary receptacles for rubbish and slop water. In most cases, rubbish was thrown all over the yards. No doubt, poverty played a key role in the failure of residents to have the necessary equipment available. Only 18 per cent of the residents were paying for a daily night soil removal. The sanitary department, for its part, was only replacing the buckets once in every six removals. Every ten removals, the buckets were washed and placed in boiling tar. The reason why clean buckets were not supplied more frequently was that the Board did not have sufficient plant available. The washed buckets were taken to the residents either in 12 scotch carts, each carrying

²⁵⁴ Shorten 1970, 171–72.

30 pails, or in a special compartment in the front of the 16 new design of night soil vans. The carts and vans only provided for the transport of 2,720 tarred night soil pails nightly, whereas between 8,000 and 9,000 pails were emptied.²⁵⁵ In 1897, the residents of Fordsburg and Vrededorp (see Figure 4.6) protested against the dumping of refuse in their vicinity. To allay the nuisance the Sanitary Inspector promised to have all the refuse covered with a layer of earth. During that year, the Town Engineer at last was able to construct the first pumping station and put a pipeline to Waterval where an irrigation farm was tried out with little success.²⁵⁶

According to the Sanitary Inspector, one of the dangers for Johannesburg was that the municipality did not have any sanitary control over the townships lying outside the town area without any services. The major concern was the possibility of infectious diseases spreading from there. There were, however, problems in the town area too. The Sanitary Inspector was complaining that the Sanitary Department could not get any better class Blacks to work as bucket boys. This meant that they had to use only the simplest pails, because “any complicated bucket would immediately suffer damage in the hands of these natives”. He also mentioned that large numbers of “Kaffirs” still living in the town were “a great nuisance”. The town was also:

*woefully deficient of public conveniences, though three urinals have been imported and will be erected at an early date [...] I would like to see the erection of proper “Cabinets d’Aisance”, with lavatories and sanitary accommodation for both sexes.*²⁵⁷

The Sanitary system of the town was antiquated and disgusting, and a proper drainage system was urgently required. From time to time different schemes were proposed to the Board, but the matter was a difficult one. Some engineers favoured a water system, others the Liernur,²⁵⁸ and other different systems used in the various parts of the world. Experimentation was felt to be dangerous, especially with the money of a town whose best sources of revenue had been given away and where failure would have been disastrous. The townspeople were, therefore, interested in the proposed new sanitary system, and they determined to obtain the best and most independent expert opinion before allowing any final decision. The new system of treating sewage by means of filter beds was thought to be probably best suited to the special requirements of Johannesburg.²⁵⁹

²⁵⁵ Zangel 2004, 92.

²⁵⁶ Annual Report of the Public Works Department, Johannesburg, 1897, 19. JARCH 200B. JMA; Shorten 1970, 171.

²⁵⁷ Town Council, Johannesburg (Sanitary Department), 5, 8–10. In Report of the Burgomaster, Johannesburg, 1897.

²⁵⁸ Liernur’s Pneumatic Sewerage System was designed as a “separate” system, with the sewage and rainwater disposed of by separated systems. Pneumatic pressure delivered sewage through pipes to a collection station.

²⁵⁹ Bleloch 1901, 298.

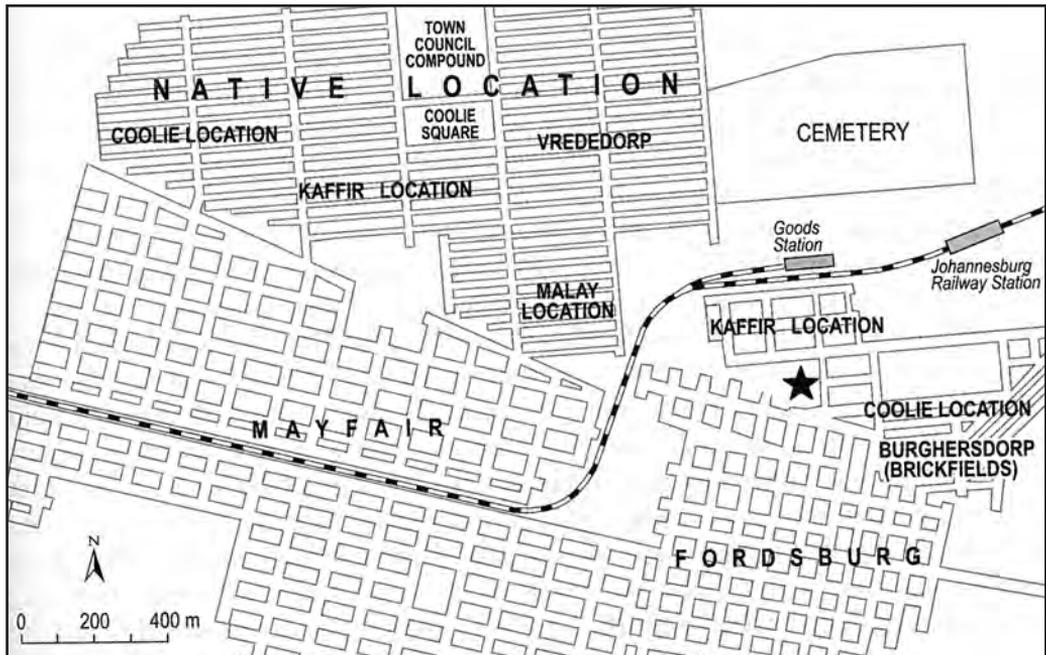


Figure 4.6. Native Location and surrounding areas. (Grant and Flinn 1992, 136)

4.4.2 The Sanitary Situation after the South African War

In this Chapter, the sanitary situation in Johannesburg in 1901–1903 will be described. Attention is paid to the building of the waterborne sewerage system, night-soil collection, and the situation in the non-White residence areas, especially in the so-called “Insanitary Area”.

Sanitary Services

After the South African War, life got worse for many sectors of Johannesburg society, as housing and facilities deteriorated. According to *The Star* the whole sanitary service was “a source of endless anxiety to the municipality” requiring the closest attention.²⁶⁰ Brickfields area was often flooded during the rainy summer months. Water supplies came from shallow wells in private yards. Lavatories were holes in the ground and much of the water had been made unusable because some wells had been used as lavatories, or polluted by manure and dead animals. Drinking water in Vrededorp and in the

²⁶⁰ *The Star*, 20 Aug. 1902.

some areas of Jeppestown came from wells constantly exposed to pollution. Diseases originating from polluted water were common in working class neighbourhoods and in 1902, an epidemic of typhoid fever in Jeppestown was attributed to soil polluted by slops. The report of the Medical Officer of Health pointed out that most of the mine workers' houses on McIntyre Street, where the majority of the typhoid fever cases were detected, were crowded together and dirty with both the pail and rubbish receptacles being "very offensive" and too close to the kitchens and backrooms.²⁶¹

The acting Town Clerk had issued in 1901 a notice calling upon residents to erect or re-construct the latrines in accordance with the sanitary regulations. Offenders were required to rectify blocks or guides, to secure the fixing of pails in their proper places. Proper urine arrestors were to be provided under the seat, and a sufficient quantity of dry earth or ashes was required to be used daily to cover the contents of the pail in use. No flap-doors were allowed to face the street. Floors had to be made of concrete or paving, and ventilation had to be provided at the bottom of the door and near the ceiling of the closet. The works committee's function was to approve plans for the erection of closets, and they were instructed by the Council to ensure that plans were carefully scrutinised. The sanitary department, in turn, was instructed to inspect all the closets in the district, and to report on their condition.²⁶²

The Sanitary Board had the duty of providing sanitary services. For many years, the belief prevailed that Johannesburg's mining boom could not last; therefore only in 1903 the work was started on the town's first waterborne sewerage scheme. Completed at a cost of 335,600 pounds, the system drained sewage from the Fordsburg Valley area to an outfall at Klipspruit. Unfortunately, the trenches for the pipes could not be dug. Because the reef, where Johannesburg was situated, was mostly rock the trenches had to be blasted with dynamite. The work took months to do.²⁶³ G.A. Leyds had left quite a graphic description about what the waterborne sewerage meant for Johannesburgers:

*Only those who have lived in a town of 200,000 souls without proper adequate sewage disposal and without septic tanks, due to the rocky surface, can realise what an improvement the new Council effected when at last waterborne sewage was installed. Gone at last were the billions of flies which surrounded the little buckethouses in the backyards, spreading disease and filth.*²⁶⁴

Before the work started, both the Medical Officer of Health and the Town Engineer examined the matter. Dr. Charles Porter made three days visit to Durban in 1902 to examine their methods of dealing with refuse removal.²⁶⁵ The Witwatersrand Water

²⁶¹ Callinicos 1985, 75; Lange 2003, 104.

²⁶² Johannesburg Health Committee minutes. Meeting 17 Oct. 1901. MJB 1/4/1. TAB.

²⁶³ Shorten 1970, 571; Leyds 1964, 79.

²⁶⁴ Leyds 1964, 269.

²⁶⁵ Report of Medical Officer of Health, for period from 1st July, 1902, to 30th June, 1903. In Report on the Work of the Town Council for the Period from May 8th 1901, to the 30th June, 1903. 32–36.

Supply Commission had also broached the question of a sewerage system for Johannesburg. There were two opinions on the matter. One engineer said that because of the geographical location the sewerage system would be a dangerous for the public health. On the other hand, the only doctor interviewed was of the opinion that with good sanitation and water supply schemes Johannesburg would be one of the healthiest towns in the world and the City Engineer of Pretoria thought the building of a gravitation water-carriage sewer system was an absolute necessity.²⁶⁶

The sewage farm built in Klipspruit could only serve those parts of Johannesburg that fell on the south of the Witwatersrand. To the north, properties either had French drains for the bath and wash-water, or an open tank in the yard for slop-water. Lavatories were external and buckets were used. These were emptied at night. William Douglas Alder recalled:

*After eleven o'clock at night the 'night brigade' used to thunder through the suburbs collecting the black tarred buckets placed on the kerbside, leaving fresh buckets for the owners to collect in the early hours of dawn.*²⁶⁷

As Alder remembered, it was all very unhygienic and typhoid fever was common, even in the areas of the well-to-do. Winifred Mary Tilley remembered that in Doornfontein:

*On nocturnal outings encounters with 'the flying four-wheelers' were inevitable. These were carts, drawn by two mules, which carried tarred buckets which were inserted into the outside lavatories of people's homes. The full buckets were removed by other carts. Every home had outside lavatories at the back of which was a walled-in passageway giving access to the hinged wooden flap through which the buckets could be inserted and removed.*²⁶⁸

John Wentzel also described the work he called as "the midnight mail":

*A long line of flat dun-coloured tanks on wheels, each with a couple of red oil lanterns as tail lights, was manned by the 'dirty boys'. Most of them had patterned wooden discs in their earlobes and all of them wore gumboots and protective clothing made from strips of sacking or rubber-sheeting [...] They came openly, not as thieves in the night, but [...] as discreetly and quickly as they were able, to remove and replace the tar-blackened buckets through little wooden trapdoors at the back of the houses they served. Perhaps because of this stealth, householders were often surprised by the sudden appearance of a rubber-coated figure in the backyard, or worse still by a black hand through the trapdoor interrupting their evening reveries.*²⁶⁹

As suburbs expanded to the north, the newer ones like Parkview were especially designed with sanitation lanes running behind the houses. Outhouses were built with a small hatch at the rear opening onto the lane, through which used buckets were exchanged for fresh ones in the dead of night. Where geology allowed, French drains and

²⁶⁶ Report of the Witwatersrand Water Supply Commission 1902, 9, 50, 131.

²⁶⁷ ROJ 1986, 64.

²⁶⁸ Ibid., 73.

²⁶⁹ Wentzel 1975, 105.

septic tanks could be used, but most Johannesburg residents had night soil collection. Night soil was dumped into the main sewers of central Johannesburg and it went on its way to Klipspruit. In 1911, a pumping station was constructed at Bez Valley to take that sewage into the main outfall sewer, but otherwise the system was gravity fed.²⁷⁰

The Situation in the Locations

An inspection was carried in the Indian Location in 1901. The inspector reported, in a letter to the acting Mayor in the 22nd March 1901, that he had visited several of the stands, and had not found any suitable for human habitation. All the rooms were found to be in a very dirty condition, consisting of plain galvanised iron shanties, all of which were smeared with the filth of every description. The rooms were very small, and generally did not have lighting or ventilation. Most were without proper flooring. The floors, or the lack of them, were considered a harbouring place for fleas and other vermin, as the soil was very sandy. The closets were haphazardly placed, making it difficult for the sanitary men to reach them in order to give them proper attention and to keep them clean. The water supply was derived from a series of shallow wells, which had been used as depositing sites for night soil, dead animals, and stable manures, and were grossly polluted and unsuitable for drinking purposes.²⁷¹

In June 1901, the Health & Measures sub-committee of the Town Council reported that there was a:

*great risk to the health of the town arising from the present state and position of the Coolie Location, especially in view of the imminent possibility of an outbreak of bubonic plague. We recommend: That the attention of the Government be drawn to the urgent necessity of taking in hand the removal of the locations with the least possible delay.*²⁷²

However, they felt that as the land still belonged to the government, they could not take any steps involving capital expenditure to improve the conditions until the Council had the permanent control of the land. Therefore, a reluctance to improve conditions existed, as the improvements would have required capital expenditure.²⁷³ By October, the White slum areas were included in the scheme, though the plan to improve drainage in the area was not formally placed before the Town Council until the 19th February the following year. By this time, the Town Valuer had estimated that the drain-building programme would cost 750,000 pounds and would generate a profit of 80,000 pounds for the town.²⁷⁴

²⁷⁰ Carruthers.

²⁷¹ Zangel 2004, 66.

²⁷² Johannesburg Health Committee minutes. Meeting 3 June 1901. MJB 1/4/1. TAB.

²⁷³ Ibid.

²⁷⁴ Cammack 1990, 190.



Picture 4.7. House from cardboard boxes in slum yard in 1903. (Source: Museum Africa Collection)

The Black residents lived either in the mining compounds or in what were the worst slum conditions. (See picture 4.7) Blacks, Coloureds, and Indians were of concern for the local authorities and by 1902 a Commission of Enquiry, which had been set up by the Town Council, declared the Locations to be unsafe and unhygienic. Conditions were often unfit for human habitation but slum property owners still charged exorbitant rentals for rooms that usually were no more than simple subdivisions of old sheds, stores, workshops, or outbuildings. The residents were relocated to a variety of sites, both within and on the peripheries of Johannesburg. A number of Black and Coloured residents were removed and “resettled” in locations west of Vrededorp. In 1904, however, with the outbreak of bubonic plague in the “Coolie Location”, an estimated 3,000 people were moved from the locations and were installed 16 kilometres south-west of Johannesburg at Klipspruit.²⁷⁵ The health and hygiene reasons given for the relocations were contentious and it has been asserted that the town administrators were actually just looking for a

²⁷⁵ More about this in Chapter 5.2.

way of turning Johannesburg into White's only zone. The outbreak of bubonic plague provided the necessary justifications for the relocation of Blacks out of Johannesburg and into the more distant townships that had been established.²⁷⁶

The Council had good reasons for its concern about the inner-town slums. Sanitary conditions were indeed shocking and diseases were rife, but the concerns of both the Council and the government about the health situation in the slums were hypocritical. Conditions in Klipspruit were even unhealthier than those in the slums. Klipspruit was surrounded on three sides by the municipal sewerage farm – which soon advanced within 300 metres of its perimeter – and most families lived in municipality-built v-shaped huts that, with no foundations, were no more than an iron roof placed over the ground. The stench of the sewerage farm permeated every dwelling.²⁷⁷

Problems with the Insanitary Area

The report of the Johannesburg Insanitary Area Improvement Scheme Commission, published in 1903, gave a vivid picture of the conditions in the area now called Newtown. The City Gas Works were at the corner of West and President Streets, and to the north were old brickfields on which a veritable shantytown had been built. A portion of this area was called Coolie Town (see figure 4.6), and in this complex of filth and squalor lived over 5,000 people of all races. The streets were twisted and narrow, the water was drawn from polluted wells, and lavatories were just holes dug in the ground. What emerged during the hearings was that both the commissioners and witnesses related the area's lack of economic value to its geographical features and social conditions. For all of them the lack of proper streets, drainage and sewage systems, and the ignorance of its poor Whites and Coloured inhabitants combined to cause the deplorable state of the district. This was aggravated by the difficulties in policing an area of narrow streets and passages that constituted a refuge for the criminal classes. All of this, plus its comparative isolation from the town, militated against the value of brickfields as a business site.²⁷⁸

The Medical Officer of Health, Dr. Charles Porter had reported in the 18th November 1902:

*It consists of narrow courtyards, containing dilapidated and dirty tin huts, without adequate means of lighting and ventilation, and constructed without any regard to sanitary considerations of any kind. In the middle of each slop-sodden and filth-bestrewn yard there is a well from which the people get their water supply, and they choose this place for washing purposes, urinals and closets sometimes being in the immediate vicinity. In one case the closet is about one pace from the well.*²⁷⁹

²⁷⁶ Rubin 2004, 76, 78; Bonner & Segal 1998, 12.

²⁷⁷ Bonner & Segal 1998, 13.

²⁷⁸ Lewis 1966, 47; Lange 2003, 61.

²⁷⁹ Quoted in Callinicos 1985, 75.

The authorities objected to the new slum areas because they were breeding grounds for disease and because they considered that, the racial mixing would dilute the White race and undermine the White supremacy. The White officials wrote in fear about the “promiscuous herding of Indians, Malays, whites and ‘kaffir people’ who lived on friendly terms”.²⁸⁰ In September 1903, the “Insanitary Area” was expropriated. The overcrowded area where narrow chaotic streets made proper sanitation impossible, could now be cleared. All the buildings were to be removed and new streets added, with two major roads pushed through the area. Proper drainage was to be constructed and the land resurveyed into large and regular blocks. Nevertheless, after expropriation, residents continued to live in the area as the tenants of the town, though no attempts were made to improve conditions. Because of White opposition there was no place to which the inhabitants could move, no White wanted to have an Indian location placed near to him. Plans had to be shelved.²⁸¹

4.4.3 Development after 1903

In this Chapter, the main themes of the sanitary development of Johannesburg after 1903 will be examined. The main points described are the problems with the housing situation, the efforts of the municipality to improve the situation and the condition of the locations and slums.

Problems with the Housing

In 1903, it was found that most of the timber in the latrines in the African Location was rotten and would have to be replaced, but that the corrugated iron could be reused. The Health Committee authorised the erection of 50 latrines, each to contain four special pails, with one latrine to every 16 stands. This arrangement would facilitate the removal of night soil. Within a few months, this was already hopelessly inadequate. One latrine for every 16 stands, when the population density was eight persons per stand, meant that 128 people were sharing one latrine. It must be borne in mind that latrines were situated outside of the houses, and some distance from certain houses. The lack of ablution facilities was, in no small measure, a contributory element in the deterioration of conditions in the area. In less than two decades, the urbanization of Johannesburg had produced most of the evils associated with the great European cities. The working class was separated from the well-to-do by the lack of transport, the high

²⁸⁰ Quoted in Bonner & Seagal 1998, 13.

²⁸¹ Cammack 1990, 191; Dugmore 1993, 98–99.

cost of living, and the scarcity of affordable accommodation, while slums such as those in the Brickfields-Burghersdorp area were identified in the mind of the ruling class with London's rookeries.²⁸²

The housing stock in existence in Johannesburg at the turn of the century was inadequate to meet the needs of the population. An estimated 100,000 people lived in the town after the war, but a mere 15,000 places of residence existed, thus on average there was 6.5 people per residence in 1904. Overcrowding and the lack of amenities, for the vast majority, meant that pneumonia and dysentery were rife. The majority of Johannesburg residents before the war had been young and male; while this pattern continued for the most part, the number of families did increase from 12 to 20 per cent by the middle of the first decade. The escalating demand for both the bachelor housing and family dwellings led to an investigation of the situation as early as 1902. What was found was simply that for an urban centre of its importance Johannesburg was severely lacking in housing and infrastructure. Because of these findings, the British government spent over 3.5 million pounds on the upgrading and improvement of Johannesburg between 1903 and 1906. The town was supplied with sanitation, water, roads, flush toilets, and electric tramways, in short, Johannesburg stopped being an overgrown mining town, and almost 30 years after its founding, could finally justify its claim to be a "city".²⁸³ In 1903, the Johannesburg's Housing Commission reported that suitable houses were available for the White immigrants for rent but only on the borders of the demarcated insanitary area. Although this was appropriate accommodation at the right price, the unhealthy conditions and the multiracial component of the area made it thoroughly undesirable for the British workers who had to live in "those localities affected by the poorer classes" and live in a manner that "is repugnant to those who have been used to associate with their equals".²⁸⁴

Municipality Efforts to Improve the Situation

During the reconstruction period, the state was addressing urban problems with the sanitary legislation, the street clearance projects, the eradication of slums, the opening of arterial roads, and the development of a public transport system in the city. Against the backdrop of widespread Social Darwinism both in Britain and Europe, the idea of sanitation had remarkable strength in inspiring town planning in most Western cities. The ideas behind the public health policies and town planning implemented in South Africa were also broadly in line with these views. The belief in the environmental determination

²⁸² Zangel 2004, 174; Lange 2003, 58.

²⁸³ Rubin 2004, 78–79.

²⁸⁴ Report of the Johannesburg Housing Commission, 1903, Evidence of P. Japhet, para. 1.

of crime – so pervasive in Britain between the mid-1800s and the early 1900s – also influenced the resolutions of the Johannesburg Town Council in these fields. Street clearances meant improving the sanitation of slum areas and breaking their isolation from the rest of the city as a way of fighting “moral decadence” as well as unhealthy conditions in the poverty-stricken areas of the city such as Brickfields.²⁸⁵

The Council was trying to solve the problem of the water supply and for a short while M. Adolfs²⁸⁶ reappeared in the municipal offices. He was asked to prepare reports on the schemes proposed by the Committee to this end. Although the Rand Water Board had been established recently, typhoid remained rife in Johannesburg where the Medical Officer of Health, Dr. Charles Porter, would not allow water in the Council Chamber or Committee Room unless it had been boiled. In 1904, the first fully planned stormwater drainage system functioning independently of the sewerage scheme was laid down.²⁸⁷

In October 1904, the Public Health Committee published its report on the housing of the Africans and Asians in Johannesburg. In the report, the Committee strongly recommended that for sanitary reasons the African location should be removed as far as possible from any neighbourhood inhabited by Europeans. According to the Committee, the advantages for this were obvious to everyone; for instance, the sewage from the location could be put open on the land and the liquor trade for Blacks could be rendered more difficult. Besides, the change would be welcomed by the majority of the Blacks, at least according to the opinion of the Manager of Locations.²⁸⁸ The Committee also recommended the establishment of the Asian Bazaar at Klipspruit, to where all the Asians (Indians, Malays, Chinese, and Syrians) should be removed. Dr. Porter would have allowed some Indian and Chinese storekeepers and the Indians living in private residences to stay but the Committee wanted to move everyone. Most of their reasons were based on racial stereotyping. According to them, the experience had shown that social intercourse between Europeans and Asians resulted in the deterioration of Whites, without improving the Asian. They also denied that the success of the Asian traders and artisans was based on superior thrift and industry; instead, the reason was that their lower standards in uncleanliness and the ordinary requirements of life enabled them to underbid the White competitors. Porter was supporting the Committee with the descriptions of the unclean conditions most of the Asians were living in; the only ones concerning sanitary matters that he had nothing to complain at were the Chinese.²⁸⁹

²⁸⁵ Lange 2003, 59.

²⁸⁶ Secretary of Sanitary Board and Stadsraad 1889–1900.

²⁸⁷ Shorten 1970, 453, 572; More about stormwater drainage, see Whitlow & Brooker 1995.

²⁸⁸ Report of Public Health Committee on Location Question, 3–4. GOV, 156, GEN760/04. TAB.

²⁸⁹ Report of Public Health Committee on Location Question, 7, 10. GOV, 156, GEN760/04. TAB; Report A of Medical Officer of Health, 2–4. GOV, 156, GEN760/04. TAB.

This plan, however, was never realised since the City Council did not have any power to remove Asians to Klipspruit or force them to stay there. The result was that the Indians coming back from Klipspruit streamed into the Malay Location. The municipality also found that if it were to provide the city with essential services such as sewerage and refuse removal, its labour force required easier access to the city than was possible from the municipal location at Klipspruit. Accordingly, permission was granted for the accommodation of bona fide African employees in compounds dotted about the city, and in servants' quarters in the backyards of the White residential properties.²⁹⁰

From the Transvaal Law Reports several Supreme Court cases dealing with sanitary problems in Johannesburg can be found. For example in 1907 in a case *Tobiansky v. Johannesburg Town Council*, it is apparent that a serious problem with refuse and overall sanitary conditions in the city existed. A portion of Waterval farm was used *wrongfully [...] as a depositing site for night soil, slop water and carcasses of animals, and that consequently offensive, poisonous and unwholesome vapours and noxious matters issued and proceeded from the site and spread and were diffused [...] properties, rendering them unwholesome, dirty and uncomfortable to live in [...] and seriously endangering [...] health.*²⁹¹

The area was situated near a major public road, Old Krugersdorp Main Road, and had earlier belonged to the old *Stadsraad* and was used to this purpose obviously since 1894. Although the area was a serious health risk in 1907, this practise was common in the growing towns of the country, and elsewhere.²⁹² Even on the opposite side of the world, similar cases can be found. For example in Tampere, Finland, at about the same time, exactly the same kind of problem was reported.²⁹³

During the closing months of 1907, some 240 Whites – including many from Vrededorp – were engaged as pipe-makers in lower Fordsburg or as trench-diggers in Braamfontein to build the city's waterborne sewerage system. New stirrings amongst the unemployed in the western suburbs rang all the old alarm bells for the ruling classes in the town hall. Johannesburg's new Mayor, James Thompson²⁹⁴, was as aware as his predecessor was that a high level of unemployment and the simultaneous collapse of organised charity in the city constituted a particularly explosive social mixture. In March 1908, the Town Council therefore again extended its relief works programme by agreeing immediately to include the Ferreirastown and Marshalltown districts into the municipal sewerage scheme.²⁹⁵

²⁹⁰ Dugmore 1993, 101–102; Parnell & Pirie 1991, 130–31.

²⁹¹ Transvaal Law Reports 1907, 134–156.

²⁹² Ibid.

²⁹³ Juuti 2001, 66–87.

²⁹⁴ 1866–1937. Chairman of the Public Works Department 1903–07. Mayor 1907–08.

²⁹⁵ Van Onselen 2001, 349–52.

In 1908, a number of different experiments were made for the dispensing of wastewater in properties where owners agreed to this. The various types included “French Drains,” consisting of a pit filled with broken stones to which the wastewater was conducted in a pipe, after passing through a hay filter; the water was eventually disposed of by percolation through the sides of the pit. Another method was the “Vivian Poore” system, in which the water, after being filtered in a similar manner, was conducted by means of a perforated iron gutter over a trench filled with broken stone, and was absorbed by the ground. These systems were working throughout Yeoville with satisfactory results.²⁹⁶ By the same year, most of the large properties in the town were connected to sewer system. Actually, after 1908 property owners were enforced in terms of By-laws to be connected to the system. Two years later, in 1910, the first treatment plant was constructed in Klipspruit.²⁹⁷

The increasing number of sewer connections did not diminish the need for a pail service as much as had been anticipated. The area of the pail service was extended by 1911 to townships on the municipal boundary. The service, in fact, was given right up to the boundary line in all directions.²⁹⁸ The year 1912 was marked by considerable activity on the part of the Council in the erection of public conveniences. These were built on Market Squares in Johannesburg, Fordsburg, and Newtown. “They are of the most modern and up-to-date type.” The convenience for women was under construction in Newtown, and underground conveniences were planned at Von Brandis Square.²⁹⁹

In 1918 in a “bucket strike”, the Black municipal sanitary workers demanded a six pence rise a day. They were affected by the rising cost of living and were probably inspired by a successful strike of the White municipal workers. The Black police were drafted in as scabs, but there were so few of them that they could attend to only hospitals, schools and similar establishments. The strikers, 152 “bucket boys”, were imprisoned for two months and forced into work under armed escort. The callous way in which this was done incensed the urban Black population and angry public meetings all over the Rand ensued.³⁰⁰

The Living Conditions in the Slums

In 1906, the Health Department was alarmed at the general deterioration of the “Malay Camp”. (See Figure 4.6) Sanitation remained rudimentary, and most of the 557 pail-closets were very dilapidated wood and iron structures. In nearly every case, the flap at the back of the

²⁹⁶ Annual Report of the Town Engineer. In Mayor’s Minute, Johannesburg, 1908, 25.

²⁹⁷ Grant & Flinn 1992, 62; Biggs 1973, 225.

²⁹⁸ Report of Manager of Scavenging Department. In Mayor’s Minute, Johannesburg, 1911, 96.

²⁹⁹ Annual Report of the Town Engineer. In Mayor’s Minute, Johannesburg, 1912, 29.

³⁰⁰ Roux 1964, 130–31; Proctor 1979, 54; Hyman 1971, 69.

closet had been torn off, and used for firewood. This practise was so common that stopping it was impossible. A few of the closets on premises occupied by the “better type of Cape people” were reasonably clean. Those belonging to the Indians were, almost without exception, in a wet condition, owing to the Asian habit of using water, instead of paper, for cleansing purposes. In other instances, the closet seats were fouled. In nearly all the cases, the closets were “evil-smelling”. The health department felt that trying and enforcing the use of ashes in the closets was impractical, because these ashes would ultimately find their way, through the night soil intakes, into the sewers, and cause blockages. Regarding the water supply, only 24 stands were connected to the water mains. Most of the water used in the Location was drawn from some 325 wells. These wells were usually situated close to the closets. It was safe to say that not all the well water was fit for human consumption. It was suggested that, although some controversy existed in relation to the bearing of the costs of the reticulation, it should be completed as soon as possible.³⁰¹ As the housing shortage got worse for Blacks, more people were crowded into the Malay Location. Conditions were very bad, sewerage and drainage systems were primitive, and people were forced to throw their slop water out into the streets. In 1908, the *Rand Daily Mail* described the Malay Location as “the worst slum in Johannesburg”. When smallpox broke out in the area the municipality sent a rat catcher and installed a modern sewerage system – but only about half a dozen families could afford to install new lavatories.³⁰² By 1910, the Malay Location still had no formal water reticulation and it was served instead by 325 shallow, unprotected, and polluted wells.³⁰³ The Location network was completed only in 1912 after long and difficult discussion between the Railway Department and Johannesburg City Council about who actually had the authority and responsibility to improve the area. The whole Location was also provided with sewers in the same year.³⁰⁴

In 1912, after the outbreak of smallpox, slum property became the focus of public attention. In August, the *Transvaal Leader* ran two articles on the matter. The first one praised the action of the Medical Officer of Health during the emergency and at the same time criticized the Town Council’s inability to put into practice measures that could have prevented the epidemic. Analyzing the smallpox cases, the journalist established that most cases started amongst the Black and Coloured populations, which, the writer argued, indicated the need to regulate the conditions under which they were to be allowed into municipal areas.³⁰⁵ A second article, “The Scandal of Slums”, went further in relating

³⁰¹ Report of the Medical Officer of health on the sanitary circumstances of the Malay Location, 11 Dec. 1909. GOV 1239, PS 44/4/10. TAB.

³⁰² Callinicos 1985, 76.

³⁰³ Parnell 1991, 276.

³⁰⁴ Annual Report of the Town Engineer. In Mayor’s Minute, Johannesburg, 1912, 23, 31; Dugmore 1993, 108–111.

³⁰⁵ *Transvaal Leader*, 16 Aug 1912.

slum property to disease, arguing that disease originated in the dirt of the slums and flourished through the ignorance of its inhabitants.³⁰⁶ Apparently, the miasmatic belief that disease was transmitted by physical proximity was still thriving. Dr. Charles Porter had also paid attention to slum conditions especially in City and Suburban, Ferreirastown, Fordsburg, Marshallstown and Old Doornfontein, which all had been established before the passing of health and building by-laws in 1903. The problem according to Porter was that most of the poorly constructed and crowded buildings could not be closed down or demolished without a magistrate's order. There were three ways to deal with slum property. Firstly, the local authorities should have the power to condemn dwelling houses unfit for habitation; secondly, locations should be established for the non-Whites; and thirdly, the municipalities should be given the power to compel Coloureds and Asians to live in such locations. Porter, nevertheless, considered examples presented in newspapers as inaccurate and exaggerated.³⁰⁷

In the period between the South African War (1899–1902) and the First World War (1914–1918), the urbanisation of the Africans exacerbated conditions in the slums. Unwilling to finance urban African housing, local authorities campaigned for the restriction of African settlement by calling for the tightening of the measures proposed in the 1918 Urban Areas Bill. For the Africans living in slums “home” usually was a single room, about 3.6 square metres. Men and women, adults and children, all slept in one room. Sometimes over 20 families shared a single yard. Since all the washing and much of the cooking was done in the yard, the standards of cleanliness left much to be desired. As a rule, the sanitary conditions were very bad. There was rarely more than one toilet per yard, and this was frequently out of order. Structures varied from brick buildings, usually old and dilapidated, to the shanties of wood and iron. Most of them leaked, only a few had stoves and water had to be fetched from outside. In many instances, the yards were ill drained, toilet facilities were inadequate, and slop-water from ablutions and cooking gravitated to the lowest lying part of the yard, from where it often ran into the rooms, many of which were without flooring and at a lower level than the yard itself. The quality of life in the cell-like structures that made up the slums was further inhibited by poor ventilation. Reporters and inspectors often complained of the dangers caused by the cramped and overcrowded conditions. Yet it is clear that many slum residents kept their homes remarkably clean, especially given the adverse conditions under which they laboured. There was, however, a general problem with refuse removal and sewerage

³⁰⁶ Transvaal Leader, 23 Aug. 1912.

³⁰⁷ Lange 1998, 146–147.

connection. Yards were rarely connected to the municipal sewerage system and even if they were, the larger number of illegal occupants meant the system was severely overloaded.³⁰⁸

Between 1908 and 1919, when the Union government's first Public Health Act was passed, it became clear that the slum problem in Johannesburg had important implications at three different, although complementary, levels. First, the multiracial character of these areas raised the question of what to do with the non-European population, especially with the "natives", who had settled in the city. Secondly, the presence of the poor Whites in these areas meant that any slum clearance would have to be followed by a process of resettlement that guaranteed that no new slums would develop. Lastly, the very existence of slums contradicted the modern notions of town planning and the settlement of a respectable working class.³⁰⁹

4.4.4 The Rapid Increase of Population and Sanitary Problems

Johannesburg developed most of the problems of the big city during the first years of its life. The population growth was phenomenal and with it, all the related problems arose. Keeping the town healthy and in proper sanitary conditions was a big problem from the beginning. Sanitary conditions in early Johannesburg were nearly as bad as they could be. Wells were mostly polluted, there were no drainage systems, and health conditions were deplorable. The local government, the Sanitary Board, had power over sanitary conditions. This work, however, was not easy in a mushrooming town. First, there were the sanitary gangs of convicts cleaning the area. Yet, the use of pails was started nearly from the beginning, so the cesspool phase was generally avoided. The pail collecting service was quite a colourful event as many residents have recalled later.

Both W.H. Miles and Charles Aburrow, the first two town engineers, recognised the sanitary problem and tried to solve it. Aburrow even made a plan for a waterborne sewerage system in 1895 and got approval for it. Unfortunately, in 1898 the Government stepped in and tried to give the sewerage service away as a concession. The *Stadsraad* managed, however, to stop this plan, but because of the South African War, nothing further could be done.

³⁰⁸ Parnell 1991, 273; Zangel 2004, 166; Beavon 2004, 86; Parnell 2003, 626; For same kind of conditions in Europe see for instance Hamlin 1998 and Harjula 2003.

³⁰⁹ Lange 2003, 82–83.

In the last years of the South African War and just after the war, the sanitary situation in Johannesburg got worse. As the water supply was disturbed because of the war, many residents had to rely on polluted wells and other water sources. The new regime, however, started to make improvements. The most important of these were the start of the building of the waterborne sewerage system in 1903 and stormwater drainage system in 1904. This improved the situation in the central part of the town immediately. The situation in the suburbs was, however, very different; pail collection continued. Another important tendency, which started to emerge, was the town administrators' willingness to turn Johannesburg into White's only zone. There was a discussion about the expropriation of the so-called "Insanitary Area". The best example was when the non-White people from the "Coolie Location" were removed into Klipspruit on the neighbourhood of the sewage farm. This removal could be said to be the birth of a later township system in Johannesburg. This forced relocation and the discussions concerning it had all the distinctive marks of the "sanitation syndrome".

In the early 20th century, all the problems caused by explosive population growth could be seen in Johannesburg.³¹⁰ Water supply started to be at a reasonable good level and the building of a waterborne sewerage system in the town centre had improved the sanitary situation there. Nevertheless, there were problems with housing; there were too few residences and too many people and families living in the same houses. The sanitary conditions in the non-White living areas and slums had also not improved very much. There were efforts by the municipality to improve the situation. The sewerage network was slowly extended into the suburbs and at the same time, the pail system was introduced to the new areas. The main sanitary improvement, however, according to the White officials was, of course, the separation of the non-Whites from Whites. This was successful in the case of Blacks and Coloureds who were removed first to Klipspruit and then to the other areas. In the case of the Asians this "success" came only later, during this period, the City Council did not have legal powers to remove them to Klipspruit or force them to stay there.

³¹⁰ You could say that there was the same kind of situation in Tampere, Finland after 1870s, only in a smaller scale. Haapala 1986, 157–58.

4.5 Key Findings concerning Sanitation³¹¹

The physical environments in the four case cities are very different from each other, this is a main reason for the differences in sanitary problems, and the required solutions the towns were facing. It is self evident that some of the problems were similar but in every case, special features can be identified.

The collection of excreta, different fluids, and other organic wastes were a problem in every case town but still there were differences. Before the waterborne sewerage systems, there were only two systems available: cesspools or pails. In Grahamstown, they were using cesspools until the beginning of the 20th century; thereafter they changed to the pail system. Cesspools were already seen as a sanitary problem in the 1860s and there already were several plans in the late 19th century to abolish them and to change to the pail system. Yet, none of these were realised mostly due to economic reasons. Emptying the cesspools was done by contractors and this system continued after the transfer to the pail system in 1901. The municipality debated about taking this over several times in the early 20th century but it was done only in the 1920s.

In Cape Town the system was mixed, there were cesspools still in the late 1880s but there were also pail systems and even water closets though without proper sewers. Cesspools were seen as a problem only in the 1880s; in the 1850s, some doctors were still on the opinion that they caused no bad effects. One reason for this might be that in Cape Town they could dump the waste into the sea at Table Bay; in landlocked towns like Grahamstown and Johannesburg, this was not an option. In Johannesburg, they were also using both systems, although in the central town, the cesspools were done away quite quickly and even most suburbs were using the pail system by the early 20th century. The problem with people living in slum conditions without any sanitary system was, however, the most severe in Johannesburg. Slums developed in a few years in Johannesburg whereas they took decades to develop in other South African towns.

In Durban, cesspools were already banned in 1865 and the pail system was introduced. This was quite an important step considering the sub-tropical climate of Durban. The pail system was extended to suburbs in 1891; thereafter, the collection work was taken over by the Sanitary Department from the contractors. Pail collecting continued in the suburbs until the 1910s. There is interesting difference with Cape Town in the sense that in Durban the dumping of the waste to the sea started only after the construction of the sewerage works; before that, they were using a sewage farm.

³¹¹ In table 5, there is an overview of the development of sanitation and sewerage schemes in case cities.

Table 5. The development of sanitation and sewerage in case cities, 1836–1918.

	Cape Town	Grahamstown	Durban	Johannesburg	Other areas
1836		Creation of Municipality			
1840	Creation of Municipality				
1854			Municipal Ordinance; Borough of Durban proclaimed		
1857	Select Committee appointed to inquire into the sanitary state of Cape Town		Erection of an embankment at the head of the vlei above the Umgeni brickfields		
1861			First Inspector of Nuisances		
1863		Sanitary regulations			
1865			Night-soil contract		
1867		Sanitary Inspector appointed			
1868		Report on cesspools			
1870	“Street keepers” engaged				
1874			Milne’s Drain completed		
1875			Pail system started		
1877			Adlam’s Drain completed		Select Committee on the sanitary arrangements of municipalities in the Cape Colony
1879		Investigation into the sanitary condition			
1882		Municipal Location created			
1884	First sewerage schemes not recommended				
1885			Lavatories opened in Town Hall		
1887	First Sanitary Engineer; Castle Drainage Scheme			Sanitary inspector appointed; Sanitary Board nominated; Coolie Location laid out	
1888	Select Committee on Cape Town sanitation; Drainage scheme			Charges introduced for sanitary pail collection	
1889	Pritchard Scheme		Stormwater drainage scheme	Urinal put up on the Market Square	

	Cape Town	Grahamstown	Durban	Johannesburg	Other areas
1890	First Chief Sanitary Inspector; Sanitary Department established				
1891	Report on the sewerage		Fletcher's report on sewerage; pail system extended to suburbs	Report on sewerage	
1892	Duncombe's sewerage scheme				
1893			Stormwater Drainage Scheme		
1895	Building of waterborne sanitation system started; first public conveniences			Waterborne sewerage scheme	Green Point and Sea Point, and Kalk Bay start to carry out sewerage schemes
1896			Waterborne sewerage system becomes operative		
1897				Sewerage concession discussion	
1898		First Medical Officer of Health			
1901		Cesspool system abolished			
1902					Sewerage work started in Wynberg
1903		Emptying pails by contract started		Waterborne sewerage system started; report of the Johannesburg Insanitary Area Improvement Scheme Commission	
1904	Stormwater drainage system			Stormwater drainage system	
1905	Sea outfall for sewerage completed	Two public urinals built	Indian squatters removed from the Vleis		Sewerage work completed in Wynberg
1906			Draining and filling of Eastern and Western Vleis started		
1907				Klipspruit Sewage Works opened	Kalk Bay drainage works opened
1908				Supplementary report of Johannesburg sewerage committee	
1910				Treatment plant constructed in Klipspruit	

	Cape Town	Grahamstown	Durban	Johannesburg	Other areas
1911			Most of the developed area sewered		
1914					Tuberculosis Commission
1915	Southern Suburbs sewerage scheme approved				
1918				“Bucket strike”	

The waterborne sewerage system was built around the same time in Cape Town and Durban in the mid-1890s. However, in both towns the discussion about the system had already been going on for a couple of decades. In both places, the first schemes were made in the beginning of the 1880s. In Cape Town, the discussion of the optimum plan and the question of how to finance the system postponed the start of building. In Durban, they had to finish the water supply system first. Both towns ended up building the outfall to the sea. In Durban, they did not even seriously considered any other possibilities. In Cape Town, they were considering the sewage farm but could not find any good location for it. In Johannesburg, a sewerage system for the town area was already planned in 1891, five years after the birth of the town. The main consideration in this first plan, however, was finding the place where the sewage could be disposed. The first comprehensive sewerage plan was done in 1895. Implementation of this plan, however, was postponed because of the political reasons and the building of the first waterborne system was started only in 1903. The network slowly spread to the suburbs during the next decades. In Grahamstown, the waterborne system was discussed from the beginning of the 20th century but because of the problems with the water supply and economic reasons, the system was not built until in the 1930s.

The drainage of the surface waters was the biggest problem in Durban, which was situated on a marshy lowland area. Because of this, the building of drains was started relatively early and it continued through the whole research period. In Cape Town, the drainage was mostly a problem due to the rainwater. The Dutch had already built *grachts* to the main streets in the 17th century and these drained the surface waters away. They were covered during the 19th century and so changed into the drains. An effective stormwater drainage system, however, was built only in 1904. In Johannesburg, the drainage was a big problem and most of the early visitors noted this. The first drainage scheme was planned in 1895 but this was never realised. The drainage system was finally built in the same year as in Cape Town. It still covered only the central part of the town and reticulation work continued until the end of the research period. In Grahamstown, the drainage was apparently not seen as a problem by the municipality although the lack of it was referred in newspapers and by experts.

If we consider the sanitary conditions in the case towns, the improvement of the conditions could be said to have been most visible in Cape Town and in Durban. In those towns, the poorer areas where the improvements were not so great were situated further away from the town centre. In Grahamstown, the locations for the Blacks were situated in the immediate neighbourhood of the town centre and were visible from the eastern entrance to the town. In Johannesburg, the situation was the same with the Malay Location, although the worst slums were hidden in the backyards or in the mining areas. However, the worst slums in South Africa existed in Johannesburg from the 1900s onwards.

Three important issues appeared to influence approaches to the sanitary development of the case towns the most. One is the interrelationship between the water supply and sanitation. In every case it was realised that to get a better sanitary situation, a sewerage system was needed and preferably a waterborne system. However, before that could be built water supply should be augmented on a level high enough to flush the sewers. In Cape Town and Durban, this point was reached around the same time in the 1890s; in Cape Town after the decision was made to get water from Table Mountain and in Durban after the Umlaas Scheme became operational. In Johannesburg, this happened after the decision was made to establish the Rand Water Board; of course, in this case there were also other reasons why it happened only in the 20th century. In Grahamstown, they did not reach the needed level in water supply before the 1930s.

Grahamstown is an example of the other consideration that affected sanitary improvement, the money, or actually the lack of it. As with water supply, the municipal finance had a limiting effect on sanitation improvement in Grahamstown. Much needed improvements were time after time postponed to wait for more opportune times. In the case of Johannesburg, the powers of the Sanitary Board were at first limited in this sense. It had the power to improve the sanitation but because it was economically dependent on the central government, it could not actually do very much. Even after it got more financial power, the central government interfered with the local government's powers by trying to give out a sewerage concession for Johannesburg. Only after the South African War did the situation improve in this sense. In Cape Town and Durban, the situation was originally similar; the power of the municipalities to take loans was limited. However, in both cases, this was changed in the beginning of the 1880s and after that, the financing of projects was not anymore a limitation.

The third issue is the attitude of the ruling class and the municipal officials towards the poor and people of different colour. Whites were considering all the people from other population groups as a threat to their health. The miasmatic theory of disease was still prevalent amongst some of them in the beginning of the 20th century and in many cases Black, Coloured, or Indian residential areas in the neighbourhood of White

residences were seen as the biggest sanitary problem there was. There were people who thought that the living conditions in those areas should be improved or that Whites are as susceptible to diseases as the other people are, but they were in a very small minority. Most of Whites thought that the best way to solve this problem was to relocate the others as far away from them as possible. In Cape Town and Johannesburg, they actually resorted to the forced removal of population groups further away from the town centre. In Durban this was also done, only on a smaller scale, when the Indian squatters were removed from the Vleis. Grahamstown is the only case where there were no forced removals, but this is probably only because of the smaller size of Grahamstown.

5. Health

In this section, some aspects of public health and segregation in relation to water supply and sanitation are examined. In the first Chapter, the effects of epidemics are described, first at a general level and then some specific epidemics are examined. In the second Chapter the role of the medical officers and the relationship between segregation and health are under observation.

5.1 Epidemics

The Fear of Epidemics

Technological progress produced steamships and railroads that spread diseases from town to town with a speed never before possible. Some diseases were also spread in other ways. Some diseases move along the oral-faecal route, with water as a favourite medium for reaching new victims. The 19th century urbanization spurred the public and private efforts to provide growing populations with huge amounts of water from above ground sources. This happened, however, considerably earlier than the knowledge for sanitation procedures for safer water was developed. Thus, more people were at risk than had been before or have been since. The miasmatic theory, which still had strong support, could very well exist with the segregationist policies. There already existed in the early 19th century the ideological link between blackness, dirtiness, and disease.¹

Blacks were thought to be more susceptible to diseases than Whites because of their incomplete and inadequate adjustment to the conditions of urban life, the unsanitary conditions they lived in, their habit of living in overcrowded houses, of spitting indiscriminately, of sleeping with blankets pulled over their heads, and depraved habits.² The reluctance to make any environmental improvements in the Black compounds or

¹ Kiple 1997, 116; Deacon 1996, 289–91.

² Packard 1987, 192–93.

locations was partly resulting from these views and the idea that Blacks as a race were more susceptible to disease. In the early 20th century, the Black slums were considered to be as the nurseries of infection by the White health officials. Many diseases, for instance plague, tuberculosis, and smallpox, were said to have originated within the slum districts.³ As one contemporary writer put it:

*[...] when gathered together in large communities for the convenience of work, it is almost impossible to keep them either clean or healthy. The consequence of this uncleanliness is that fever and disease of various kinds run riot amongst them, and this insanitary condition of the natives endangers the lives of the white people amongst whom they live.*⁴

Of course, there always were people with different views. For instance, Joseph Corben, the Chief Sanitary Inspector of Cape Town, told to the Parliamentary Committee in 1894 that the dirtiest community were the low class Whites not Blacks. He also claimed that the association of Blacks and Whites did not degenerate Whites. On the contrary, if you “separated the whites from the blacks you would take away all means of educating the blacks from a sanitary point of view”.⁵

Maynard Swanson has shown that with the advent of industrialization and urbanization as well as the development of public health consciousness, “fear of epidemic cholera, smallpox and plague both roused and rationalized efforts to segregate Indians and Africans in municipal locations”, especially in Natal and Transvaal.⁶ In the towns of the Cape Colony, as well as in Durban and Johannesburg, “the accident of epidemic plague became a dramatic and compelling opportunity for those who were promoting segregationist solutions to social problems”. The equation of Blacks with infectious disease and the perception of urban relations in the terms of “the imagery of infection and epidemic disease” provided a rationale for rural separation and the removal of African housing to the edges of the towns.⁷

In the 1850s and 1860s, non-Europeans were regarded in Natal principally as another environmental factor. They were considered as being a hazard to be surmounted or a natural resource to be utilised. This changed from the 1870s onwards. The Municipality of Durban, for example, attempted in the 1870s to establish an Indian location to remove the “breeding haunts and nursery grounds of disease, misery, and discomfort” with which the Indian settlement was believed to menace the town. In the early 1890s, Durban leaders tried again to impose municipal locations upon the Indians in order to achieve, in the words of its Mayor, “the isolation with better hopes of cure of this social leprosy”. In 1897, the Colonial Patriotic Union collected over 5000 signatures arguing that the

³ See for instance Packard 1989 and Parnell 2003.

⁴ X. C. 1902, 73.

⁵ CCP, A3-1894, 135–36.

⁶ Swanson 1977, 390.

⁷ Ibid., 387.

insanitary habits of Asians were a constant source of danger to the health of the White population. In short, the metaphoric equation of “coolies” with urban poverty and disease became a steady refrain of the White opinion and a preoccupation of the police and health officers in South African colonies long before 1900.⁸

In the Cape Colony the outbreaks of diseases, like smallpox in 1882 or bubonic plague in 1901, overcame the government’s reluctance to pay for the building of separate hospitals or locations. Improved state revenue enabled the government to give attention to segregating institutions like prisons.⁹ Epidemics also gave the racists the perfect excuse to pursue their ideology. They had little success in Cape Town in 1882, but in 1901, with bubonic plague, the Africans were marched off to Uitvlugt and the first township, later to be called Ndabeni, was established.¹⁰

Early Epidemics

In a bit over three centuries of its existence, serious epidemics have visited Cape Town quite often. The Cape had its first outbreak of smallpox in 1713, when infection was introduced from the East. The mortality of Whites was high (a quarter of the population died) and whole tribes of the Khoi were completely wiped out. Another virulent outbreak of smallpox occurred in 1755, causing the death of 936 Whites and 1,109 slaves and free Blacks. A more limited epidemic occurred in 1767. All three smallpox epidemics in the 18th century came to Cape Town by sea. This demonstrates the vulnerability of Cape Town, as a port, situated on the route mid-way between Europe and the East. In the 19th century further smallpox epidemics occurred that of 1881 being the most virulent, carrying off over 1,000 Capetonians. In 1901, bubonic plague was introduced from India – 735 cases resulted in 357 deaths.¹¹

It might have been expected that the municipal authorities in Cape Town would have been active in the measures of purification as, for instance, cholera was thought to be transmitted by the impregnation of the air with pestilential miasmata. However, most of the municipal commissioners owned land in the town, and were naturally opposed to radical plans for the demolition of insanitary premises. Smallpox caused more deaths than cholera, a violent outbreak of smallpox occurring in the spring of 1858. Whilst 148 deaths were reported for the first two months of the outbreak, the mortality was probably much greater, since the registration of births and deaths was carelessly enforced.¹²

⁸ Swanson 1964, 203; Yap & Man 1996, 44.

⁹ On segregation in other institutions in Cape Town, see Deacon 1996.

¹⁰ Bickford-Smith 1995b, 73–74; Davids 1983, 73.

¹¹ Phillips 1979, 88; Davids 1983, 51.

¹² Hattersley 1973, 179.

Smallpox in Grahamstown in 1859–1861

Without modern scientific knowledge and an isolation hospital for infectious diseases, there was a constant threat to public health in Grahamstown, increased by the unhygienic slaughter methods, the unsatisfactory state of affairs being further aggravated by the insufficient water supply. Overcrowding in the poorer quarters made the isolation of the sick during the epidemics almost impossible. Grahamstown was fortunate to possess several good medical men of whom Dr. William Guybon Atherstone¹³ was the most famous. They suggested measures to combat diseases, which sometimes were difficult to implement in the face of apathy and superstition. Several serious epidemics happened in Grahamstown between 1837 and 1862, the most serious of which was a smallpox epidemic, which extended over a period of nearly two years, from 1859 to 1861. This epidemic was a considerable expense to the municipality.¹⁴

When the first cases of smallpox were diagnosed in April 1859, Dr. Atherstone, the Chairman of the Board, and the Town Clerk took the precaution of placing the patients in tents on the outskirts of the town. The municipality undertook the expense of care and medical attention. The possibility of building a smallpox hospital was investigated, but the expenses were thought at first to be excessive. Instead, the Commissioners ordered straw huts to be built. The doctors objected to this with the result that a wooden structure was built to house the patients. Until the hospital was completed, the patients were accommodated under a marquee. Meanwhile the Commissioners in consultation with the medical profession in Grahamstown decided upon remedial measures: the “Hottentot location” was to be “cleaned up”; all the wagons entering the town were to be inspected; and the wardmasters were instructed to find out the number of the people in Grahamstown who had not been vaccinated. In spite of the precautions, the number of smallpox cases increased. Early in June, Dr. Atherstone reported that he had 20 patients. Clearly, it was in the interests of the population for the Commissioners to assume the emergency powers delegated to them under the terms of the Act 1 of 1856, an Act for preventing the spread of contagious or infectious diseases.¹⁵

The Superintendent of the Native Locations and the Chief Constable were authorised on the 3rd June 1859 to inspect and report on living conditions in the locations. The inspection was not however limited to the locations, but was also conducted within the European part of the town. Appalling overcrowding was reported in several cases. Off New Street, near the centre of the town, one small house of two rooms housed five

¹³ 1814–98. Medical and scientific pioneer. Founder of Albany Museum in 1855. In 1867, he identified the first diamond found at the Cape. Member of the Legislative Assembly 1881–83, of the Legislative Council 1883–91.

¹⁴ Hunt 1961, 201–02.

¹⁵ Ibid., 202.

families consisting of 18 persons. Despite instructions, the overcrowding was difficult to prevent.¹⁶ As late as 1861, three smallpox cases were reported in Estments Row. Dr. Atherstone found it to be in the most filthy condition. Further investigations revealed that in the row there were seven cottages, exclusive of the Black premises, tenanted by 45 men, women, and children. No privies were attached to any of these cottages, and a privy below the row “was choked up with filth which [...] emitted a noxious stench.”¹⁷ Furthermore, no provision was made to supply water to the row. It is not surprising that disease lurked in every corner. These findings led to the Sanitary Regulations of 1863 under which every owner of a house, intended to be inhabited, was required to provide it with a cesspool or other means of disposing of night soil without endangering the health of the inhabitants or be liable to pay a fine. The expense of the epidemic bore heavily on the Municipal revenue at a time when the Municipal Commissioners were personally committed to municipal debts. Over a period of 15 months, from March 1859 to June 1860, 140 patients were treated at the expense of the municipality. Of the patients 53 died and the municipality bore the expense of their burial. The Commissioners claimed that the epidemic had cost the Municipality of Grahamstown 1,000 pounds in 15 months and appealed to the Colonial Government for financial assistance. The Cape Parliament voted the sum of 500 pounds towards defraying the expenses of the Municipal Commissioners of Grahamstown.¹⁸

Smallpox Epidemic of 1882 in Cape Town and Its Results

The fears of an epidemic striking Cape Town proved to be well founded when smallpox hit the town in June 1882. The *Cape Times* led with an easily justifiable attack on the Town Council:

*Now they hope in a week to accomplish the reforming work of the years, and by a few buckets of whitewash or chloride of lime to compensate for the continuous stolid neglect of every sanitary precaution until the city is simply ripe for plague.*¹⁹

In the course of the next few days, the Council received the information about the sanitary conditions from the street-keepers. Councillor G.A. Ashley reported on the condition of Aspeling Street, where the first suspected case had lived: the streets were not made-up, they had no guttering, there were pools of black filth in “every direction”, and no dirt carts came that way. With respect to the house where the smallpox case had been found, there was no outside “accommodation”, and the filth was piled up against

¹⁶ Ibid., 202.

¹⁷ Grahamstown Journal, 5 Mar. 1861.

¹⁸ Gibbens 1982, 204; Hunt 1961, 203.

¹⁹ Cape Times, 27 June 1882.

the outside of the house.²⁰ Nevertheless, the householder representatives of the Council did not show any inclination to vote for increased rates to pay for better sanitation and the residents of Green Point showed no inclination to shoulder the burden. They successfully prevented the appropriation of the Common for the erection of working class houses.²¹

The visitation of the epidemic produced a hospital, a Sanitary Inspector, some washhouses, and a slightly changed Town Council, which proceeded to do nothing. It did not change middle-class attitudes to the lower orders, or produce any significant reforms. It had for a few months given a view of lower class Cape Town, whose discomfiture was rationalised by reference to racial characteristics, even while the housing shortage was acknowledged. What is evident from the smallpox epidemic of 1882 is the ease with which middle-class Cape Town attributed the spread of it to the lifestyle of the lower classes, which was to be blamed for the poor hygienic conditions of the town. The lifestyle of the poor was a lifestyle produced by their inherent laziness. Very little recognition was given to the fact that this lifestyle was encouraged by the inactivity of the town administrators. The evidence of appalling housing conditions, of people who had no housing at all, of filth, did no more than merely make the middle-classes more aware that the existence of such conditions was potentially a danger to themselves, and that had temporarily translated into action to ameliorate those conditions. However, the dying out of the epidemic towards the end of 1882 also saw the diminishment of the immediacy of the threat, and, with it, any concern to improve the housing of the lower orders.²² In Claremont, this epidemic caused a row between a local doctor, Dr. John Wright²³, and the property owners. The inadequate water supply and the very rudimentary sanitary arrangements added to the trouble of the epidemic, and Dr. Wright accused the property owners of criminal carelessness. The owners were furious but did nothing to improve conditions.²⁴

The Bubonic Plague of 1901 in Cape Town

In 1901, poverty and overcrowding were endemic in the some quarters of Cape Town. The most devastating criticism came from Professor W.J. Simpson, the British plague authority who became adviser to the colonial government. "Next to Bombay, Cape Town is one of the most suitable towns I know for a plague epidemic", he said. There were an extraordinary proportion of ancient and filthy slums, occupied by a heterogeneous population; the Africans were unfit for town life; the poorer Coloureds were even dirtier

²⁰ Cape Times, 30 June 1882.

²¹ Cape Times, 17 Aug. 1882.

²² Bickford-Smith 1981, 38; Davids 1983, 72.

²³ He was the father of Dr. H.C. Wright, the District Surgeon of Wynberg.

²⁴ Murray 1958, 47.

in their habits, while the Malays and Indians possessed the habits of the Asian, and the poorer class Portuguese, Italians, Levantines and Jews were almost as filthy as the others were. "Living in the same insanitary areas, often living in the same houses, the different races and nationalities are inextricably mixed up, so that whatever disease affects the one is sure to affect the other".²⁵ In addition, special factors operated to exacerbate the situation. Dr. A.J. Gregory, the colonial Medical Officer of Health, in his report to the government noted the old and insanitary condition of many parts of the



town. He cited particularly ancient stormwater sewers which created a labyrinth of rat runs, the extraordinarily large numbers of rats distributed throughout the town, the presence of a mixed population closely intermingled in their domestic relationships, their filthy habits, the progress of a war and the military occupation necessitating the accumulating of the large masses of forage and other stores and their conveyance through the country, and the presence of the large bodies of troops and their movements into and out of the infected area, and the overcrowded state of the town owing to the presence of refugees and persons attracted by the army.²⁶

Picture 5.1. Dr. A. Jasper Anderson, Medical Officer of Health for Cape Town 1901–23. (Source: Shorten 1963, 274)

At this time Cape Town was a slum-ridden town where Whites were living surrounded by Black servants. As a result of the plague the Medical Officer of Health, Dr. A. Jasper Anderson²⁷ (see picture 5.1), called for an African location where they could be housed in controlled and sanitary conditions without flooding into already overcrowded central areas. Ndabeni location was constructed rapidly and soon 7,000 Africans lived there. Afterwards Dr. Anderson expressed as his opinion that keeping the slums of the town in a satisfactory condition was impossible while Blacks were permitted to occupy tenements without control.²⁸

²⁵ Quoted in van Heyningen 1981a, 75; see also James 1970.

²⁶ Van Heyningen 1981a, 75.

²⁷ First full-time Medical Officer of Health 1901–23.

²⁸ Mayor's Minute, Cape Town, 1901, 206; Maylam 1990, 61; Slinger 1968, 14.

*The Kafirs are out of the City, and have been well and comfortably housed in a location of Uitvlugt, and I should hope it is impossible that even an approximation to the old condition will ever be allowed to exist again.*²⁹

The plague emergency was the precipitant cause of the government's decision to bring a location into being almost overnight. However, had the various governmental authorities been readier to decide who should act, and possessed the legal authority to compel the Africans to live in a location, it might well have been created before plague struck the town. Had there been no plague, there is little doubt that a location would have been established. Notwithstanding that, eventually fewer plague deaths occurred among Blacks than among Whites and considerably fewer than among Coloureds, only Blacks were forcibly removed and contained in the Location. Nor were they allowed to return to Cape Town once the plague had abated. Two points of general significance emerged from the creation of the Ndabeni Location. The first was the use of a "sanitation syndrome", that is the use of the fear caused by an epidemic to remove a group of people from the urban fabric to a location beyond the urban area; the second is the control that the local authorities now acquired over the supply of labour to the "white" town.³⁰

Bad health was a cause of the poverty. People frequently became trapped in a vicious circle of sickness, which dragged down their wages and drove them into overcrowded housing that, in turn, exacerbated their condition. Moreover, Cape Town was not a healthy town. It is true that its water supply was much better than it had been in the past. Indeed, considering the heavy demands of the military and shipping during this period, the town coped remarkably well in this respect. The same could not be said of the rapidly growing Municipality of Woodstock, however. The methods of sewage and refuse disposal were still primitive and slovenly. Although the Council had taken over the former, refuse disposal was still in the hands of a private contractor, and the more unsavoury corners of the town were usually ignored. This contributed to an average death rate in 1899 of 28.2 per 1,000, 18.8 amongst Whites and 36.7 amongst Coloureds. Set against this was the fact that the death rate from tuberculosis was on the increase, one death in every eight amongst Europeans and one in every six amongst Coloureds was from tuberculosis. The authorities were well aware of the implication of this, and a leaflet was circulated in 1898 setting out precautions against the disease.³¹

²⁹ Annual Report of the Medical Officer of Health, for the year ended 30th June, 1901. In Mayor's Minute, Cape Town, 1901, Appendix 10, cxl.

³⁰ Saunders 1979, 173; Beavon 1982, 6–7.

³¹ Annual Report of the Medical Officer of Health for the year ended 30th June, 1899. In Mayor's Minute, Cape Town, 1899, xcvi; Mayor's Minute, Cape Town, 1898, 69.

Bubonic Plague Elsewhere

The plague of 1901 also led changes in locations in the other towns of South Africa, for instance in Port Elizabeth all the old locations were demolished, and a new one, New Brighton, was built six kilometres from the town centre. It also added to the impetus for a municipal plan to segregate the Indians, as the Plague Officer was of the opinion that they were a “peculiarly plague-spreading people”. During the next ten years, very large sums of money were spent in constructing sewerage and improving the sanitation through a thorough system of cleansing drains and streets.³²

Bubonic plague struck Durban in 1902 and for several years thereafter, rejuvenating the past fears of African and Indian-borne pestilence, and hastening the emergence of the compulsory segregation in urban locations or compounds. Although plague had been traced to ships from Argentina, it was seen to emanate from the Indian and Black slums of Durban. The White residents clamoured for the containment of Blacks regarding them as a public health hazard. The authorities responded by passing the Native Location Act in 1904. However, locations were not created at this stage; neither the government nor the Durban Municipality was able to provide the necessary finance. Just as Cape Town had passed on the innovation of a “sanitation syndrome” as a basis for containment, so Durban passed on to Johannesburg a further dubious concept, namely a beer monopoly, known as the “Durban System”, as a basis for financing locations for Blacks.³³

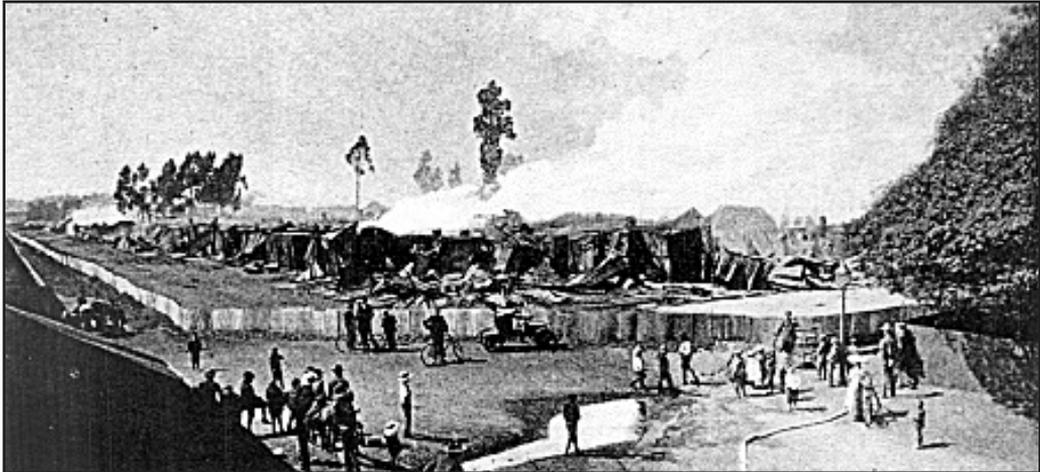
On an inspection held in the Indian Location of Johannesburg on the 28th January 1904 the Sanitary Department found that pail closets were full or overflowing in many cases, and that the ground surrounding them was saturated with faecal filth. The Sanitary Inspector, when questioned about the state of affairs, advised that the service provided to the area was a regular one, but only on every alternate night. However, because of the overcrowding in the area, this was hopelessly inadequate, as the number of the people in the courts was so high that the number of closets was insufficient. As a result, conditions were exceedingly unpleasant and unhealthy. In most cases, there was insufficient room to erect further closets, even if the Council was prepared to undertake structural additions to property, which might, in any event, be demolished.³⁴

Dr. Charles Porter visited the area on Mohandas Gandhi’s invitation on the 13th February. Following the inspection, Dr. Porter emphasised his opinion to the Council that the area was insanitary and that its continued existence was a danger to public health. He recommended that the residents be removed from the area as soon as possible, and if necessary accommodated in tents until alternative arrangements could be made for

³² Christopher 1987a, 197; Swanson 1977, 400–407; Christopher 1987b, 7; Playne 1910–11, 622.

³³ Swanson 1968, 37; Beavon 1982, 8.

³⁴ Zangel 2004, 72.



Picture 5.2. Burning of the Indian Location 1904. (Source: Kallaway & Pearson 1986, 32)

the erection of more permanent dwellings.³⁵ The Town Clerk responded by authorising the increase of services to the area, and the collection of night soil on a daily basis.³⁶ However, this really was “too little, too late”.

On the 19th March, bubonic plague broke out and the Council expedited the implementation of waterborne sewage for the central and southern parts of Johannesburg. This was gravity fed through a network of huge underground sewers to a Council-owned farm at Klipspruit. The Medical Officer of Health had the whole Location burnt down. (See picture 5.2) This was the most drastic and thorough action for the sake of public health ever undertaken in Johannesburg. Most of the former residents of the area were moved to Klipspruit. The irony of moving persons from an unsanitary slum to land adjoining a sewage works on the grounds of health control will not have been missed. The Klipspruit sewage works continued to operate even though a residential location had been erected adjacent to it. Flies that fed and bred in the extensive seepages and pools of sludge that abounded consequently plagued the township.³⁷ The situations where refuse would be dumped near the neighbourhoods occupied by the poor, the working class, and ethnic and racial minorities was and still is familiar in the other parts of the world.³⁸ Gandhi wrote about the burning of the location as follows:

So far as I recollect, the location was put on the flames on the very next day after its evacuation. The Municipality showed not the slightest inclination to save anything from the conflagration. About this very time, and for the same reason, the Municipality burnt down all its timber in the market, and sustained a loss of some £10,000. The reason for this drastic step was the discovery of some dead rats in the market.

³⁵ Johannesburg Health Committee Minutes, 16 Feb. 1904. MJB 1/4/8. TAB.

³⁶ Johannesburg Health Committee Minutes, 17 Feb. 1904. MJB 1/4/8. TAB.

³⁷ Carruthers; Leyds 1964, 171; Shorten 1970, 240–41; Beavon 1982, 10.

³⁸ Melosi 2005, 34.

*The Municipality had to incur heavy expenditure, but it successfully arrested the further progress of the plague, and the city once more breathed freely.*³⁹

A number of points need to be distilled from the events surrounding the removal of the “Coolie Location”. The first is the fact that the new administrators of Johannesburg, the British, were as callous and harsh in their consideration and treatment of the African people as were the Afrikaners. Next, the removal to Klipspruit was a forced removal. The removal, which had been made in the interests of public health, would in those very terms turn out to be a disaster. The removal should be seen as an example of the “sanitation syndrome”, used to denote a situation in which a concern for sanitation and public health is used as a means for achieving a desired urban goal not otherwise easy to obtain. The selection of Klipspruit as the site for the new location effectively determined the future site for the southwestern townships or Soweto. The removal of the unfortunate African people to a site 16 kilometres from Market Square makes the intentions of Lionel Curtis to secure for Johannesburg, the largest municipal area in the world, so that it could plan and develop residential areas for its citizens, look particularly strange. The “largest municipal area in the world” was essentially demarcated by a boundary that represented the 9.6 kilometres radius from Market Square. Finally, not only could no suitable site be found on the approximately 104 square kilometres of undeveloped land within that radius, but also the people removed from the “Coolie Location” had been dumped an additional six kilometres beyond the municipal boundary.⁴⁰

Spanish ‘Flu of 1918

The Spanish Influenza pandemic reached countrywide proportions in South Africa by September 1918. The mines reported that more than 10,000 men were unable to go on shift, and, as the infection spread, tram and train services had to be curtailed, the schools were closed, and the courts were obliged to adjourn their sittings. The Union and Johannesburg Health Departments established an Influenza Epidemic Committee to deal with the emergency in the town where some activities were brought almost to a standstill. Because of the Committee’s work, however, Johannesburg had a lower death rate caused by the infection than any other major centre in South Africa. Even so, the statistics issued by the Medical Officer of Health revealed that during October 499 Whites and 1,000 Blacks had died from influenza, and 79 Whites and 109 Coloureds from pneumonia.⁴¹

³⁹ Gandhi 1927, 248.

⁴⁰ Beavon 2004, 78.

⁴¹ Shorten 1970, 275–76; About Spanish Influenza in Finland see Linnanmäki 2005.

A massive influenza epidemic broke out amongst the Klipspruit inhabitants. This happened at a time when the White ratepayers were complaining that their Black labour was too far removed from them. The combination of a health hazard and the irritability of the employers galvanised the municipality into action and they established Western Native Township between the present-day Westdene and Coronationville. This location was somewhat closer to town than Klipspruit. Not surprisingly, the site chosen for Western Native Township was a piece of wasteland, more precisely a levelled refuse tip⁴². The death rate in the first two decades of the century reached the highest point in all the population groups in Johannesburg with the influenza epidemic. There were other endemic diseases for which there was little remedy between 1910 and 1920. For all the population groups, the greatest killers were pneumonia and other respiratory diseases, followed by the diarrhoeal diseases – dysentery and typhoid – in which poor sanitation played a major role. Even in the White areas of the town, waterborne sewerage was not widespread until the 1920s.⁴³

In Cape Town, relief-operations and house-to-house visits dramatically revealed to many the insanitary, overcrowded, and unhealthy slum conditions prevalent in the large areas of the town. Some improvements were felt to be particularly urgent. In the months following the epidemic, streets and backyards were cleansed and disinfected regularly, more sanitary inspectors were appointed, and an extensive system of emergency relief was organized.⁴⁴ The epidemic highlighted the position of the Africans in Cape Town in two ways. Firstly, it revealed the appalling conditions prevalent at the Docks Location and Ndabeni and secondly, house-to-house visits during its height showed up the large number of Africans residing within the city in contravention of the law. Many Whites felt that these only caused greater overcrowding and were a serious health hazard to boot – “dirty, ill-clad and ill-nourished”, as the *Cape Times* described them, men “who would fall easy victims to a renewed outbreak of the disease, and at the same time they would act as fearfully effective agents in the dissemination of the influenza germ, whatever it is”.⁴⁵

⁴² An area or a place for dumping something, such as rubbish or refuse.

⁴³ Beavon 1982, 10–11; Unterhalter 1982, 620–21.

⁴⁴ Phillips 1979, 95.

⁴⁵ Cape Times, 8 Mar. 1919.

5.2 Public Health

The Role of the Medical Officers

The role of health officials in the late 19th century was probably not easy considering that they saw clearly the defects in the sanitary conditions and the dangers they caused to public health and still they had to fight against elected councillors who were reluctant to make the necessary improvements.⁴⁶ In his annual report in 1899, Dr. H.C. Wright, the District Surgeon of Wynberg was expressing his frustration very clearly:

One of the most discouraging burdens of life is to be asked for professional opinions – in other words advice – time after time, and find it treated with the “let slide” doctrine, [...] when one of the public comes across a nuisance particularly objectionable to himself he generally approaches the doctor, usually the District Surgeon – cannot he do something? He has to admit that he has tried and failed, for I look upon the result of the volume of matter printed yearly in the District Surgeons’ Health Reports as a gigantic failure, for unless the reports are backed by special interest or fierce agitation there is no attention paid to them. I have read the Acting District Surgeon’s scathing report for last year [...] The report for that year was in no way exaggerated, and I will mention any improvements that been taken place under respective headings, but I am afraid they have taken place more due to the pressure brought to bear by affected individuals’ persistent agitation rather than as the result of Blue Book reports.⁴⁷

Four years later, he just said that “his views on the usual questions of drainage, water supply, and sanitation in general [...] have been so frequently expressed” that he did not need to repeat them, “except to state that all the abuses remain, and little, if any improvement has taken place”.⁴⁸ In the same year, the Medical Officer of Health for the Cape Colony wrote about the same matter in his annual report:

For many years it has been the custom to obtain those reports and to print them for presentation to Parliament, and I am of opinion that on the whole their preparation and publication serve in some degree to direct attention to sanitary defects and to create interest in sanitary improvement, yet I am bound to admit that they attract less notice than the importance of the subject they deal with deserves. Were they only read and digested by those responsible for the carrying out of local sanitation work, valuable knowledge would be obtained of local conditions and of the almost universal need that exists for their improvement [...] Although attention is usually paid to other matters of Municipal concern, it is frequently to be noticed that questions of Health and Sanitation are neglected. I only know of two Local Authorities in the Colony which employ a Medical Officer devoting his whole time to the work of the District, namely, the Municipality of Cape Town and the Board of Health of Kimberley.⁴⁹

⁴⁶ William Henry Duncan, the first Medical Officer of Health in England, met the same kind of difficulties during his tenure in Liverpool in 1847–63. Laxton 2000.

⁴⁷ District Surgeons Reports. In Reports on the Public Health, 1899, 106.

⁴⁸ District Surgeons Reports. In Report of the Medical Officer of Health for the Colony on the Public Health, 1903, 172.

⁴⁹ Report of the Medical Officer of Health for the Colony on the Public Health, 1903, v; by 1905 there was also a whole time Medical Officer in Port Elizabeth.

He continued criticizing the sanitary condition in the towns of the Colony saying that only in a very few the sanitary condition was satisfactory or could not be improved. The most frequent sanitary defect was the failure to provide a proper water supply. In many towns, the water was good and pure at the source but was putrefied before it reached consumers because of the open furrows. Another, smaller defect was the absence of the proper systems of night soil and slop water disposal. In many areas, this was left to the householders to arrange, in other cases the Local Authority appointed contractors whose operations they did not supervise. He acknowledged that this was a difficult question but was still of the opinion that many Local Authorities did not do the best they could in these matters.⁵⁰

The differing views between medical authorities were also causing problems for municipal authorities in dealing with sanitary and health problems. For instance, Dr. George Turner investigated typhoid in Port Elizabeth from September 1896 to January 1897. He concluded that the locations were not the cause; the culprit was the inadequate drainage and sewage system. The Town Council of Port Elizabeth was disappointed with Turner's conclusions, especially since in a study done a year earlier by two local doctors it was claimed that the unsanitary Africans living in municipal locations were the cause of typhoid disease. The Medical Officer of Health for Port Elizabeth also recommended that one location should be closed and Blacks moved.⁵¹

There are other similar examples of difficulties between medical and municipal authorities, for example the question of private wells in Mowbray in 1904. Dr. J.A. Mitchell, the Assistant Medical Officer of Health for the Cape Colony, inspected water from one well in Mowbray. In his report, he condemned water as unfit for drinking purposes and mentioned that there were four other private wells still in use, one of which had already been ordered to be closed.⁵² Dr. A.J. Gregory, the Medical Officer of Health for the Cape Colony, wrote to the municipality recommending the closure of all these wells. The Sanitary committee, however, did not agree to do that but instead suggested that the sanitary inspector should take samples from the wells for analysis. One local newspaper commented on this by writing that "the Mowbray Municipality like the others with which we are blessed in this Peninsula, are very careful to avoid Dr. Gregory as far as they possibly can".⁵³ It also suggested that the councillors had some personal interests at stake.

⁵⁰ Report of the Medical Officer of Health for the Colony on the Public Health, 1903, vii; The Medical Officer of Health returned to this question again in his report for the year 1904 and 1905. Report of the Medical Officer of Health for the Colony on the Public Health, 1904 and 1905, xvi.

⁵¹ Kirk 2000, 116–17.

⁵² J.A. Mitchell to A.J. Gregory, 17 Feb. 1904. MOH, 130, C17D. KAB.

⁵³ South African Review, 11 Mar. 1904.

Segregation and Health

The public health movement, which equated sanitation with civilisation, provided the legal, intellectual, and professional framework for the initial segregation, on a racial basis, of living areas and amenities in the Cape Colony and elsewhere at the close of the 19th century. The public health legislation was used to effect forced removals to Ndabeni, which were not provided for in the Native Locations Act of 1899. Although plague itself played only a small role in justifying the relocation in 1901, the “sanitation syndrome” had been deployed during the previous decade in pressurising the Cape Town Council to move the Africans from racially mixed areas and from the docks. The notion was that the Capetonians had to be protected from contagious diseases emanating from the dirty, overcrowded areas inhabited by poorer classes, an idea already prevalent in middle-class Cape Town in the 1880s.⁵⁴

Some public health measures had their own racist undertones. Elizabeth Van Heyningen has argued that by focusing on the human factor in the transmission of plague in Cape Town at the turn of the century, doctors encouraged the targeting of “dirty” Indian and Chinese shops and overcrowded, unsanitary African dwellings in attempts to wipe out the disease.⁵⁵ Nevertheless, the racism of the public health movement cannot simply be explained away as a justification for racial segregation. The extent of medical contributions to urban segregation must be measured against the racist content of medical metaphors.⁵⁶

In 1908 in his presidential address to the South African Medical Congress Dr. Wilfred Watkins–Pitchford⁵⁷ addressed the hygiene in South Africa. Concerning the removal of human excreta, he said:

*The problem of the removal and disposal of human excreta is being solved, [...] by the introduction of a water-carriage system. Coastal towns have, of course, a great advantage over those inland in that they may with comparatively little expense, [...] run their untreated sewage into the sea [...] The smaller inland towns being unable to afford a sewerage system appear to have no alternative to the pail method. All such conservancy systems have the common objection that material [...] is preserved in or near our dwellings for a variable period instead of being immediately removed. The pail system as usually carried out in South Africa is attended with great nuisance and danger to health, although by the exercise of a certain degree of niceness and care it may be rendered both inoffensive and innocuous.*⁵⁸

⁵⁴ Saunders 1979, 138; Bickford-Smith 1981, 40.

⁵⁵ Van Heyningen 1981a.

⁵⁶ See for instance Deacon 1994.

⁵⁷ 1868–1952. Assistant Government Bacteriologist for Natal 1902–09. Government Pathologist for Natal 1909–11. Chief Pathologist and Analyst of Transvaal 1911–12. Director of the South African Institute of Medical Research 1912–28.

⁵⁸ Watkins–Pitchford 1908, 71.

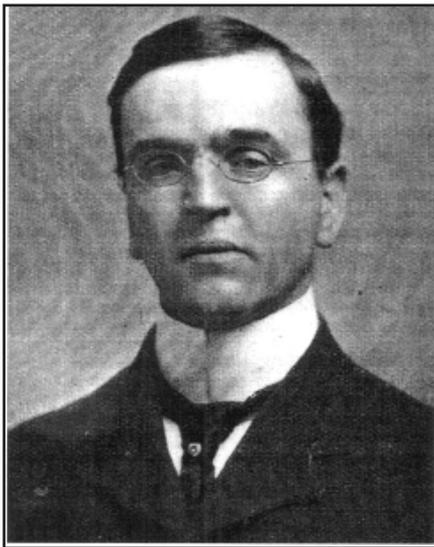
He also commented on the problems with public conveniences in South African towns and mentioned that in enlightened communities the situation had improved:

To the stranger making his first acquaintance with South African towns there are few things less conspicuous than the public conveniences; not only are they difficult to find, but when found they prove too often to be in a very unsanitary condition [...] Public conveniences are a necessity to both the health and the morality of the town, and this being so they should receive as much attention as the lighting and paving of the streets. This claim has of recent years received increasing acknowledgement, and it is now usual for enlightened communities to place their public conveniences in the most frequented parts of the city [...]]⁵⁹

Considering the African and “Asian” locations, he clarified his opinion as to their desirability in every town:

That Natives and Asiatics [...] should reside apart in a specially-allotted district of the town is admitted by most to be highly desirable. These people have moral ideals and social habits widely different from those of educated Europeans, and this fact alone fully justifies such racial segregation. To the hygienist, however, the most convincing argument is the facility which is afforded for sanitary control, more especially in respect of the communicable diseases. The question of locations is referred to here mainly because some of our large towns have as yet made no movement towards this desirable reform.⁶⁰

For years the Malay Location of Johannesburg had no sewerage or water connections,



a situation changed only in one sector in response to the outbreak of smallpox. Regularly described as the most unsavoury part of the town, the Malay Location nevertheless festered for decades while the town’s Medical Officer of Health conceded that the Location’s inhospitable character was due to uncertainty about its future. Unwilling to address in a comprehensive manner the sanitation problems in the Malay Location, the Council acted in a haphazard manner to isolate the public health crisis. As an example, in order to contain the threat of disease, particularly plague, an ever-increasing number of rat-catchers were employed in the Malay Location.⁶¹

Picture 5.3. Dr. Charles Porter, Medical Officer of Health of Johannesburg 1901–25. (Source: Brink 1994, 18)

⁵⁹ Ibid.

⁶⁰ Ibid., 73.

⁶¹ Parnell 1991, 275.

In 1911, Dr. Charles Porter (see picture 5.3) stressed the importance of establishing separate locations for the Africans, Coloureds and Indians as an integral part of general town-planning provisions. The extension of the existing powers pertaining to the Africans and forcing Coloureds and Indians to live in racially segregated municipal locations was, for him, the most important matter from the public health point of view. Dr. Porter, however, did not see the Africans as a greater sanitary threat than the poor Whites. Responding to the 1912 smallpox outbreak, he corrected segregationist zealots mobilising for the African removal because of the outbreak of disease, by pointing out that the incidence of smallpox among the urban Africans was low, and that in a decade of working in Johannesburg he did not know of any instance where an African introduced smallpox into a White family. By 1913, he rebuffed the suggestions of moving the Africans from the Malay Location as they would spread throughout the Municipality, and the sanitary and public health position would not be improved.⁶²

In 1914, the Tuberculosis Commission gave an account of the conditions in the urban Black locations throughout the Union. The main finding was that the site was in many cases wrongly chosen, generally on some donga and in the vicinity or not far from the town sanitary tip, the refuse dump or the slaughter poles and at the same time away from the possibility of procuring any proper domestic water supply. Furthermore, because of the irregular layout, sanitary control was difficult and the individual duty of plot-holders with reference to their plots was hard to define or enforce. Very few of the dwellings were provided with their own sanitary accommodation and public latrines in the location were few and often entirely absent. Refuse was in most cases not collected. As a rule, the authority pointed out a place where the inhabitants themselves were expected to dispose of their refuse. "In some cases the town water supply is laid on to one or two standpipes in the location, but in most instances the inhabitants have to fetch their water from the irrigation furrow after it has run through the town, or some neighbouring sluic." Municipal sanitation usually stopped at the boundary of the location. "With few exceptions" the dwellings "are a disgrace, and the majority quite unfit for human habitation."⁶³

On several occasions before the First World War, contagious diseases were attributed to the conditions in the Johannesburg inner-town slums, the most notorious of which was the Malay Location. Significantly, before the War the sanitation threat posed by the Malay Location was not used to justify selective re-housing and racial segregation, although this policy was widely embraced. Instead, the Local Authority neglected its role as the keeper of public health and condoned living conditions that threatened human life. Only the anti-slum outrage that followed the influenza deaths in 1918 prompted even cursory attention to conditions in the Malay Location. Frightened by the high casualty rate of Spanish

⁶² Parnell 1993a, 478–79; Parnell 1991, 277.

⁶³ U.G., 34–14, 124–126; Morris 1981, 13; Marais 1962, 258.

Influenza, the Medical Officer successfully initiated a substantial upgrading grant for the Malay Location, whose proximity to the town and the White suburbia made it the focus of the White's sanitation paranoia. By the end of the War, however, the political climate in Johannesburg had changed and the proposed improvement of the Malay Location was insufficient to appease the White protesters. Specifically the poorer section of White society demanded nothing less than the wholesale relocation of the Malay Location.⁶⁴

The "sanitation syndrome" provided the excuse to remove Blacks from the urban fabric to a location beyond the urban periphery. Plagues were perceived to emanate from slums, and Whites clamoured for the containment of particularly the Africans, whom they labelled as public health hazards. This fear was given concrete expression with the outbreaks of bubonic plague. In this way, Ndabeni location was established at Uitvlugt eight kilometres from the Cape Town centre and Klipspruit at 20 kilometres from the Johannesburg town centre, while in Natal, the Native Location Act was passed in 1904 enabling municipalities in this province to provide alternative locations for their African populations. The fact that Ndabeni was located on a site selected for sewage disposal works, that Klipspruit adjoined such a site, and that Western Native Township was constructed at the Newlands depositing site in 1918, did not perturb the health-conscious White residents. This suggests that the "sanitation syndrome" provided the ideological justification to move the Africans beyond the urban periphery to locations where land was less valuable, and to contain and control their presence within townships, thus preserving property interests in the inner towns. In the first two decades of the 1900s, solutions to sanitation problems were sought primarily through segregation and influx controls, rather than urban upgrading, philanthropy, or public housing provision. The fear that infectious disease was no respecter of class or racial boundaries and the "metaphoric equation" of Blacks with infectious disease provided a compelling rationale for the major forms of social control, and in particular the segregation of African locations. There was no amelioration in the poor housing, low wages, inadequate water supplies, and sanitation giving rise to poverty-based disease; nor was there any major increase in the allocation of health resources to deal with the increased burden of ill health.⁶⁵

⁶⁴ Parnell 1991, 285.

⁶⁵ Torr 1987, 32; Parnell 1991, 272; Andersson & Marks 1989, 519.

5.3 Health, Water Supply, and Sanitation Hand-in-hand⁶⁶

There were bubonic plague epidemics in 1901 in Cape Town, in 1902 in Durban and in 1904 in Johannesburg and Spanish 'Flu hit the country in 1918. Every one of these epidemics could be connected to insanitary conditions in the towns. Instead of directly improving the sanitary situation in the towns, the most visible consequence, at least from plagues, was the removal of Blacks from the town centre into the locations, which were situated a long way from the centre. Public health was used as a ground for these forced removals of the non-White people into the locations. The areas where Blacks were living were considered as the nurseries of infection by the White health officials. Many diseases were said to have originated within these districts even if the evidence showed otherwise. The still prevalent miasmatic theory helped to link blackness, dirtiness, and disease, and the Whites were afraid that the others would spread diseases amongst them.

Table 6. Epidemics and the development of public health administration in case cities, 1836–1919.

	Cape Town	Grahamstown	Durban	Johannesburg	Other towns
1836		Creation of Municipality			
1840	Creation of Municipality; smallpox				
1858	Smallpox				
1859		Smallpox epidemic starts			
1861		Smallpox epidemic ends			
1871	Smallpox epidemic				
1874			First Medical Officer of Health		
1881	Smallpox				
1882	Smallpox				
1883	First Medical Officer of Health				Public Health Act of the Cape Colony
1887				District Surgeon appointed	
1893		Smallpox			First Medical Officer of Health for the Cape Colony

⁶⁶ In table 6, is presented the overview of the epidemics and the development of public health administration in case cities during the research period.

	Cape Town	Grahamstown	Durban	Johannesburg	Other towns
1894				First Medical Officer of Health	Public Health Bill of the Cape Colony
1897					Public Health Amendment Act of the Cape Colony; colonial public health department created
1898	Typhoid epidemic	First Medical Officer of Health			
1901	Bubonic plague; first full-time Medical Officer of Health; establishment of Ndabeni			First full-time Medical Officer of Health	Public Health Act of Natal
1902			Bubonic plague		
1904				Bubonic plague in the 'Coolie Location'; Klipspruit established	
1913		Tuberculosis Commission inspects locations			
1914					Tuberculosis Commission
1918					Spanish 'Flu
1919					Public Health Bill

Many of the health officials identified these problems but could not always get other officials to act towards improving the conditions. At least in the Cape Colony there were distinct differences between colony level medical officials and local level decision makers in municipalities. That local medical men also did not always agree with the colonial officials did not help at all in these situations. The situation was, of course, the most difficult when the local decision makers did not agree with their own Medical Officer of Health as commonly occurred in Grahamstown.

6. Water Supply and Sanitation Drives Environmental Health

6.1 The Development of the Water Supply in South Africa

There is a general pattern concerning how water supply evolved in many towns and cities in South Africa. Private water supplies were initially augmented by communal schemes. These were modest at first, later followed by the construction of large dams and eventually the importation of water from neighbouring catchment areas. As the systems increased in size, the opportunity for lowering costs by combined, regional-based schemes improved. The Government, which had considerable experience in irrigation water supply, undertook to construct such schemes, and hence to regulate and apportion bulk water supplies. The Government had to embark on the water supply schemes on an increasingly larger scale due to the increasing demands of mining and industry. Many of these Government water schemes later became interlinked to form large supply system networks. The Vaal River System is probably the most important of these.

The main consideration in the way of services required for the old towns were water supply and access to the erven¹. Water supply was obtained from a river or spring and was led by an open furrow through the streets to provide for the irrigation of the erven. At the same time, the furrow served to provide the drinking water for animals and the water for domestic use. These irrigation furrows usually served as stormwater drains and in many cases, they were used to dispose of the wastewater from residential premises. Some of these water supplies are still in existence in the old towns and in the streets; the conservancy dams were constructed only later. The use of underground water obtained from boreholes developed only after 1900, while earlier most water supplies were from surface-water sources.

¹ Erf: a plot of ground, stand.

6.2 The Development of Water Supply and Sanitation in the Case Cities

In *Cape Town*, water was originally collected from the streams and springs; the first storage reservoirs were built in the immediate neighbourhood of the town area. Nevertheless, step-by-step, water had to be fetched from farther and farther away. At first, water on Table Mountain was harnessed and later it became necessary to rely on rivers and new reservoirs and dams situated at quite long distances from the town centre. This development continued in Cape Town after the end of the research period, today it is taking water from nearly every source identified in the early 20th century. There were also plans to establish private companies for supplying water. The first one was established in the 1840s but it did not succeed in collecting enough funds to continue in operation. At the end of the 1850s, there were discussions about establishing an independent board for water supply. The municipality, however, managed stop this plan to take away some of its powers. In 1882, the Table Mountain Water Company was actually established to develop sources on Table Mountain. This company owned development rights for five years but for various reasons did not succeed in anything else than selling the rights back to Cape Town in 1887 albeit with a profit. After this, there were no plans for private companies.

Water supply was a highly political issue from the beginning in Cape Town; it could be argued that it was the most political of the four cases. The costs of the projects and possible effects on the rents were two critical issues that caused political turmoil. Water supply was a big concern in local elections from the 1870s onwards and political groups were born around this and the sanitation questions. The decisions for building the first three reservoirs were easy ones but after that, the decisions to build on Table Mountain and further away from the town centre raised debate at quite a high level. The prime example of this was the poll between Steenbras and Wemmershoek Schemes in 1917, which split the whole population of the town into two camps. Other main struggles happened in the years 1882, 1897 and 1906. The sanitary situation in the town area was also a highly debated issue from the 1850s. It also ended up being an issue in the political battle between “Clean Party” and “Dirty Party” in the late 1870s and early 1880s. The victory of “Clean Party” in municipal elections finally gave the opportunity to make a comprehensive scheme for waterborne sewerage in the whole town area during 1891. There were, however, problems with the cost estimates of this “Dunscombe Scheme” and it was never realised as such. The building of the sewerage system was, nevertheless, started according to the modified scheme in 1895.

There were independent schemes for water supply and sanitation in the suburban municipalities of Cape Town. Most of them were established as independent municipalities during the 1880s and were all quite small. However, their population began to grow rapidly in the 1890s and they had to do something to improve their living conditions. The situation was the best in Wynberg, which managed to build three reservoirs on Table Mountain and its own sewerage system. The Municipality of Green Point and Sea Point was very dependent on Cape Town for its water supply; nevertheless, it managed to build its own sewerage system. Others tried to establish their own schemes independent of Cape Town; unfortunately, for them, these were too expensive. From the early 1900s, it became clear to everyone that Cape Town and other municipalities on the Cape Peninsula should co-operate. However, it was not until 1913, that the agreement for municipal unification was reached and even then, Wynberg clung to its independence until 1925.

In the early *Durban*, they had problems with the water quality in the town area. There was, however, enough water in nearby rivers; the problem was how to utilize this. At this point in the 1860s, the Mayor was even considering that private companies could solve this problem. The first solution for the problem with the water supply, however, was the drilling for artesian water. This succeeded during the 1870s when good water was found in the Botanic Gardens. This supply was sufficient for the town for some years. When the first Borough Engineer was appointed in 1882, he began immediately to investigate various options for sourcing water from nearby rivers. The result was that between 1887 and 1904 all three main water sources, namely the Umbilo, Umlaas and Umgeni Rivers, were taken into use. The sole reason for the order in which these schemes were utilized was economic. The Town Council was carefully calculating the costs and advantages of various schemes for the town. Considering the rapid growth of the population particularly during the South African War, they, however, did not have any other options than continually adapt new schemes.

This necessity and the availability of the water made the making of these decisions, however, easier than, for instance, in Cape Town. There were no political battles around the augmentation of the water supply. The issue of water supply was clearly only an economical one; there seems to have been unanimous agreement about the necessity of improving the water supply, discussions were mostly concerning what plan was the most economical for the municipality. It is self evident that some people were more active in these issues than others were but it is clear that people generally agreed on the necessity of the improvements. Durban was very fortunate to had a person such as John Fletcher in the post of Borough Engineer for 29 years. Fletcher was the driving force behind the building of the waterborne sewerage system during 1895. Durban also has one feature that is not so obvious in the other three towns, floods. During the

period, a few disastrous floods occurred in the Durban area. From the aspect of water supply, the most disastrous was the one in 1905, which resulted the closing of Pinetown waterworks. The flood in 1917 caused severe damage to the Umlaas waterworks and led to the searching for new sources.

It is arguable that the situation in **Grahamstown** was quite similar, there was enough available water. It is, however, necessary to take account of the fact that the population growth in Grahamstown was not at the same level as in other towns; accordingly, the need for water supply was not as urgent as in the other towns. At times water supply became an issue in local politics but not so often or at the same level as in Cape Town. There were similarities, however, for instance in the way in which the battle lines were drawn between the different social groups and the people living in the different parts of the town areas. Even in Grahamstown, the concept of a publicly run company was discussed, at least in one Town Council meeting in 1865.

In Grahamstown, the supply was at first by furrows running in the main streets; it was very soon realised that this was not sufficient. After the establishment of the municipality the decision was made to put suitable water mains in the streets, water for these was taken from the streams. During the 1850s, it was decided that the old reservoir in the Botanic Gardens was too small and at first, they built Grey Reservoir and some years later Douglas and Hamilton Reservoirs in the immediate vicinity of the town centre. The fourth big reservoir in the town area, Cradock, was built in the 1870s. There were also various other schemes for reservoirs, for instance in the Fort England area, these were, however, never realised mostly due to economic reasons. Grahamstown's population growth after the 1850s was very slow; the number of its population actually shrank somewhat after the founding of Kimberley. This affected the town's economic situation, generally it did not have the funds to realise the new schemes. In the 1890s, they needed to do something and the Slaai Kraal Scheme was adopted. This led to the construction of two new reservoirs, Milner and Jameson, in the late 1890s and early 1900s. It was soon realised that even these were not enough and the search for a new source started again. Eventually Howieson's Poort was selected. The next reservoir was opened there in 1930.

Cesspools were used in Grahamstown until 1901 when the system was abolished being considered unhygienic. After this a pail collection system was started. It lasted until the opening of waterborne sewerage system in 1936. Here again the high cost of the system was the sole reason that it took so long to realise; demands for waterborne sewerage had already been made in the 1900s. In Grahamstown, the water supply and sanitation of the locations was a much discussed issue. One municipal and two government's locations existed in the immediate neighbourhood of the town centre and everybody could see and sometimes even smell what was happening in these areas.

The Town Council was, however, very reluctant to do anything unless it was absolutely necessary. When the Tuberculosis Commission in 1914 issued its findings on conditions in these locations, the Mayor and the Town Council at first denied these findings. Even so when the sewerage system was built during the 1930s, only some public buildings and offices in these locations were connected.

In **Johannesburg**, we have a very different case. The town was born on a watershed, where there was not much water available. Johannesburg was established relatively late and grew quickly. Some far-sighted people had already seen in the 1890s that the only solution was to source water from the Vaal River. This, however, was so big an undertaking that it was realized only after the First World War, when construction work started on the Vaal River Barrage. For c. 30 years, the water supply of Johannesburg was insecure. The situation was also very different from the other cases because private companies were supplying the water. The granting of a concession was a normal policy for the government of the South African Republic to finance its workings. To give away a concession was also an easy solution for the government at the time; it did not have to use its own resources towards solving the water supply problem of a mining camp. The municipality did not have much to say about the way these private companies managed their services. There were, however, heated discussions as to whether the municipality should start their own scheme for supplying water and this was a key issue in some elections and polls. At first, providing water to Johannesburg was easy; water streams were tapped. By the end of the 19th century, the source at Zuurbekom provided crucial water supplies as the Witwatersrand started running dry. However, the mining industry and the rapid population growth required greater quantities of water. Once the Rand Water Board was founded in 1903, innovative measures were introduced to exploit the underground water supplies of the Klip River, to the south of Johannesburg. Before the outbreak of the First World War in 1914 it was evident that the Vaal River would be an essential component in water planning if the Witwatersrand, by now already the major centre of industry and finance in South Africa, was to continue flourishing. The construction of the Vaal Barrage in the period 1916–23 was a major project.

In spite of the great building activity, the coming of the railways, and the establishment of banks, the Government offices and some minor industries, social life in some respects was very much still that of the mining camps for the first ten years in Johannesburg. Many men who were boys at the time of Jameson Raid emphasized two factors, which changed Johannesburg's social life from that of a mining camp to that of a modern town. These were the supply of pure water in copious quantities from Zuurbekom and the macadamising, i.e. hardening but not tarring, of the streets. With its water, gas, and electricity reticulation and its transport service, Johannesburg already was by the 1890s far ahead of other towns in the Transvaal. When in 1904 a waterborne sewerage

system was installed, the town really became civilised. Spending on Black housing, however, was kept to a minimum. Only when disease struck down too many workers and threatened to spread was any attempt made to improve the conditions of the poor. In the first stage of industrialisation in South Africa, services were not adequately provided for the poor and the lower paid workers. The result was “slum” living conditions, diseases, and a high number of deaths, especially amongst children.

Table 7. The milestones of the development in case cities.

	Cape Town	Grahamstown	Durban	Johannesburg
Water pipe network started	Early 18th century	1844	1878	1888
First reservoir	1811	1840s	1884	1888
Creation of Municipality	1840	1836	1854	1897
First Municipal Engineer	1854	1859	1882	1889
First Sanitary Official	1870	1867	1861	1887
Cesspools abolished	1890s	1901	1865	After 1903
Pail collecting system started	Before 1850s	1903	1865	1887
Filtration started	1869	1914	1887	1888
First MOH	1883	1898	1874	1894
First sewerage scheme	1884	1930s	1891	1891
First public conveniences	1895	1905 (for Whites, earlier for Blacks)	1885	1889
First bigger water supply scheme realised	1891	1898	1887	1921
Stormwater drainage	1904	not known	1893	1904
Building of waterborne sewerage system started	1895	1934	1895	1903
First full-time MOH	1901	1898	1902	1901

6.3 Main Drivers for the Development

6.3.1 Population Growth

The population growth affected the development of the water supply and sanitation in these cases. Johannesburg is a prime example of this. Since ten years after its establishment, it had become the most populous urban centre in Southern Africa. This caused enormous problems with the water supply and especially with sanitation. Without proper water supply, a waterborne sewerage system was unthinkable and so long as water supply was in the hands of private companies, it stayed inadequate. The companies were supplying certain areas and were very reluctant to expand their networks, especially in the poorer areas. The situation improved in this sense only after the establishment of the Rand Water Board and the expansion of the borders of Johannesburg. The building of the waterborne sewerage system was started at about the same time but even this did not improve the conditions in the worst areas – the locations and slums in the backyards. As a contrast to Johannesburg, we had Grahamstown where the population growth was quite modest, between 1850 and 1920 the number of the population only tripled. Of course, there were overcrowded houses and insanitary streets in Grahamstown, but these are explained more due to the poverty than the population growth.

In Durban and in Cape Town the population growth did have an impact. In Durban, the problems with the population growth started to be felt during and after the South African War (1899–1902), earlier the growth has been quite even. Still it was not a big problem since they still had rivers to dam and places to build new storage reservoirs. They had already built a waterborne sewerage system so even this was not causing big problems. In Cape Town, problems were greater; there were all the time coming immigrants from Europe and the other parts of South Africa. Population growth was even bigger problem with the neighbouring small municipalities; many of them doubled their population between 1890 and 1910. Of these only Green Point and Sea Point, Wynberg and Kalk Bay managed to build their own water supply and sewerage systems during these years, others have a combined enterprise for water supply and no sewerage system until after the unification with Cape Town. This population growth made the water supply of the whole Cape Peninsula area problematic in the early 20th century and forced municipalities to start looking their water outside of the Peninsula. In the last resort, problems with the water supply forced them to the unification in 1913.

6.3.2 Municipal Finance

The municipal finance affected the development of the water supply and sanitation, especially in Grahamstown. The municipality was small compared to the others and its financial resources were very limited. Most of the improvement schemes were either postponed or rejected because of the lack of financial means to realise them. The final decisions were usually made only after there were no other alternatives left. The Town Council was always searching for cheaper alternatives. In Cape Town and in Durban the finance had the most effect before the 1880s when the powers to take loans were limited. In Durban, the appointment of the first Borough Engineer happened at about the same time when the Borough obtained more freedom in taking loans. After this, the main effect of the finance was in the prioritisation of the different schemes. In Cape Town, the case was very much the same and in both places no schemes were rejected after the 1880s for solely economical reasons.

In Johannesburg, the situation was different because the municipality took over the water distribution system only in 1905. There were already discussions about starting systems earlier but these were left undone due to economical reasons, state interference, and some unlucky occurrences. In sanitary matters, the influence of finance proved more important. The Sanitary Board had the responsibility but unfortunately, it was economically too dependent of the central government to actually do very much. Here we also had interference from the central government affecting the situation.

6.3.3 Racial Attitudes

There were interesting variations with the attitudes towards the non-Whites amongst Whites, which also had an impact on how the services were developed in their living areas. For instance in the 1870s one Capetonian doctor blamed high mortality in the city for “the stupid nature of the population”. According to him, Blacks would never improve “unless you compel them like slaves”. This attitude seems to have been quite common even in the 20th century. In Grahamstown, the Chairman of the Sanitary Committee reported in 1894 that Blacks did not understand sanitation. Moreover, in 1918 the Acting Medical Officer of Health for the Union said that because tuberculosis and venereal diseases were primarily affecting rural African population, their treatment was of little concern. It was no wonder that the lot of the non-White people was not improved very much with the augmented water supply and better sewerage systems.

There were, of course, other opinions. Dr. Charles Porter from Johannesburg, for instance, saw all the poor people as a sanitary threat, he did not differentiate Whites from non-Whites in this sense. Nevertheless, he was of the opinion that the establishment of separate locations for various population groups was an integral part of town planning. A markedly different attitude amongst the officials was the opinion of the Chief Sanitary Inspector of Cape Town when he in 1894 told that the low class Whites were the dirtiest community. He also did not support the separation of Whites and Blacks; according to him, Whites were not degenerated when associated with Blacks and the latter would benefit from the contact.

Still, as a rule, Black, Coloured, and Indian living areas were seen as the biggest sanitary problem existing. Most of Whites were thinking that the only way to solve this problem was the removal of the other ethnic groups somewhere else from their neighbourhood.

6.3.4 The Role of Experts

In general, the relationship between the officials concerned with the water supply and sanitation and the local decision makers was an important issue affecting the development of these services. The status of the officials in municipal hierarchy varied. If we consider the status of the town engineers, the medical officers of health and various sanitary officers in relation to the town council, the status seems to be the lowest in Grahamstown. The advice and proposals of these officials were continuously passed over. Only in the 1910s, it seems that the situation improved in this sense. Durban seems to be a very different case, at least when considering the municipal engineers. The influence of particularly John Fletcher in matters concerning his field seems to have been very important. His plans and schemes were without exception accepted and he was used as an expert outside Durban. Johannesburg and Cape Town are in this context situated somewhere between Grahamstown and Durban. In Johannesburg Dr. Charles Porter could be compared to be at the same level as Fletcher in Durban. With his large and long experience, Porter managed to make his position as the Medical Officer of Health in Johannesburg unchallenged. His views were not questioned nor was he blamed for blackening the name of Johannesburg when he spoke or wrote about problems within the city, as happened in Grahamstown. In Cape Town, it seems that the status of the town engineer was raised somewhat after the starting of the sanitary reform in the early 1880s. Earlier the Town Council, or the Boards of Commissioners and Wardmasters before that, had been quite reluctant to put enough money into infrastructure building and it is even possible to blame the problems with the Molteno Reservoir to this stinginess.

When the Council started to allocate money for the improvements, the status of the Town Engineer was also raised. There were, however, still problems as can be seen from the presentation R.O. Wynne-Roberts gave in London about his experiences as a colonial engineer after returning to England.

The problems between the health officials and local decision makers were not limited only to municipalities. In the Cape Colony, the district surgeons reported on the health and sanitary conditions in their districts to the governor. Their position was quite important before the municipalities started to appoint their own health officers and even after that in the districts where there was no municipal officers. The municipalities and especially the town councils apparently saw these colonial officials as interfering in the autonomy of the local government when they were pointing out defects or abuses. Apparently, most of the district surgeons also saw their difficult position and became quite frustrated about this. Later when the colonial medical officer of health was named, this officer met the same problems. This officer actually had the means to force the municipalities to make the improvements in their conditions or correct the worst abuses. This was seen as even more interfering with the municipal self-governance than the earlier suggestions of the District Surgeons. The local decision makers also quite often were big property owners and were quite reluctant to make decisions that would have forced them to improve their own properties, especially if people living in these properties were the poor Whites or non-Whites.

When Johannesburg was born, the need for a professional engineer to direct the development of the town infrastructure was a recognised fact. Of course, as a mining area, the number of engineers resident in Johannesburg was also probably much higher than elsewhere in South Africa and this fact might also have something to do with the early appointment of the town engineers. In each of the three other cases, the appointment of the first town engineer can be connected to the big municipal works and even water supply works: in Cape Town the building of the No. 2 Reservoir, in Grahamstown the building of the Grey Reservoir and in Durban the need for the augmentation of the water supply in the early 1880s. In two cases, the workload concerning the water supply was even seen as to be so great that a separate department was created. In Cape Town, this happened between 1901 and 1906 and in Durban between 1919 and 1935. The appointments of the Medical Officers of Health and the sanitary officials in Cape Town and Grahamstown are connected more to the changes in legislation and in Johannesburg, the need for a medical officer was so great that they appointed one. In Durban, the first Medical Officer of Health had already been appointed in 1874.

6.3.5 Infrastructure Building

In the building of infrastructure, there are also some differences between the case towns. Cape Town had started with the *grachts* in the main street on which the local streams were led and most of the refuses were thrown. Later in the beginning of the 19th century, water pipes were installed in the main streets and the *grachts* were gradually covered and transformed into drains. This was, of course, not an automatic development, there were other alternatives but this was seen as an easiest solution. This change had already started when Cape Town became a municipality in 1840. In Grahamstown, the development was similar, after getting the municipality in 1836, furrows were dug in the town centre for water supply, and then in the 1840s these were replaced by water pipes in main streets. In both places, they then started to build storage reservoirs in the neighbourhood of the town centre and then further away. The differences become apparent when we look at the sanitary infrastructure. In Cape Town, the size and the surroundings of the city forced them early on to consider the drainage system. This, however, could be realised only after the water supply was in a high enough level in the 1890s, when they built both the waterborne sewerage system and stormwater drainage system. In Grahamstown, they also had a need for a sewerage system but there was neither immediate necessity for it nor the money to build it. The area was more flat than Cape Town and there was much less rain so the gutters and ditches could manage the surface drainage. They also needed good water supply before installing a waterborne sewerage system and this was realised only in the 1930s.

Durban and Johannesburg are different cases. In Durban, the early water supply was based on wells and rainwater until the 1870s. Only after 1879 when the Currie's Fountain became a main water source the building of a water pipe network was started. After that they sourced the surface water from local rivers and storage reservoirs were built for this transported water; in Cape Town and Grahamstown reservoirs were at first collecting waters from the nearby springs and streams, so there is a fundamental difference here. In Durban, the surface drainage was the biggest problem due to its situation in marshy coastal lowland area. There were also seasonal rains that could cause disastrous floods. The building of drains was consequently started relatively early and continued for the rest of the 19th century. The building of the waterborne sewerage system was started around the same time as in Cape Town during the 1890s.

In Johannesburg, they first utilised water from local streams and springs but these were soon polluted. After the Waterworks Company was established, it started to build storage reservoirs for various places in the eastern side of the town centre to collect water from a few still clean sources. The growth of the town very soon made this solution

insufficient. There were two possibilities: groundwater from mostly dolomitic formations or surface water from the Vaal River. Since the groundwater sources were closer, these were used first and with wells in Zuurbekom, it was thought that the supply would be sufficient. After the South African War the situation, however, changed when the Rand Water Board was formed to supply the whole Witwatersrand area. They augmented supply from wells in Zwartkopjes area but in the beginning of the 1910s, it was realised that a bigger source was needed. In the end, it was agreed to utilise the Vaal River option. After that, most of the water used in Johannesburg has been surface water as in other cases. Johannesburg also had some problems with drainage and sewerage. The first plans were already made in the beginning of the 1890s but the building was started only 1903 for various reasons and even then the rocky ground caused problems.

The cesspools were the early method of handling the organic wastes in Grahamstown, Cape Town, and Durban. Durban was first to abandon this system during the 1860s. Cape Town followed in the 1880s although there were still some cesspools existing when the sewerage system was built. In Grahamstown, they were discussing this problem from the 1860s but the final decision was made only in 1901. In Durban and Grahamstown, they transferred to the pail system, which was also the main system in Johannesburg. In Cape Town, the system was actually quite mixed: cesspools, pails, and even water closets existed at the same time from the 1850s to 1880s. In Durban, Cape Town and Johannesburg the waterborne sewerage system was installed during the research period, in Grahamstown this happened only later. The emptying of cesspools and the collection of pails was done at first by contractors except in Johannesburg. In Grahamstown, this collection by contractors continued until the 1920s in spite of the plans of departmental work from the beginning of the 20th century. In Durban, the Sanitary Department took over in the 1890s and the collecting continued in the suburbs until the 1910s. In Johannesburg, the pail system was also continued in the suburbs until the 1910s. The collection work was, however, taken over by the local officials from the beginning. In Cape Town sanitary contracts continued until the establishment of the Sanitary Department in 1890.

6.3.6 Hygienic Revolution and South Africa

Why did the hygienic revolution not reach the same stage in South Africa as in Europe or in other parts of the English-speaking world during the research period? It was not because of the lack of information or knowledge amongst the municipal or governmental officials working with the related issues. Most of these officials either were from the British Isles or had been educated there so they have the information and contacts to

receive the new knowledge. The problem in South Africa compared to, for example, USA, Australia, and New Zealand was that there were a huge non-white majority amongst the population. Most of the municipal decision makers considered the non-whites living in the cities only as a nuisance to be got rid off. In addition, even amongst those people who saw that to protect white people from epidemics you have to improve living conditions of all, racist attitudes were common.

There was also the reluctance of the municipal decision makers to spend money on anything that benefited directly only the non-whites. These led to the situation where the living conditions inside the municipal area could vary in a great scale. In the other end where the white suburbs with wide clean streets and every possible municipal services, in the other end slums with narrow dirty streets without proper water supply and where refuse collectors visited only two times a week or even less often.

You can also question how much the improved water supply actually improved the health situation in the towns in the late 1800s. It may be argued that the direct environmental benefits were limited before the sewage treatment was modernized and that the spread of piped water amongst higher classes dirtied the environment of the poor. Rivers and beaches became polluted by untreated wastes disgorged from the overloaded sewers.

Overall, it can be argued that the slow pace of hygienic revolution in South Africa was mostly due to the racist attitudes of the ruling white elite. There were some other reasons, like, for example, in Johannesburg where the decisions of the private companies supplying water were based on what was best for the business not to any humanitarian needs. Still the racist attitudes prevalent at the time could be said to be the main reason for the slow pace.

6.3.7 Public-Private Consideration

As can be seen the development path for effective water supply and sanitation was different in each of the four case towns. The interesting distinction between Johannesburg and the other towns is that from the beginning water supply in Johannesburg had been out of the direct municipal control whereas Cape Town, Grahamstown, and Durban kept it under their own control. It is obvious that one reason for this was the habit of the South African Republic to relinquish concessions to get money. An interesting point is that this continued after the South African War and the British takeover in 1901.

The establishment of Rand Water Board formalized the situation where a non-municipal company was controlling the water supplies and was providing the municipalities and mines of the area with water. The City of Johannesburg, however, continued to control

the division of water to its citizens until few years ago when even this was contracted out. In the Durban area, the development followed the pattern of Johannesburg later. In 1974, the Umgeni Water was established to control water supplies and provide municipalities with water. This, of course, has more to do with the regional water supply than the supplies of individual municipalities, but still in Grahamstown and Cape Town, municipalities have so far retained the whole water supply in their own hands.

6.3.8 The Lack of Good Governance

Based on this research, it could be argued that good governance was not yet used in the municipal governments in the case towns in this era of reforms. Of course, the principles mentioned at the beginning of this study (at the end of the Chapter 1.1) are applicable to the modern world. If there had been a concept of good governance in the late 19th century, most of the municipal officials would have said that they were working according to that concept.

Nevertheless, the participatory democracy was at that time a matter for the future in the minds of some idealists; the qualifications to take part in municipal decision making were such that they left most of the people out. The transparency of decision making was something unheard of; experts were using language that normal people had no way to understand. A traditional top-down approach was also used and local officials and politicians did not take all the shareholders into account; most people did not have anything to say about which way and when they had access to water supply or sewerage. Natural resources were taken into use without any thought about sustainability or what were the effects on the environment. However, some new ideas and criticisms were introduced especially in the newspapers and in the political debates -- it even provoked some actions towards better direction not only in water supply and sanitation but also in municipal administration.

6.4 Further Research

This research has examined only four South African cities during a certain time period. Obvious further research would be the continuation of this research of the case cities towards modern times. This, however, would probably not prove to be a very fruitful direction. More interesting would be the broadening of the research during the same period to other towns in Southern Africa. For instance, comparing Johannesburg with Kimberley, which had a similar history, would be interesting. In this research, I have examined cities with different environments, it could be also fruitful to compare cities that have been established around the same time in similar conditions, and see what may explain reasons for the differences in their development.

Another interesting issue concerning water supply and sanitation is the intermunicipal co-operation. In this research, there are two examples of that, the Rand Water Board and the events in Cape Peninsula before the municipal unification. Particularly the co-operation between small suburban municipalities in the Cape area would be a very interesting topic to investigate in more depth. In addition, it would be interesting to see if there are other examples of this kind of co-operation existing in South Africa in the 19th and the early 20th centuries.

The role of experts in case cities raises some interesting questions for further research. As an example, considering Durban, was John Fletcher's position as Borough Engineer really so influential as it may seem in the light of this research. Answering this question would need a more thorough examination of the local newspapers and the minutes of the meetings of the Town Council and various committees. Another question considering Cape Town is why there were so many Town Engineers between the 1860s and 1910s. Was there something specific in the working environment that explains the many changes in the office during this time? Concerning this, you may also question at a more general level, what were the criteria when the municipalities were selecting new town engineers or the new medical officers of health? What were the expectations of the candidates' earlier experiences? How did their level of previous work experience, for instance, with water supply and sanitation works affect their selection as town engineer? It is also important to consider the question of mobility in this, many of the new town engineers during the late 19th and the early 20th centuries came from England.



Picture 6.1. Settlement near Zuurbekom pumping station in Johannesburg. (Photo: Petri Juuti)

6.5 Water and South Africa

During the late 19th century, towns in South Africa were growing with immigrants coming from Europe and Asia and with Africans moving into towns for work. This urbanization process put many pressures on the municipal officials responsible for the infrastructure. More houses and roads had to be built, different kinds of services had to be offered amongst which water and sanitary services were of vital importance. In South Africa today cities are growing with immigrants coming from the neighbouring countries and with poor people seeking a better life than can be achieved from the countryside. The problems the city officials are still facing are identical, the building of a working infrastructure and the guarantee to provide the needed services.

The times had been changing, nowadays water and proper sanitary services are recognized universally as basic human necessities. History does not necessarily repeat itself but at least it is possible to learn from what has happened earlier and learn from past mistakes. The example of the Johannesburg Waterworks Company, for example, should be a warning to those demanding privatization as a solution for problems related to water supply. In a water scarce country such as South Africa, it is particularly important to understand the history of their water supply.

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