

**FACTORS PREVENTING THE SUCCESSFUL IMPLEMENTATION  
OF THE  
POLLUTER PAYS PRINCIPLE**

**A CASE STUDY OF THE BAYNE'S SPRUIT**

**by**

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## **ABSTRACT**


Despite the pollution control provisions provided in national and local legislation that explicitly or implicitly give effect to the polluter pays principle (PPP), certain rivers continue to suffer from persistent industrial pollution. This research focuses on one such river, the Bayne's Spruit, as a case study. The Bayne's Spruit is a small river that is located within an urban catchment, and which has been subjected to wet industrial pollution for over a decade. Much of this pollution is associated with the Pietermaritzburg edible oil industry. This pollution impacts negatively on a downstream community that uses the river for irrigation of subsistence crops, for recreation and for subsistence fish harvesting. The pollution has also severely degraded the riverine ecosystem. This research commenced with a literature review of the PPP in its international, national and local context. It was noted that the current legislative framework for implementation of the PPP with regard to pollution of rivers in South Africa comprises primarily of the National Water Act 36 of 1998 (NWA), the National Environmental Management Act 107 of 1998, and the Pietermaritzburg-Msunduzi industrial effluent bylaws of November 1998. The case study was approached using a largely qualitative methodology, although quantitative data was also relied upon where feasible. The historical context of the case study was provided by conducting a review of newspaper reports, a review of government inspection records, and a review of water quality data (including bio-monitoring and chemical data). The current status of the Bayne's Spruit was then explored by conducting in-depth historical interviews with community members, and by conducting direct observation of the environmental status of the Bayne's Spruit. This data was supplemented by an analysis of the test results of sampled industrial effluent, and by information obtained from representatives of two edible oil companies. In-depth, purposively selected interviews were conducted with various role players (local government, regional government and industry) to identify what factors are preventing the successful implementation of the PPP in the case study area. Factors identified include a lack of environmental ethic within the edible oil industry, with some of these companies free riding on the Bayne's Spruit to maximize their profits. At a local level, factors preventing implementation of the PPP include deficiencies in the local industrial

effluent bylaws, failures to administer and implement provisions contained in the bylaws, capacity restrictions and institutional paralysis. National legislation is not being successfully implemented because the government agency empowered under the NWA is deferring primary responsibility for dealing with pollution to the local authority. Factors also include difficulties associated with monitoring of rivers, including lack of capacity to engage in monitoring, and confusion over the functions of the various spheres of government. Finally, enforcement complexities are a major factor preventing successful implementation of the PPP. These problems relate to inadequate penalties, enforcement arrangements, capacity problems, separation of authority to operate the municipal sewer works and to enforce the industrial effluent bylaws, difficulties in identifying the offending polluter (causation), problems with access to company premises, the open access character of the storm water drainage system, previous failed prosecutions and reliance on the criminal justice system.

## PREFACE


The research described in this mini-dissertation was carried out at the Centre for Environment and Development, University of Natal, Pietermaritzburg, under the supervision of Dr Nevil Quinn.

The mini-dissertation represents the original work of the author and has not otherwise been submitted in any form for any degree or diploma at any university. Where use has been made of the work of others it is duly acknowledged in the text.



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Adrian Pole



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Dr NW Quinn



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## LIST OF ABBREVIATIONS

ASPT	Average score per taxon
CAC	Command and control
COD	Chemical oxygen demand
DWAF	Department of Water Affairs & Forestry
DEAT	Department of Environmental Affairs & Tourism
DG	Director-General
EPA	Environmental Protection Agency (USA)
IEBs	Industrial effluent bylaws (Pietermaritzburg-Msunduzi)
IPC&WM	Integrated pollution control & waste management
NEMA	National Environmental Management Act, 107 of 1998
NWA	National Water Act 36 of 1998
NRA	National River Authority (UK)
OECD	Organisation for economic cooperation & development
PHOD	Provincial Head of Department
PPP	Polluter pays principle
SABS	South African Bureau of Standards
SADC	Southern African development community
SASS	South African scoring system
SOG	Soap, oil & grease
UK	United Kingdom
UN	United Nations
USA	United States of America
USSR	Union of the Soviet Socialist Republics
WDCS	Waste discharge charge system
WMA	Water management area



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# CHAPTER 1: OVERVIEW

## 1.1 INTRODUCTION

Access to fresh water is a basic necessity upon which the lives of humans and biota depend. Water is also an important component in many industrial processes, and large amounts of trade effluent are produced as a byproduct of these processes. The disposal of trade effluent into fresh water deteriorates water quality and can result in the degradation of aquatic ecosystems.

Many nations around the world have attempted to resolve the problem pollution poses by prescribing standards to industries and specifying how byproducts should be treated before disposal. This approach is commonly referred to as a command and control (CAC) approach to pollution control. However, these systems are perceived to be expensive and inefficient. More recent efforts to find cost-effective and efficient solutions for dealing with pollution place emphasis on using economic instruments to internalise the costs of pollution into the costs of production (Taviv *et al.* 1999). This approach has received international approval. For example, principle 16 of the Rio Declaration (1992) requires countries to promote the internalisation of environmental costs and the use economic instruments to give effect to the principle that the polluter should bear the costs of pollution. In terms of the polluter pays principle (PPP), it is polluters (and not society) who should bear the costs associated with their polluting activities. These costs include clean-up costs, opportunity costs and costs of administering the pollution control system.

The PPP has been defined as an economic principle that serves as an incentive to polluters to reduce pollution by internalising the costs of pollution into the costs of production. As a result, the end product should more accurately reflect the true production costs (including environmental costs), with this higher cost being transferred to consumers wishing to purchase such a product on the open market (Taviv *et al.* 1999).

The economic interpretation of the PPP assumes that environmental media (rivers, oceans, air and land) have a certain waste assimilation capacity, and that a zero pollution level could not be achieved without causing considerable economic upheaval (Taviv *et al.* 1999).

In South Africa, the 1990s witnessed an environmental law reform process, and the PPP was incorporated explicitly or implicitly into a number of statutes, including the National Water

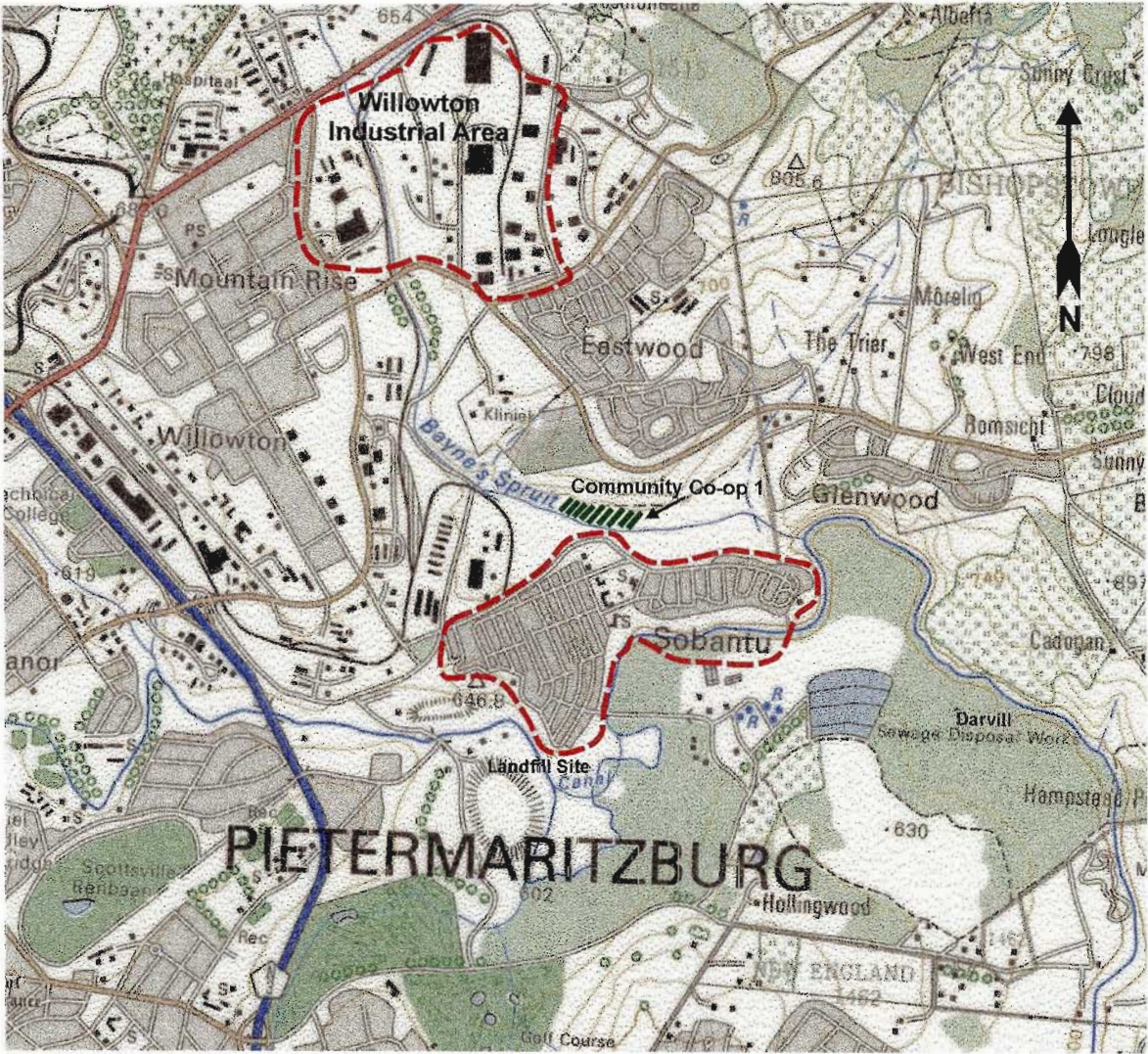
Act of 1998 (NWA) and the National Environmental Management Act of 1998 (NEMA). In addition to provisions requiring the polluter to pay for prevention, cleanup and disposal costs (including lifecycle costs), emphasis is given to managing water as an economic good to ensure that it is used more efficiently in terms of both quantity and quality. Setting an appropriate price for water is regarded by the Department of Water Affairs and Forestry (DWAF) as an effective mechanism to achieve efficient use of water (DWAF 2000a). DWAF is presently overseeing a multi-stakeholder process that is designing a national Waste Discharge Charge System (WDCS). This process is still in the design phase, and implementation of the final strategy in test Water Management Areas (WMA) is only scheduled for January 2003 (DWAF 2000a).

At a local level, the PPP implicitly forms part of Pietermaritzburg-Msunduzi Transitional Local Council's industrial effluent bylaws (IEBs) of 18 November 1998 (see Appendix A). In terms of these bylaws, polluters have to apply to the City Engineer for permission to discharge into the sewers. All costs associated with the application for permission, as well as costs associated with *inter alia* on site treatment works required and monitoring of discharges, are to be borne by the applicant. In addition, the Pietermaritzburg-Msunduzi Transitional Local Council (referred to hereafter interchangeably as 'local council' or 'local authority') levies charges against companies utilising the sewers, and is responsible for enforcement.

## **1.2 PROBLEM STATEMENT**

Despite the pollution control provisions provided in national and local legislation, and in particular provisions that implicitly or explicitly give effect to the PPP, certain rivers continue to suffer from ongoing industrial pollution.

The Pietermaritzburg edible oil industry, together with other industries, is located within the Willowton industrial area of Pietermaritzburg (Figure 1.1). The edible oil companies are situated in close geographical proximity to each other on both sides of a reach of a small urban river known as the Bayne's Spruit. Illegal discharges of wet



**Figure 1.1:** Locality map of case study area showing the Willowton industrial area in relation to Sobantu and Co-op 1 (not to scale)



industrial effluent into the Bayne's Spruit by companies within this industry have had a serious detrimental effect on the riverine ecosystem.

Some of these companies have also contravened the municipal IEBs regulating discharges of industrial effluent into the municipal sewer system. These contraventions include discharging trade effluent without the requisite permission, as well as discharging trade effluent in excess of the standards set out in the IEBs (Fennemore 2001 *personal communication*). The local wastewater works located at Darvill is not designed to treat effluent of this nature, and these discharges impact adversely on the efficient operation of the wastewater works. This has cost implications for the city of Pietermaritzburg, and can result in poorer quality treated effluent being discharged into the Msunduzi river from Darvill.

The pollution of the Bayne's Spruit is of particular significance to the Sobantu township situated downstream of the Willowton industrial area. Members of this disadvantaged community use the Bayne's Spruit for irrigation of community gardens, swimming and small-scale subsistence fish harvesting. The Bayne's Spruit is also used by informal settlers in the area.

The Bayne's Spruit is a tributary of the Msunduzi, and both form part of an urban catchment. The services of the Msunduzi are used by Darvill to transport treated effluent away from Pietermaritzburg. Water is extracted from this river by commercial farmers for irrigation (Mulder 2001 *personal communication*), and the river is also the site of the annual Duzi canoe marathon. The Msunduzi is itself a tributary of the Umgeni river, which flows into the Inanda dam, Durban's main water supply.

It is assumed for the purposes of this mini-dissertation that evidence of trade effluent being discharged into the Bayne's Spruit with impunity, and to the detriment of the riverine ecosystem and the downstream Sobantu community, is an indication that the PPP is not being successfully implemented.

### **1.3 AIM AND OBJECTIVES OF THE STUDY**

The central aim of this research was to identify and document the factors preventing successful implementation of the PPP in the context of the Bayne's Spruit urban river system, with particular reference to the Pietermaritzburg edible oil industry.

The objectives of the study were to:

- (a) Conduct a literature review;
- (b) Determine and document the historical context of pollution of the Bayne's Spruit by the edible oil industry;
- (c) Establish and document the current environmental status of the Bayne's Spruit;
- (d) Conduct in-depth interviews with role-players to establish and document what factors are preventing successful implementation of the PPP;
- (e) Make appropriate recommendations based on the research findings.

## **1.4 STRUCTURE**

Chapter 2 comprises of a literature review on the PPP. The review will consider the meaning, origins, rationale for and application of the principle within an international, national and a local context. Chapter 3 describes and justifies the qualitative and quantitative methodologies used during the course of this research. Chapter 4 sets the historical context of the research, and provides a review of available newspaper reports on pollution of the Bayne's Spruit by edible oil companies as well as a review of recent DWAF inspection records in respect of three of these companies. The chapter goes on to briefly analyze available historical bio-monitoring and chemical data on the Bayne's Spruit. Chapter 5 sets out current pollution problems identified in respect of the Bayne's Spruit, and also provides anecdotal information on current pollution and its impact on the downstream Sobantu community. This chapter also considers the test results of effluents sampled. Chapter 6 presents the main findings of this research, namely the factors preventing the successful implementation of the PPP within the context of the case study. Themes have been extrapolated from transcriptions of semi-structured interviews conducted during the research process. The chapter also includes a discussion of the factors identified. Chapter 7 contains concluding remarks and sets out recommendations for further studies and on the way forward.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

Continued global economic growth through industrialisation threatens the health of natural systems and humans due to problems associated with disposing of waste produced as a byproduct of industrial processes. Fuggle and Rabie (1992) suggest that it is now universally accepted that increased levels of pollution and environmental degradation are to be expected. Water is essential to satisfy basic human and environmental needs, and is one of the environmental media threatened with contamination by industrial pollution.

### **2.2 COMMAND AND CONTROL APPROACH**

Society initially attempted to address pollution problems by introducing command and control (CAC) systems. Field (1997) describes a command and control approach to public policy as one where political authorities mandate behavior in law to induce socially desirable behavior, and then rely on existing enforcement mechanisms to get people to obey the law (Field 1997).

The protection of the environment historically focussed on the prevention of environmental degradation, with government departments identifying activities detrimental to the environment and enacting legislation prohibiting such activities (Barnard 1999). Standard CAC systems feature uniform emissions standards for all sources of pollution and require the installation of pollution control technologies specified by government (Goodstein 1995).

Standards have been popular because they appear to be simple and direct, and are consistent with the approach that relies on legal systems to define and stop illegal behavior (Field 1997). In addition, CAC regulations are regarded as the most desirable policy instrument in circumstances that require direct controls, such as situations where monitoring costs are high or where the optimal level of pollution is set at zero (Kahn 1998).

However, in developing CAC measures, little regard was often had to the processes that produced the pollution or to the ability of polluters to avoid pollution (Goodstein 1995). In the United States of America (USA), for example, water pollution control policy relied on permits which were based on meeting certain technology-based pollution standards. However, when faced with a choice of technologies, USA industry often chose the specific equipment cited by the Environmental Protection Agency (EPA) (Taviv *et al.* 1999). This technology was often kept until standards were changed, and thus acted as an incentive to companies to maintain



obsolete water pollution control technology (Tietenberg 1992 cited in Taviv *et al.* 1999). CAC systems do not provide an incentive to reduce pollution levels to below the prescribed emissions or technology standards (Taviv *et al.* 1999). Also, the inflexibility of the CAC approach *“means that cost-saving opportunities which can be captured by incentive-based systems are not exploited, and that incentives for improved technologies are limited”* (Goodstein 1995: 480).

Legislation was often prepared without consulting affected parties, and law enforcement was achieved by warning or prosecuting polluters caught contravening the legislative requirements. Thus the law was focussed on the end-of-the-line as opposed to pollution prevention. As a result, companies focussed on addressing pollution only after the event or when deciding how end-of-the-line effluent treatment plants should be structured to avoid contravening legislation (Barnard 1999).

Under CAC regulatory systems, polluters who fail to meet regulations are fined or penalised (SADC 1996). Punishments for offenders polluting above legal limits have also taken the form of plant shut downs and even imprisonment of offending managers (World Bank 2000).

Various existing enforcement authorities are relied upon to measure and detect violations of CAC standards (Field 1997). The CAC approach requires strong enforcement mechanisms, as pollution from each plant has to be monitored and analysed to establish non-compliance, and legal proceedings need to be instituted where there are violations. These steps are not cheap, and many developing countries have not been able to implement them (World Bank 2000). The costs of enforcement regimes are high for both the regulator and the regulated, with large numbers of highly trained staff with sound knowledge of types of pollution, of industry-specific technologies and of production processes being required. In addition, CAC regimes require constant monitoring of industry to ensure compliance, and the regulator is required to keep up with industry developments (Taviv *et al.* 1999). As a result, decades of attempts to control pollution through traditional regulations have often yielded disappointing results (World Bank 2000).

Another problem with the CAC approach is the question of cost effectiveness. The same standards are applied to all sources of a particular pollutant, which fails to equalize marginal abatement costs across sources of pollution and results in more abatement costs than necessary to achieve a desired level of emission (Field 1997; Khan 1998). Requiring each

polluter to reduce pollution by the same amount incurs a higher cost to companies with higher abatement costs. CAC systems can only achieve the minimum abatement costs if the assignment of pollution levels is made in a way that equates marginal abatement costs across polluters. This can only be achieved if polluters emit the same type of pollution, or if the regulatory authority knows what the marginal abatement cost function is for each polluter. However, it would be too expensive to develop estimates of marginal abatement costs of individual polluters due to the wide range of polluters in most societies (Khan 1998).

Good regulation requires using different strategies that are dependent upon whether companies have self-interest in going beyond compliance. However, it is difficult for regulators to classify regulated firms and to “*distinguish rational economic actors from the irrational or incompetent*” (Cunningham 1995: 80). This can result in regulatory systems that stimulate voluntary action but fail to deter companies with no interest in responding to voluntary initiatives. Alternatively, a more stringent approach risks alienating companies that would be willing to voluntarily comply. A possible solution to this problem is the regulatory pyramid proposed by Braithwaite (cited in Cunningham 1995). The pyramid may begin with self-regulation that must be justified to regulatory authorities as satisfying regulatory targets. This may be followed by incentive-based mechanisms, mandatory environmental audits, civil penalties and finally by criminal penalties and license withdrawals (Cunningham 1995).

Russel and Powell (1996) question the terminology used in instrument classification, and reject the CAC label for all instruments other than economic incentives. They argue that the term CAC should only be applicable to instruments that specify what is to be achieved and how it is to be achieved, and should not be used as a blanket term in referring to government intervention. Thus numerical limits on discharges cannot be classified as CAC as they do not dictate how compliance is to be achieved.

## **2.3 THE POLLUTER PAYS PRINCIPLE**

### **2.3.1 Definition**

In its most basic form, the polluter pays principle (PPP) asserts that the person or entity that causes pollution should bear the costs associated with that pollution (Alder & Wilkinson 1999). In terms of this standard interpretation, the polluter is only required to pay for controlling effluent down to an acceptable level, and is not liable for the costs of environmental damage caused (Connelly & Smith 1999). This interpretation of the PPP effectively allows polluters to discharge an “*acceptable level of effluent free of charge*”

(Turner *et al.* 1994: 149). However, the view that producers may pollute as long as they pay for it is regarded as a complete misunderstanding of the PPP (Bell & McGillivray 2000).

More recent interpretations of the PPP make the polluter liable for the costs of pollution damage in addition to the costs of preventative and control measures (Kidd 1997; Alder & Wilkinson 1999; Glazewski 2000). The polluter is regarded as being responsible for costs resulting from environmental damage as well as adverse impacts on human health (Kidd 1997; Bell & McGillivray 2000; Glazewski 2000).

The reality is that there is no agreed definition of the principle, and there has frequently been dispute over its scope, especially with regard to limits on damages payable (Bell & McGillivray 2000) and the extent to which the external effects of pollution should be internalised (Boyle 1994).

### 2.3.2 Origins

Larsson (1999) states that the PPP was first explicitly mentioned within the environmental context during a United Nations Economic Commission for Europe panel discussion in 1971, which expressed the principle as requiring that *“each economic sector should be charged for the pollution caused”* (Larsson 1999: 91). The principle was popularised during the 1970s by the Organisation for Economic Co-operation and Development (OECD) (Bell & McGillivray 2000), which adopted the principle due to the *“growing severity and pervasiveness of pollution in the industrialized economies”* (Turner *et al.* 145). OECD’s environmental policy recognised that: *“when the costs of [environmental] degradation are not adequately taken into account in the price system, the market fails to reflect the scarcity of such resources...[consequently]... the polluter should bear the expenses of pollution... in other words, the costs of these measures should be reflected in the costs of goods and services which cause pollution and/or consumption”* (cited in Gillespie 1997). The principle was also discussed during the European Community Paris Summit in 1972, which culminated in the Council recommending in 1974 that its member states adopt the principle (Larsson 1999).

In 1973, the United Nations Conference on the Human Environment recognised that the responsibility for pollution and environmental protection should be accepted by every level of society, from individuals through to governments. This sentiment was expressed in Principles 22 and 23 of the Stockholm Declaration.

Almost a decade later, the PPP was presented as a preventative measure in the European Community Treaty (Maastricht, February 1992) with the aim of ensuring environmental health and safety as well as consumer protection (Oosthuizen 1998).

Importantly, the PPP formed part of the 1992 Rio Declaration. Principle 16 of the Rio Declaration states that:

*“National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the costs of pollution, with due regard to the public interests, and without distorting international trade and investment”* (cited in Glazewski 2000: 21).

### 2.3.3 Philosophical premise and rationale

The PPP represents a divergence from the historical CAC approach taken by most governments in an effort to address the environmental crisis posed by excessive pollution and waste. However, experience has suggested that CAC approaches have failed to provide efficient and cost effective solutions for environmental management. It is within this context that the evolving discipline of environmental economics provided a new approach which suggested that it was possible for flexible, economics-based measures to reduce pollution, with simpler administration and less costs. In the *“context of pollution control this came to be known as the Polluter Pays Principle or the PPP”* (Taviv et al. 1999: E-1).

Taviv et al. (1999) and DWAF (2000b) suggest that there are six philosophical premises for the PPP (see Table 2.1). Both sources provide the same philosophical premises, but do not reference the source of this information:

**Table 2.1:** Philosophical Premises for the PPP (Taviv et al. (1999); DWAF (2000b)).

<i>Ethics</i>	The PPP is derived from the universal moral principle that, all other things being equal, we ought not to cause harm to others. Implementation of the PPP shifts the responsibility for environmental costs away from society and to the polluter, and adjusts the pricing system to reflect more accurately the costs of production.
<i>Equality</i>	Everyone has an equal right to use environmental resources, and pollution charges systems protect this right. For example, PPP charges are designed to create an incentive for an upstream polluter to minimise its discharges, thereby protecting the interests of downstream water users.
<i>Sustainability</i>	Environmental resources must be safeguarded to ensure that the interests and needs of present and future generations are met.

<i>Economic efficiency</i>	PPP systems provide an opportunity to optimise choice between environmental and economic needs, and between effluent treatment and cleaner process technologies.
<i>Transparency</i>	The PPP should be introduced through extensive consultation involving the participation of regulators, polluters and parties affected by pollution.
<i>Environmental efficiency</i>	The PPP encourages polluters to stay below prescribed standards, resulting in a maximisation of environmental benefits.

According to Alder & Wilkinson (1999), the PPP has two distinct rationales, one based on economic theory, and the other based on notions of justice. These rationales are discussed below.

### 2.3.3.1 Economic rationale

The dominant interpretation of the PPP is that it is an economic principle based on utilitarianism. The aim of the principle is to create a uniform and fair world trading system (Birnie & Boyle 1992 cited in Alder & Wilkinson 1999).

Larsson (1999) defines the polluter pays principle as an economic principle which imposes *“the cost of pollution abatement on individual polluters, rather than on the public purse, to be passed on to the consumer, and thus reflected in the price of the product”* (Larsson 1999: 90). This definition introduces the concept of full cost accounting, and is indicative of the close association that the principle has with the discipline of environmental economics. This is significant in that it links the PPP to *“a broader economic theory of environmental protection in which the internalisation of costs is viewed as a technique for maximisation of social welfare”* (Alder & Wilkinson 1999: 172). This approach is also reflected in Principle 16 of the Rio Declaration, which promotes the use of economic instruments to internalise environmental costs.

#### *(i) Environmental economics*

Environmental economics approaches the problem of pollution by questioning why people behave in ways that cause environmental destruction. This approach dismisses the argument that moral underdevelopment is the cause of environmental destruction, and suggests that it is rather *“the way we have arranged the economic system within which people go about the job of making their livings”* (Field 1997: 4). Environmental economics answers the question by reasoning that people pollute because it is the cheapest way in which they can solve the problem of disposing of waste and byproducts within the existing framework of economic and social institutions (Field 1997).

The environmental economics approach criticizes the argument that pollution is only a result of the profit motive prevalent in western industrial nations. In support of this argument, it points to severe environmental pollution experienced in Eastern Europe and the former USSR, as well as pollution caused by private individuals and government agencies that are not driven by the profit motive. This means that *“the profit motive, in itself, is not the main cause of environmental destruction”* (Field 1997: 4).

Instead, the environmental economics approach stresses the importance of incentives within the functioning of the economic system, reasoning that *“[a]ny system will produce destructive environmental impacts if the incentives within the system are not structured to avoid them”* (Field 1997: 4).

Within the context of industrial pollution, firms are influenced by the incentive to increase profits (in market economies) or to meet annual production targets (in socialist economies). Within this framework, firms have an incentive to take advantage of factors that enable them to better their performance, and *“one way they have been able to do this historically is to use the services of the environment for waste disposal services”* (Field 1997: 5). This is the case because the pollution assimilating capacities of the rivers, oceans, land and the atmosphere have been treated as a free good (Turner *et al.* 1994; Field 1997). Given the lack of proper prices for these environmental services, an unfettered market will result in non-market environmental goods and services being overexploited. The PPP *“seeks to rectify this market failure by making polluters ‘internalize’ the costs of use of the environment (including its waste assimilation capacity) into the economic sphere through the use of price signals and the use of economic instruments such as pollution taxes, charges and permits...”* (Turner *et al.* 1994: 145). It is this market failure that justifies public intervention in the free market (Hussen 2000).

From an environmental economics perspective, the basic tenet of the PPP is that *“the price of a good or service should fully reflect its total cost of production, including the cost of all the resources used”* (Turner *et al.* 1994: 145). By making polluters pay for the cost of environmental damage caused by their activities, an incentive is created to reduce such damage to the level where the *“marginal cost of pollution reduction is equal to the marginal costs of the damage caused by such pollution”* (Turner *et al.* 1994: 146). It is important to note that this approach is aimed at achieving an optimal level of pollution (Taviv *et al.* 1999).

(ii) *Economic instruments*

The important role economic instruments have to play in determining environmental policy is emphasized in the Rio Declaration and Agenda 21. Economic instruments provide governments with an opportunity to “*deal with environmental and developmental issues in a cost effective manner, promoting technological innovation, influencing consumption and production patterns, as well as providing an important source of funding*” (Panayotou 1994: 1).

Panayotou (1994) stresses that the use of economic instruments in environmental management in developing countries has many advantages over CAC regulations. He argues that they are the most cost efficient way of achieving the desired effect, an important consideration in developing countries in light of the reality of limited resources coupled with an urgent need to maintain competitiveness on a global market. Panayotou stresses that another advantage is that economic incentives are easier to enforce and “*unlike regulations that require bloated bureaucracies and large budgets, economic incentives generate revenues which should be welcomed by countries facing tight budgets and budgetary deficits*” (Panayotou 1994: 55).

Economic instruments, individually or in combination, can be used to either support or replace CAC regulations. Panayotou warns, however, that “*choosing the right instrument or combination of instruments for a particular problem and circumstance makes the difference between efficient and effective intervention that mitigates market failures and a costly distortion that worsens the allocation of resources and reduces social welfare. What works under one set of circumstances may be totally ineffectual under another*” (Panayotou 1994: 55).

Panayotou argues that any instrument that creates an incentive to change polluting behavior by internalising costs should be considered an economic instrument, and therefore classifies economic instruments into seven broad categories:

**Table 2.2:** Types of Economic Instruments (Panayotou 1994)

(a) property rights
(b) market creation
(c) fiscal instruments
(d) charge systems
(e) financial instruments
(f) liability instruments
(g) performance bonds and deposit refund systems

It is beyond the scope of this mini-dissertation to discuss the advantages and limitations of these categories of economic instruments. DWAF is currently engaged in a process of designing a Waste Discharge Charge System for South Africa (discussed in paragraph 2.3.7.5 below), while the Pietermaritzburg-Msunduzi Industrial Effluent Bylaws (November 1998) (IEBs) also contain elements of a charge system. For this reason a brief discussion of charge systems is presented. In addition, liability systems are also briefly discussed on the basis that such systems form part of the PPP provisions contained in the NWA, NEMA and the IEBs.

*(iii) Charge Systems*

The theory behind PPP charges is that polluters must pay for the costs incurred as a result of their pollution. At the same time, however, it is recognised that if polluters were to pay the full costs of their pollution, *“the impact would be severe enough to cripple many economies”* (Taviv *et al.* 1999: 2-2). The aim is therefore to achieve an optimal level of pollution. In practice, charges are levied to induce polluters to modify their behavior (deterrent objective) and to generate revenue to cover some of the polluter’s externalities (revenue objective). The deterrent objective would be achieved by trial and error, starting with low charges and increasing them until there is a sufficient incentive for polluters to minimise their discharges. In designing a generic charge system based on the PPP, charge components could include administration charges, waste load charge and non-compliance charges (levied when waste discharges exceed water quality objectives) (Taviv *et al.* 1999).

The optimal level of pollution is not set at “zero” due to the economic implications such a standard would have on a country’s economy (given that most companies produce byproducts). The PPP approach requires a compromise between the polluter and society, and the objectives of this compromise are to find a level of pollution where the costs of pollution are bearable to society, but where the costs of utilising a natural resource are also bearable to



the polluter. The optimal level of pollution is thus the point at which the control costs are equal to the damage costs (Taviv *et al.* 1999).

A charge system is to be differentiated from a system of environmental taxes as charges are aimed at cost recovery (internalisation of externalities) and not revenue raising. A charge system has an advantage over a system of environmental taxes as the funds generated can be utilised in the area where pollution has occurred. Revenue raised via environmental taxes forms part of the national revenue, and the utilisation of these revenues in the area in question is difficult to ensure (Taviv *et al.* 1999).

In accordance with the PPP, monies raised from the collection of charges should be linked to reducing either the costs or the impacts of pollution. These charges should be used to cover the administration costs of establishing and operating the pollution charges system (including funding water quality management control and monitoring systems). The funds raised can also be used to finance new or upgraded treatment works, catchment water quality management, cross-subsidies to other polluters to reduce emissions, as well as cross-subsidies for reducing pollution backlogs (Taviv *et al.* 1999).

Charges could also be used to compensate individual victims of pollution. However, South Africa does not have the substantial resources required for such a system, which means that individual victims would have to rely on Common Law damages claims for compensation. Charges would instead compensate the economy affected by bringing about a proportional improvement in water quality (Taviv *et al.* 1999).

Other criteria for disbursing the revenues from pollution charges include the importance of ensuring that their use results in positive environmental and social impact, as well as ensuring that the maximum benefit is derived. Finally, any revenues spent on positive water quality impact should be spent within the same river system in which the revenue was raised (Taviv *et al.* 1999).

Prior to the institution of a waste charge system, the relevant authority involved needs to be able to identify who caused the pollution and in what quantity. This is a necessary precondition for any charge system based on the PPP, for a polluter cannot be asked to pay for pollution in circumstances where it cannot be demonstrated that the polluter is the source of or

caused the pollution. Thus “*the proof of causality is one of the main limitations of the waste charge system*” (Taviv *et al.* 1999: 5-1).

(iv) *Liability systems*

Liability systems are a class of instruments that aim to “*induce socially responsible behavior by establishing legal liability*” (Panayotou 1994: 20) for damages caused to natural resources, the environment, property, human health and human life, or for establishing legal liability for non-compliance with a variety of regulations. The threat of legal action to recover damages is the economic instrument that internalises the external cost. Liability systems are not recommended for developing countries with poorly developed legal systems (Panayotou 1994).

Boyle (1994) suggests that full implementation of the PPP requires consideration of civil liability. However, negligence-based liability systems can lead to problems in proving negligence. In addition, the polluter will not bear the costs of compensation where the harm is not reasonably foreseeable or avoidable. Narrow definitions of damage may also exclude environmental losses that are not easily quantifiable in monetary terms (Boyle 1994). Civil liability does, however, provide the potential to internalise externalities through judicial means that complement legislative and administrative remedies, and damage payments have the advantage of directly compensating the victims of pollution (Tietenberg 1994).

#### **2.3.3.2 Justice rationale**

An alternative to the economic interpretation of the PPP is the approach that payment by polluters for the costs of their pollution satisfies “*some notion of ‘environmental justice’*” (Alder & Wilkinson 1999: 173). These authors state that this justice could be retributive (to punish the polluter for the having polluted), distributive (to achieve social equity or even to achieve equity between human beings and nature) and/or corrective (making the polluter pay to correct the harm caused). An example of the operation of corrective justice is where environmental statutes empower authorities to carry out corrective work and charge the polluter for the costs of such work (Alder & Wilkinson 1999). This feature is evident in the provisions of section 19 of the NWA and section 28 of NEMA (discussed in paragraph 2.3.7.3 (ii) & (iii) below).

#### **2.3.4 Purpose**

The PPP has been described as a ‘*cornerstone of pollution control and waste management*’ (Glazewski 2000: 657). Oosthuizen (1998) states that the PPP has cost implications for the

polluter, which is illustrated by the trilateral purpose of the PPP. The PPP obliges polluter to “(i) prevent, reduce and regulate pollution and environmental damages; (ii) pay damages and compensation for damages suffered by the environment and humans as a result of pollution or environmental damage; and (iii) restore and clean up the environment where pollution or environmental damage has occurred” (Kramer 1995 cited in Oosthuizen 1998: 356).

The economic impact that the PPP could have on industries should motivate them to reduce the risk of pollution arising from their activities, should provide an incentive for industries to develop less polluting technologies, and should stimulate more rational use of scarce economic resources (Jans cited in Winter 1996 cited in Oosthuizen 1998).

The PPP can only be enforced, and its purpose achieved, if it is incorporated into secondary national legislation, which results in a primary economic principle having to be interpreted as a legal rule (Birnie & Boyle 1992 cited in Oosthuizen 1998).

### **2.3.5 Regulation and the PPP**

The review of CAC systems suggested that the term should only be applicable in respect of instruments that dictated what and how pollution targets should be achieved. However, this distinction is not often made, and has resulted in a confusion of CAC systems and regulation.

Alder and Wilkinson (1999) argue that economic instruments cannot operate without the backing of state regulation. It is the state that will decide what level of environmental protection is required, and the state also has the responsibility to represent those who do not participate in the market system, such as future generations and non-humans. Thus the “*market mechanisms must be created and backed up by administrative and enforcement machinery just as is the case with traditional regulation*” (Alder & Wilkinson 1999: 212). Thus the costs associated with such regulation are retained when implementing the PPP. Hawke (1991) states that economic instruments should almost always be seen as a compliment to state regulatory powers (cited in Churchill *et al.* 1991), while Turner *et al.* (1994) argues that although economic instruments are the primary vehicle for the implementation of the PPP, the use of regulation to internalize externalities is also consistent with the PPP. The optimal level of pollution can be secured through environmental regulations that are carefully designed and strictly enforced, and should be reached by polluters reacting to a financial disincentive imposed upon them by fully enforced liability law (Hussen 2000).

Panayotou (1994) concedes that regulations and economic incentives are by necessity complimentary as a minimum amount of regulation is required for these incentives to become operational, and states that an efficient system would require a broad regulatory framework that is implemented through a reasoned and structured set of economic instruments. He cautions, however, that while *“[h]ybrid systems of economic incentives and regulations do exist... they should not be confused with a mixture of the two, arising from the unwillingness of regulators to depart from their command and control posts. In the hybrid systems the government sets a long-term target (e.g...water conservation) and market-based instruments are used to achieve the target at minimum cost”* (Panayotou 1994: 57).

## **2.3.6 International experience**

### **2.3.6.1 Pollution control legislation in southern Africa**

While a number of countries in southern Africa have pollution control legislation, many have not been successful with enforcement of this legislation. This is attributed to *“low penalties, lack of technological capacity as well as the practical problems of administering environmental legislation”* (SADC 1996: 143). Legislation in some SADC countries has failed to establish incentives for compliance with standards, while pre-emptive and remedial measures have been poorly used. This is partly attributable to legislation focussing primarily on punishment for transgressions (SADC 1996).

Namibia, for example, has experienced difficulties with effectively enforcing laws. This has been attributed to insufficient penalties and lengthy legal procedures. As a result, cooperation with polluters to reduce pollution is regarded as a better option in Namibia than enforcement and policing (SADC 1996).

### **2.3.6.2 Implementation of the PPP internationally**

Taviv *et al.* (1999) state that by the 1990s, the PPP had been internationally accepted as a principle, and that most governments had realised that economic and fiscal instruments had an increasingly important role to play in environmental management.

The initial implementation of the PPP in water management was quite limited before this, with the USA first implementing the principle to recover costs for sewage treatment. More serious implementation of the PPP commenced in the 1990's (Taviv *et al.* 1999). The strengths and weaknesses of systems in China, Eastern Europe, France, Germany, Korea, the

Netherlands and the United Kingdom are set out by Taviv *et al.* (1999). A summary of this information is presented below.

(i) *China*

China introduced a pollution charges system in 1979 (O'Connor 1996 cited in Taviv *et al.* 1999), with charges levied in respect of both the quantity and quality of discharges. Charges were set slightly higher than average operating costs of pollution control facilities to encourage broad compliance with standards, and covered a variety of parameters. Revenue generated was allocated as grants or loans to subsidize pollution control measures, with the balance going to fund environmental agencies. Charge revenues accounted for almost 30% of pollution control investments by the steel industry between 1982 and 1986, while the industry's rate of compliance rose from 33% to 60% during that period. Weaknesses of the system include charges not being linked to inflation, and state enterprises being allowed to pass on the charge costs to consumers or to claim tax rebates (O'Connor 1996 cited in Taviv *et al.* 1999). A strength of the system was a fourfold penalty system for violations of standards (Taviv *et al.* 1999).

(ii) *Eastern Europe*

Eastern European countries have recently begun transforming political and economic structures, and have been harmonising their legislative and institutional structures with those of the European Union and the USA. Bulgaria has had a charge system for sewage treatment since 1951, and significantly increased the charges in 1991. Countries that have implemented wastewater charges on a limited basis include the Czech Republic, Hungary, Poland and the Slovak Republic. Most charges tend to be low and only a part of the charge is collected. In Romania, for example, the charges are not being paid due to companies going into insolvency. Charges are often not adjusted for inflation and lack political support. The Czech Republic and the Slovak Republic levy a charge for total dissolved solids. Poland is the exception, and collects significant pollution fees, including a wastewater charge in respect of saline coal mining water (Taviv *et al.* 1999).

(iii) *France*

France introduced wastewater charges in 1970 (RIZA 1995 cited in Taviv *et al.* 1999), and from 1993 considered a wide range of pollution parameters including *inter alia* suspended solids, chemical oxygen demand, acute toxicity and heavy metals. Charges are determined from a table of coefficients specific to the sector, and pollution is related to variables including input, output and the total number of employees. Dischargers may require that

actual pollution loads be measured, but bear the costs of measurement if the actual pollution load is equal to or higher than that estimated. Industries that install waste treatment plants are rewarded with a purification bonus that is deducted from the gross pollution fee (World Bank 1995 cited in Taviv *et al.* 1999), and revenues generated are spent on water pollution control investment (50%), loans to finance water pollution control (30%) and bonuses granted for communal wastewater treatment (20%). The system has significantly improved wastewater treatment, and became more effective when charges were increased and organic pollution levels decreased as a result (Taviv *et al.* 1999).

*(iv) Germany*

East Germany implemented a system that charged a levy for discharges in excess of fixed effluent limits prior to unification with West Germany. West Germany has had an effective charges system for various parameters since 1981 (RIZA 1995 cited in Taviv *et al.* 1999), and according to Taviv *et al.* (1999) is the only system with a clearly stated incentive purpose. Wastewater charges are calculated based on pollution loads in excess of parameters, multiplied by a tariff. A system of discounts operates where effluents are reduced by more than the minimum standard (a 100% discount is given where discharges are lower than half the minimum standard). However, the incentive to reduce pollution discharges is low as the average treatment costs were approximately four times the average charge levied (Taviv *et al.* 1999).

*(v) South Korea*

South Korea introduced a non-compliance emission charge system in the early 1980s (O'Connor 1996 cited in Taviv *et al.* 1999). Since 1986 a levy is automatically charged for emissions in excess of permitted levels. The charge is based on pollution concentrations only, and varies according to the location of the polluter, the duration of charges in excess of the permitted levels, and the amount of previous violations. Charges have been set low, and as a result treatment plants were not operated to their full potential where treatment costs exceeded the charges levied. Minimisation of emissions was not rewarded, while charges based on concentrations encouraged dilution without reducing the total load (Taviv *et al.* 1999).

*(vi) Malaysia*

The palm-oil industry expanded in the 1970s and became the country's largest polluter of water. In the mid-1970s a permitting system was introduced for the palm-oil mills, and the licensing fee was varied in relation to the quantity of waste discharged (O'Connor 1996 cited in Taviv *et al.* 1999). The licensing fee in effect consisted of an administrative fee and a

variable fee related to amounts of effluent discharged. The system was based on effluent standards and was phased in over four years. Partial or full waivers of the effluent fees were granted to mills conducting research on new treatment methods. The pollution load was reduced to 1% of its former levels by 1989 despite palm-oil production having reached record highs. The costs were to a large extent successfully internalized due to the competitive world market and the market power of mills over local growers.

(vii) *The Netherlands*

The Netherlands has a complex pollution charges system that was introduced in the 1970s (RIZA 1995 cited in Taviv *et al.* 1999), and a variety of parameters are considered (including *inter alia* chemical oxygen demand, reduced nitrogen and heavy metals). Charges vary depending on whether discharges are made into state or non-state controlled waters, whether discharges are made into saline or fresh water, and on the size of the industry. Communal treatment plants are encouraged, and their discharges are free into non-state waters. Charges raised are used to finance the construction of communal treatment plants, while smaller amounts are used to finance water quality programs and to subsidize pollution control initiatives by industry. The charges were initially the highest in Europe, and may therefore not be appropriate for developing countries. The system has provided a strong incentive, however, and pollution decreased by 50% between 1969 and 1975, and by a further 20% by 1980 (Taviv *et al.* 1999).

(viii) *United Kingdom*

A pollution charge system was initially introduced for trade effluent and was implemented by regional water authorities (RIZA 1995 in Taviv *et al.* 1999), but in 1990 the water sector was privatized and these private companies now levy charges. In 1992 a charge system was introduced in England and Wales for direct discharges into water (while Scotland and Ireland only have systems charging for discharges into sewers), and was administered by the state National River Authority (NRA) which was subsequently incorporated into the National Environment Agency. Charges are calculated to cover administrative costs, and annual charges are based on volume, content (type and number of pollutants) and the type of receiving water. Charges for industrial effluent discharged into sewers are based on treatment and conveyance costs. They are calculated with reference to volume, chemical oxygen demand and concentrations of suspended solids. Most private households are charged on a rateable value, except for those with metered water consumption. Revenue generated from private households amounted to 2,3 billion pounds in 1992/3 (which includes pollution

charges along with regular water service payments), compared to revenues of 146 million pounds in respect of industry and 40 million pounds generated by the NRA. The NRA charges are not related to pollution load or concentrations, and are too low to provide an effective incentive to reduce pollution (Taviv *et al.* 1997).

### **2.3.7 Application of the PPP in South Africa**

Consistent with the urgings of the 1992 Rio Declaration, South Africa has incorporated the PPP into its environmental policy and legislation. The following sections comprise of a brief overview of the history of water pollution control in South Africa, followed by a review of relevant South African policy developments and law.

#### **2.3.7.1 Brief historical overview of South African water pollution control**

Like many other countries, South Africa historically relied on the CAC approach to pollution control and waste minimisation. At the beginning of the twentieth century, South Africa had no legislation in place to combat pollution, probably because at the time water quality did not present a problem to water users. Less than two decades later, concerns that sewage discharged into public streams could render water resources unusable and cause water shortages provided impetus for the inclusion of pollution control provisions in the Public Health Act of 1919 (Taviv *et al.* 1999).

It was not until the Water Act 54 of 1956 (Water Act) was promulgated that water containing industrial pollutants had to be purified to specified standards. This Act was primarily concerned with the reuse of water, and not the costs of pollution. Different standards for different pollutants were introduced by Section 21 of the Water Act, and polluters discharging pollutants into watercourses had to comply with standards determined by the South African Bureau of Standards (SABS). Section 23 of the Water Act allowed polluters to exceed the prescribed standards under certain circumstances. The Minister of Water Affairs would issue a permit after consultation with the SABS and the Department of Health, and discharges in excess of the standards without a permit constituted a criminal offence (Taviv *et al.* 1999).

In keeping with the CAC approach to pollution control, the Water Act sought to control production processes as a means to reduce pollution discharges into watercourses. Section 12 required anyone wanting to establish a water intensive industry to obtain permission from the Department of Water Affairs and Forestry (DWAF), which gave DWAF the power to influence the choice of technology used. Section 24 provided the Minister with discretionary



powers to prohibit, restrict or impose conditions on the manufacture, marketing or use of any substance that might cause water pollution (Taviv *et al.* 1999).

Interestingly, the Water Act made provision for subsidisation of costs incurred in the construction of water works. These subsidies could, at the discretion of the Minister, amount to one third of the total costs of construction. The Browne Committee recommended in 1982 that local authorities should be subsidised to build and improve sewage works. However, the high costs of employing consultants to make a submission for the subsidies were prohibitive for poorer local authorities, and the subsidies benefited the wealthier areas that did not necessarily need subsidies. These subsidies were paid from the general fiscus and were thus at the expense of the taxpayer (Taviv *et al.* 1999). This approach is thus radically different to the notion that the polluter should pay.

The Water Act was amended in 1982 due to concern over deteriorating water quality. The amendment dealt with eutrophication caused by solid waste problems related to urbanisation. The CAC approach was retained, and at the time concerns were raised over the poor quality of effluents discharged from municipal sewage works that had received subsidies. Taviv *et al.* comment that this *“raises questions over the effectiveness of subsidies and indicates weaknesses in the ‘command and control’ approach”* (Taviv *et al.* 1999: 4-2).

#### **2.3.7.2 National policy**

During the 1990s, South Africa embarked on a process of public discussion of principles which might underpin the country’s new environmental policy. In 1996, a Department of Environmental Affairs and Tourism (DEAT) discussion document expressed the PPP as *‘those using resources, receiving services or producing waste must bear all the costs, including environmental and health impacts, and the responsibility for any consequences’* (DEAT 1996a: 15).

That same year, a DEAT Green Paper set out in section 21 that *“[t]hose responsible for environmental damage should pay the repair costs both to environmental and human health, and the costs of preventative measures to reduce or prevent pollution and environmental damage. (Also known as ‘the polluter pays principle’)”* (DEAT 1996b).

In 1999, the PPP was expressed more simply in a DEAT policy document as *“[t]hose who are responsible for environmental damage must pay all the repair costs. These include costs to the environment, costs to human health and well being, and the costs of reducing or preventing any further damage”* (DEAT 1999: 39).

In 2000, an appendix to the White Paper on Integrated Pollution and Waste Management (IP&WM) defined the PPP as “[t]hose responsible for environmental damage must pay the repair costs both to the environment and human health, and the costs of preventive measures to reduce or prevent further pollution and environmental damage” (DEAT 2000). The White Paper is driven by a vision of environmentally sustainable economic development, and represents a shift in policy from ‘end-of-the-pipe’ treatment to the prevention of pollution and avoidance of environmental degradation. IP&WM is defined in the White Paper as “a holistic and integrated system and process of management, aimed at pollution prevention and minimisation at source, managing the impact of pollution and waste on the receiving environment and remediating damaged environments” (DEAT 2000: 6).

### **2.3.7.3 National Legislation**

South Africa’s legal and policy framework has been evolving since 1994, and the PPP has been incorporated implicitly or explicitly into the NWA and NEMA. Relevant sections of these Acts are reviewed below, while brief reference is also made to other statutes relevant to pollution prevention and control in South Africa.

#### *(i) Constitution of the Republic of South Africa, Act 108 of 1996*

Section 24 of the Constitution of the Republic of South Africa, Act 108 of 1996 (SA Constitution) provides that everyone has a right to an environment that is not harmful to their health and well-being, and a right to have the environment protected, for the benefit of present and future generations. The environment is to be protected through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. Section 24 does not explicitly mention the PPP, but Oosthuizen (1998) suggests that it does not contradict the application and purpose of the principle.

#### *(ii) National Water Act 36 of 1998*

The PPP is given effect in section 19 of the NWA, which imposes a general obligation on a wide range of stipulated persons to take all reasonable measures to prevent any pollution from occurring, continuing or recurring in respect of water resources. These reasonable measures may include actions to eliminate any source of pollution and to remedy the effects of any disturbance to the bed and banks of a watercourse. Liability is retrospective, and these measures must be taken no matter how or when the pollution came about.

If reasonable measures are not taken, the polluter concerned may be directed to take reasonable steps by the relevant catchment management agency (CMA) in terms of section 19(3) of the NWA. Should the person fail to comply, the CMA may take measures that it deems necessary to remedy the situation (section 19(4)). In terms of section 19(5), the CMA may recover the costs incurred in remedying the situation jointly and severally from a wide range of persons, including: any person who is or was responsible for, or who directly or indirectly contributed to, the pollution or the potential pollution; the owner of the land at the time when the pollution or the potential for pollution occurred, or that owner's successor-in-title; the person in control of the land or any person who has a right to use the land at the time when the activity or process is or was performed or undertaken, or the situation came about; or any person who negligently failed to prevent the activity or the process being performed or undertaken, or the situation from coming about.

Section 19 also stipulates that costs must be reasonable, and may include, without being limited to, labor, administrative and overhead costs. The CMA must apportion costs at the request of any liable person, save that such apportionment does not relieve any liable person from their joint and several liability for the full amount of the costs. Oosthuizen (1998) correctly regards this as wide and retrospective liability, but points out that liability for damages and compensation payable to a human plaintiff are not covered. In addition, the NWA does not make the form of fault constituting liability explicit, and Oosthuizen (1998) submits that the section suggests negligence to establish liability. She states section 19(1)(b) and 19(2)(a)-(f) resemble reasonable foreseeability in damages and the reasonable preventative measures that must be taken. She therefore suggests that the reasonable person test to establish negligence as set out in *Kruger v Coetzee* 1996 2 SA 428 (A) is applicable.

It is important to note that sections 19(3)–(6) of the NWA empower CMAs to issue directives, to remedy the situation and to claim costs from the polluter. However, at the time of writing this dissertation, CMAs were still in the process of being established, and it was thought that they could become operational as late as the end of 2003 (Seetal 2001, Appendix B). The preamble to section 72 of the NWA provides that the Minister of Water Affairs and Forestry has responsibility to manage and authorise the use of the nation's water resources, and section 72(1) stipulates that all the powers and duties of a CMA vest in the Minister in areas where CMAs have not yet been established. Thus until CMAs are established, the Minister has the power to issue directives, to take measures to remedy the situation and to claim costs from the polluter.

Section 19 of the NWA is bolstered by section 151 (d) of the same Act, which makes it an offence for a person to fail to comply with a directive issued under *inter alia* section 19. In addition, section 151 (j) of the NWA makes it an offence to unlawfully and intentionally or negligently commit any act or omission that pollutes or is likely to pollute a water resource. The NWA provides that anyone convicted of such offences is liable to an unspecified fine or to imprisonment of 5 years (upon first conviction).

Section 155 of the NWA provides that a High Court may (upon application by the Minister or the water management institution concerned), grant an interdict or any other appropriate order against any person who has contravened any provision of the Act. Relief can include an order to discontinue any activity constituting the contravention and to remedy the adverse effects of the contravention.

(iii) *National Environmental Management Act 107 of 1998*

The PPP is set out as a legal principle in section 2(4)(p) of the NEMA. The section provides that “[t]he costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment”. By referring to adverse health effects, this enunciation of the PPP extends liability to compensation payable to a human plaintiff.

Section 28 of NEMA imposes a duty of care on every person who causes, has caused or may cause significant pollution or degradation of the environment to take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring. Insofar as harm to the environment is authorised by law or cannot reasonably be avoided or stopped, every such person must minimise and rectify pollution or degradation of the environment. Section 28 provides further that where any person fails to take these measures, the Director-General (DG) or Provincial Head of Department (PHOD) may direct such a person to do so. Should that person fail to comply, the DG or PHOD may take reasonable measures to remedy the situation and recover all reasonable costs. Oosthuizen (1998) regards the provisions of section 28 as a further refinement of the compensatory aspects of the principle outlined in section 19 of the NWA.

The PPP is also expressed through section 30 of NEMA, which deals with control of emergency incidents. In terms of this section the relevant authority may direct the responsible

person to undertake specific measures within a specific time to *inter alia* contain and minimise the effects of the incident, undertake clean-up procedures and remedy the effects of the incident. Should the responsible person fail to comply with such a directive, the relevant authority may undertake measures that it considers necessary. The relevant authority may then claim all reasonable costs incurred by it from every responsible person jointly and severally.

NEMA is also significant in that it authorises any person or group of persons to seek appropriate relief when any provision contained in NEMA, or any other statutory provision concerned with the protection of the environment or natural resources, is breached or threatened with breach (section 32(1)). Section 32(2) encourages litigants by giving the court a discretion not to award costs against unsuccessful persons or groups where the court is satisfied that they acted reasonably out of concern for the public interest or in the interest of protecting the environment, and that due efforts had been made to use other reasonable means to obtain the relief sought.

Section 33 of NEMA is also significant in that it allows any person to institute and conduct a prosecution (in the public interest or in the interest of protecting the environment) in respect of any breach or threatened breach of any duty (other than an organ of state's public duty) in any national or provincial legislation or municipal bylaw, or in any regulation, license, permission or authorisation issued in terms of such legislation, where the duty relates to the protection of the environment and the breach is an offence (subject to the provisions of section 33 (2)).

(iv) *Water Services Act 108 of 1997*

The Water Services Act 108 of 1997 provides in section 7 that no person may dispose of industrial effluent in any manner other than that approved by the water services provider nominated by the water services authority having jurisdiction in the area in question. The section provides further that no approval given by a water services authority under this section relieves anyone from complying with any other law relating to the use and conservation of water or the disposal of effluent. In terms of section 9(1) of the Services Act, the Minister may, from time to time, prescribe compulsory national standards relating to *inter alia* the quality of water taken from or discharged into any water services or water resource system. Section 21 of the Services Act provides that a water services authority which provides water for industrial use or controls a system through which industrial effluent is disposed of, must make bylaws providing for at least the standard of the service, the technical conditions of

provision and disposal, the determination and structure of tariffs, the payment and collection of money due, and the circumstances under which the provision and disposal may be limited or prohibited.

(v) *The Health Act 63 of 1977*

Section 20(1)(c) of the Health Act 63 of 1977 obliges local authorities to take necessary and reasonable practical measures to prevent the pollution of fresh water intended for the use of the inhabitants of its district (Glazewski 2000).

#### **2.3.7.4 Pietermaritzburg's industrial effluent bylaws**

Although the PPP has only recently been formally incorporated into South Africa's pollution control policy and legislation, a form of the PPP has historically been implemented in different parts of the country in the form of municipal sewage charges. The first charge recorded was in 1920, while industrial effluent bylaws were first gazetted in 1952. Local authorities around the country developed and implemented a wide variety of formulae. However, many of these systems are *"illogically designed, have no sound basis and are totally inadequate in meeting the PPP"* (Kardachi cited in Taviv *et al.* 1999: 4-2).

In Pietermaritzburg, Umgeni Water took over ownership and operation of the Darvill Wastewater Works from the local council in 1992. At the time the local regulatory framework comprised of the city of Pietermaritzburg's bylaws and an industrial effluent tariff. The responsibility for treatment of sewage and monitoring industrial effluent was delegated with the take-over of the works. The local council paid Umgeni Water to treat industrial effluent, but the legal power to formulate and enforce industrial effluent by-laws remained with the council (Moodley 1997).

Pietermaritzburg revised and published a new set of industrial effluent bylaws (IEBs) in 1998 (see Appendix A), and the PPP implicitly forms an important feature of these IEBs. Bylaw 2 of the IEBs provides that no industrial effluent shall be disposed of elsewhere but into a sewer (save by other lawful means), and stipulates that no person may discharge industrial effluent into any sewer without written permission from the City Engineer, regardless of whether the effluent complies with the standards prescribed in bylaw 11.

These IEBs have wide-ranging provisions that could potentially give effect to the PPP. For example, companies wishing to operate in the area are required to apply to the City Engineer

for permission to discharge waste into the municipal sewer system. Bylaw 3 provides that the applicant company should *inter alia*: submit plans describing the premises, drainage system and points of discharge; provide particulars on the nature of the trade effluent (composition, temperature, rate of discharge) and the proposed method for treating any industrial effluent produced; describe the general process or activity giving rise to the discharge; describe techniques to be used for preventing discharges of trade effluent into any environmental medium; and provide proposals for monitoring the discharge of the trade effluent.

Bylaw 4 provides that the applicant company should publish notice of their application for permission in a newspaper designated by the City Engineer, which potentially affords interested and affected parties the opportunity to lodge objections or to make representations to the City Engineer. Only after consideration of the application and any written objections received in terms of bylaw 5, may the City Engineer (after consultation with Umgeni Water as operator of the wastewater works) grant written permission for industrial effluent to be discharged from a trade premises, and then only if the City Engineer is satisfied *inter alia* that: the capacity of the sewer and sewage treatment works is sufficient to permit the conveyance of the effluent; the industrial effluent will receive preliminary treatment to ensure that it does not unduly endanger the health and safety of persons working in the sewer and to render it innocuous to the materials of which the sewer, plant and equipment of the treatment works are constructed of; the industrial effluent complies with the standards prescribed under bylaw 11; and any drainage and sewerage works, including storage, pre-treatment and metering installations, and provisions of pipes, drains and fittings as are required by the City Engineer under bylaw 10 have been completed.

Bylaw 7(5)(b) provides that any permission granted by the City Engineer in terms of bylaw 7 shall terminate two years from the date of the permission having been granted.

In terms of bylaw 10(a), the City Engineer (after consultation with the water service provider and by notice served on the owner or occupier of any premises from which industrial effluent is discharged or is to be discharged) may require the applicant to subject the industrial effluent to such treatment as would in the opinion of the City Engineer ensure that the effluent conformed with the provisions of bylaw 11. The City Engineer may also restrict the discharge to certain hours and specify maximum rates of discharge, and may require the applicant to install at his or her own expense any tanks, appliances and other equipment required to comply with the restrictions (bylaw 10(b)). In terms of bylaw 10(c), the City Engineer may

*inter alia* require the applicant to install a separate drainage system at his or her own expense for the sole purpose of conveying industrial effluent into the sewer, while in terms of bylaw 10(d) the City Engineer may require the applicant to construct in any drainage system conveying industrial effluent to the sewer, at his or her own expense, one or more sampling, inspection or metering chambers. Bylaw 10(e) provides that the City Engineer may require the applicant to execute drainage and sewage works, including storage, pre-treatment and metering installations, and the provision of pipes, drains and fittings.

Bylaw 11(1) sets out the standards for effluent discharged into the sewer system. Such effluent should *inter alia* not have a pH value less than 6.5 or greater than 9.5, should not have an electrical conductivity of greater than 400mSm, and should not include any substance in concentrations greater than those listed in bylaw 11(1) (see Appendix A). Bylaw 11(2) provides that every owner or occupier of a premises producing industrial effluent, foul water or any other liquid shall prevent any discharge prohibited under bylaw 11(1) from entering or being discharged into the sewer. Every holder of permission, owner and occupier who permits or negligently fails to prevent effluent from entering or being discharged into the sewer is guilty of an offence.

In terms of bylaw 16, the City Engineer is entitled to supply, install, operate and maintain, at the cost of the holder of the permission to discharge industrial effluent into the sewer, any device for ascertaining the volume or concentration of industrial effluent discharged into the sewer.

Bylaw 17 provides that the local council may (insofar as is permissible under the law) through its employees, agents and contractors have access, by reasonable force if necessary, to any premises for the purpose of *inter alia* performing any function under the bylaws, ascertaining whether there is or has been a contravention of the bylaws, and enforcing compliance with the provisions of the bylaws.

The local council is required to keep a register containing the particulars of every permission granted by the City Engineer (bylaw 18). The local council is required to make this register available for public inspection.

Bylaw 19 provides that any person who discharges industrial effluent into the sewer in contravention of the bylaws, and which damages the sewer, the industrial effluent treatment



works or which entails additional treatment costs, shall be liable for the necessary repair and treatment costs, in addition to prosecution.

Bylaw 20 provides that the local council shall prescribe fees, tariffs and charges in its tariff of charges. In terms of this tariff, the polluter is charged on the basis of volumes discharged and COD concentrations in excess of 350mSm (Fennemore 2001 *personal communication*).

Bylaw 21 provides *inter alia* that any person who contravenes the bylaws, or fails to comply with any provision of the bylaws, or with the conditions of any permit issued under the bylaws, is guilty of an offence and liable upon conviction to a fine not exceeding R500 or to imprisonment not exceeding six months (or both) for a first conviction, and to a fine not exceeding R1000 or to imprisonment not exceeding one year (or both) for any subsequent conviction. In addition, the court may impose an amount equal to any costs and expenses incurred by the local council as a result of any breach of the IEBs.

Bylaw 22 provides that any permission granted under any bylaw repealed by the IEBs shall be deemed to have been granted under the IEBs.

#### **2.3.7.5 Waste Discharge Charge System**

The Department of Water Affairs and Forestry (DWAF) is responsible for the implementation of the National Water Strategy and the establishment of CMAs. In line with this, DWAF is giving expression to the PPP in the formulation of its Waste Discharge Charge System (WDCS) to ensure that water users do not pass on the costs of pollution to society, but rather try to minimise the pollution before discharging it into a watercourse (DWAF 2000c).

According to DWAF, waste discharge is a recognised water use that needs to be controlled if water quality objectives are to be met. While the pricing strategy focuses on water use in terms of volumes abstracted or discharged, the WDCS addresses the impact that is caused by the discharge (including effluent and contaminated leachate) and the waste that it contains. The philosophical underpinning of the WDCS is a recognition that greater emphasis must be placed on managing water as an economic good to ensure that it is used as efficiently as possible. In developing the WDCS, the intention of DWAF is to use economic instruments to encourage polluters to internalise the costs associated with discharging or disposing of waste through water, and to reduce the amount of waste disposed into the environment (DWAF 2000c).

The WDCS has four main aims: to promote sustainable development and the efficient use of water resources; to promote the internalisation of environmental costs by impactors; to recover some of the costs of managing water quality; and to create financial incentives for dischargers to reduce waste and use water resources in a more optimal way (DWAf 2000c).

The WDCS, once implemented, will require any organisation that emits waste (directly or indirectly) into a water resource to pay charges. The key groups that are likely to be affected include: local or regional authorities discharging treated sewage or other forms of waste; industries whose discharges are not handled by local authorities; operators of waste disposal sites causing an impact to surface or groundwater; anyone who irrigates with water containing waste; and waste producers who dispose of waste in evaporation dams (DWAf 2000c).

### **2.3.8 Implementation**

While the PPP has international support, its implementation has largely been left to national authorities, and as a result the choice of economic instruments and the degree of implementation has been variable (Boyle 1994).

The review of the application of the PPP in South Africa above showed that the implementation of the PPP through the economic instrument of a charge system (namely the WDCS) is still in the process of being designed, and is scheduled to be implemented in test areas during the course of 2003. It should be noted, however, that the WDCS would be of limited application in respect of the Bayne's Spruit given that the Umgeni river (of which the Bayne's Spruit is a tributary) is excluded from the general authorisations to discharge industrial waste into a water resource (regulation 3.1 of the NWA). As a consequence, it is an offence to discharge industrial effluent into the Bayne's Spruit under the NWA, as well as under the IEBs.

This means that the primary mechanisms through which the PPP can be implemented under the current legislative framework is through the NWA, NEMA and the IEBs. These are all legislative instruments, and Kidd (1997) points out that legislation is usually dependent for its effectiveness on the state for enforcement and implementation. However, states are often unable to carry out these functions effectively owing to a lack of resources (Kidd 1997).

Implementation of the PPP through the IEBs is dependent on the City Engineer to implement the provisions relating to granting permits to discharge industrial effluent into the municipal

sewer. This is also holds true in respect of enforcement of the offence provisions of the IEBs where polluters discharge illegally elsewhere but into the sewer, or into the sewer but without permission or in excess of the stipulated standards.

A number of mechanisms can be used to secure compliance with the law. These include abatement notice procedures, where legislation authorises officials to “*issue abatement notices requiring offenders to put a stop to activities which are detrimental to the environment within a specified time*” (Kidd 1997: 25). This power is often supplemented by provisions allowing the official to take steps to remedy the situation where the offender fails to do so, and failure to comply with such a notice is usually an offence (Kidd 1997). Sections 19 (3) and (4) of the NWA resemble the abatement notice procedures described by Kidd (1997). The Minister of Water Affairs (in lieu of the establishment of CMAs) is empowered to issue directives to polluters to take specific measures before a given date, to continue these measures diligently and to complete these measures before a given date. Where the polluter fails to do so, the Minister may take the measures considered necessary to remedy the situation. Section 151 (d) makes it an offence to fail to comply with a directive issued under *inter alia* section 19.

Criminal sanctions constitute another mechanism that can be used to secure compliance with legislation. These sanctions include primary sanctions, which are applied where a provision is contravened that outlaws conduct directly (Kidd 1997). Section 151(i) of the NWA is a primary sanction that makes it an offence to unlawfully and intentionally or negligently commit any act or omission which pollutes or is likely to pollute a water resource. Subsidiary sanctions, on the other hand, seek to achieve compliance with legislation by administrative controls, such as the issuing of permits. Criminal sanctions are only imposed where the administrative control fails (Kidd 1997). Bylaw 2 of the IEBs provides such a subsidiary sanction. The bylaw provides that industrial effluent shall not be discharged of elsewhere but into a sewer, and only then if permission has been obtained from the City Engineer. These discharges are then subject to the standards set out in bylaw 11. Bylaw 21 then makes is an offence to *inter alia* contravene or fail to comply with any provisions of the bylaws.

Kidd (1997) points out that there have not been many successful prosecutions in respect of environmental offences in South Africa. He attributes the shortcomings of relying on criminal sanctions to a number of factors (see table 2.3).

**Table 2.3:** Shortcomings of reliance on criminal sanctions (Kidd 1997).

<i>Sanctions reactive rather than proactive</i>	In most cases the damage to the environment has already been caused, and often the offender is not required to remedy the damage caused (Kidd 1997). This is not the case in respect of the NWA, however, as section 152 provides that the court may enquire, without pleadings, into any harm or loss suffered by any person or any damage caused to a water resource, to determine the extent of the harm, loss or damage. Section 153 provides that the court may award damages payable by the accused for the loss or harm caused and may order the accused to pay for the costs of any remedial measures.
<i>Inadequate policing</i>	The three tiers of government have often not provided for sufficient specialized officials to investigate environmental crimes, while the regular police are unfamiliar with environmental crimes and do not incorporate the investigation of such crimes into their activities (Loot 1994 cited in Kidd 1997).
<i>Investigation difficulties</i>	Investigation difficulties are exacerbated by many official not having scientific expertise, not being familiar with the laws of evidence and difficulties in gathering evidence that will stand the scrutiny of courts.
<i>Prosecution costs</i>	Costs of prosecuting environmental cases are often very high due to the technical nature of the evidence led before the courts (Kidd 1997).
<i>Problems of proof</i>	It is often difficult to prove whether an offence has taken place (Kidd 1997).
<i>Lack of expertise</i>	Both investigators and prosecutors of environmental crimes often lack familiarity with an expertise in respect of environmental crimes (Kidd 1997).
<i>Adequacy of penalties</i>	Fines imposed for environmental offences are often too low to provide a deterrence, and are “often seen as a kind of indirect tax (a cost of doing business) rather than a punishment” (Kidd 1997).
<i>Dependence on administrative efficiency</i>	Subsidiary sanctions are often dependent upon administrative officials doing their jobs properly, which includes inefficiencies related to the granting of permits and monitoring of conditions of permits for compliance (Kidd 1997).

## CHAPTER 3: METHODOLOGY

### 3.1 INTRODUCTION

The literature review showed that South Africa is still in the process of settling its policy on integrated pollution control, while a waste discharge charge system is still in the design phase. However, the PPP has also been expressed explicitly or implicitly in the NWA, NEMA and the Pietermaritzburg-Msunduzi's IEBs. These legal instruments provide the current legislative framework through which the PPP is purportedly being implemented.

The research question is explored by conducting a case study of industrial pollution of the Bayne's Spruit by edible oil manufacturing companies situated in the Willowton industrial area of Pietermaritzburg. This chapter discusses the methodologies used to set the historical context of pollution of the Bayne's Spruit by the edible oil industry, to explore the current environmental status of the Bayne's Spruit, and to determine what factors are preventing the successful implementation of the PPP through the NWA, NEMA and the IEBs.

### 3.2 METHODOLOGY

The research problem has been approached by conducting a case study of industrial pollution of the Bayne's Spruit by the Pietermaritzburg edible oil industry. Case studies have been defined as '*a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence*' (Robson 1996: 146). Case studies use the logic of analytical induction, and researchers consider the specific context of the case and examine the configuration of its component parts (Neuman 2000). They help to connect the micro level (actions of individual people), to the macro scale (large-scale social structures and processes) (Neuman 2000).

This research has primarily used qualitative data collection techniques, although quantitative data has also been relied upon where feasible. The value of qualitative research is revealed in the findings, understandings and insights that emerge from the process of collecting this data (Patton 1990). In contrast to the quantitative approach to research (in terms of which a great many people's reactions are measured against limited questions to facilitate comparison and statistical comparison of data), qualitative research usually generates detailed information about people and cases, which "*increases understanding of the cases and situations studied but reduces the generalizability*" (Patton 1990: 14). In qualitative data the researcher is the instrument, and the validity of the methods employed is dependent upon the "*skill,*

*competence and rigor of the person doing the fieldwork*” (Patton 1990: 14). Ragin (1994, cited in Neuman 2000) points out that case studies are not identical to qualitative research, but that both are based on in-depth, detailed knowledge of cases. This depth is in part achieved by approaching fieldwork without the constraints of predetermined analysis (Patton 1990).

Patton (1990) states that qualitative data consists of three kinds of data collection: in-depth, open-ended questions to generate data about people’s experiences, opinions, feelings and knowledge; direct observation; and analyses of written documents. All three of these data collection techniques have been used in this research.

The historical context for this case study has been set by conducting a review of newspaper reports on pollution of the Bayne’s Spruit by companies engaging in the production of edible oils. This data has been supplemented by a review of DWAF records on recent inspections conducted by the department in respect of the edible oil companies, while quantitative bio-monitoring and chemical data has also been reviewed and presented.

The current status of the Bayne’s Spruit was explored by conducting historical interviews with representatives of the affected community of Sobantu and by directly observing pollution in the Bayne’s Spruit. This data was supplemented with quantitative data derived from samples of industrial effluent.

The primary methodology employed to identify the factors preventing the successful implementation of the PPP was to conduct in-depth, semi-structured interviews with selected role-players to explore their experiences, opinions, feelings and knowledge on pollution of the Bayne’s Spruit by the edible oil industry. An attempt has been made in this research to develop a *“holistic perspective”* (Patton 1990) of the implementation of the PPP in relation to the case study. This approach was taken in an attempt to understand the operation of the PPP within the case study area and to extrapolate lessons learned that could have broader significance.

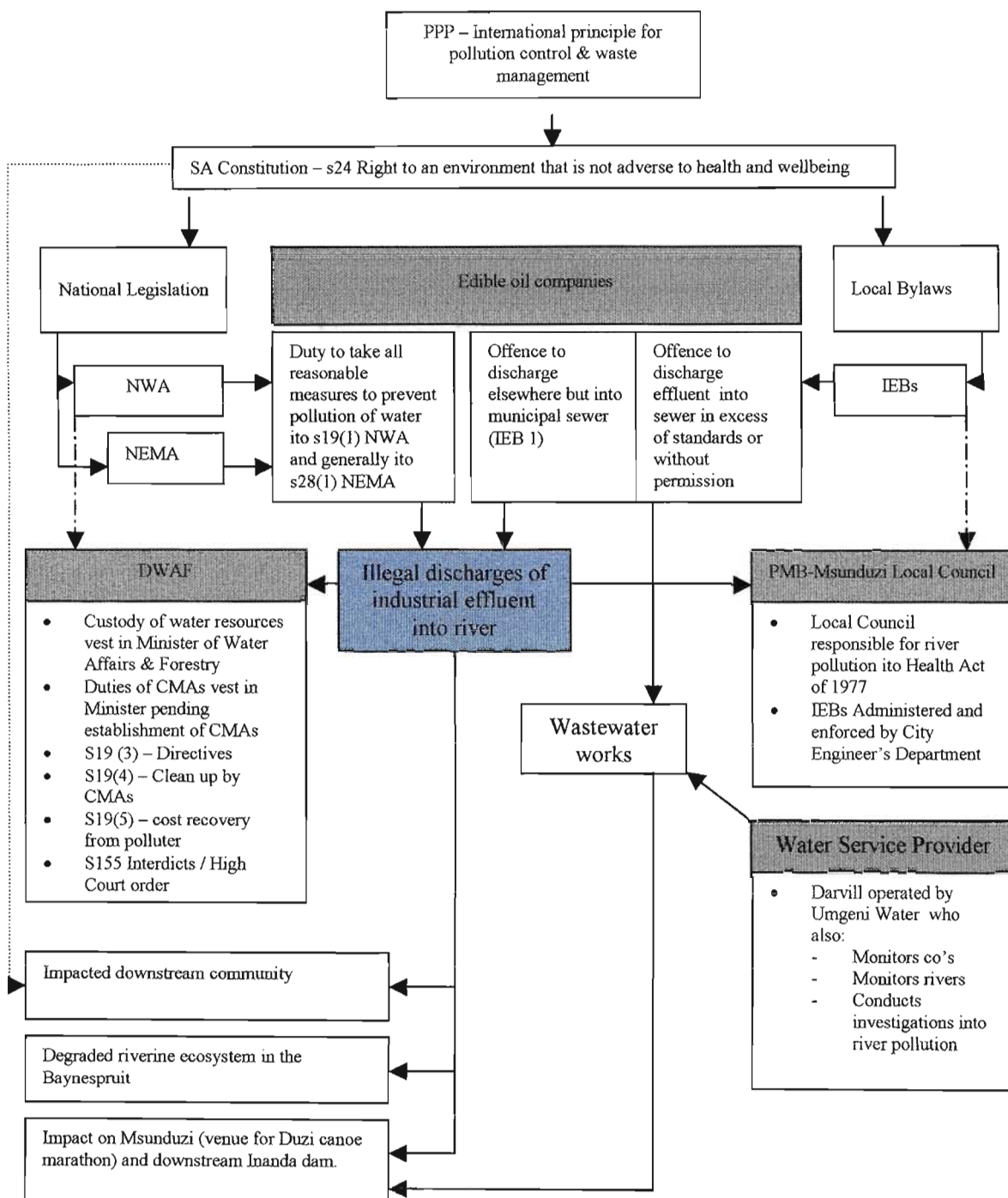
### **3.3 CONCEPTUAL FRAMEWORK**

For the purposes of this research, the particular contemporary phenomenon being studied is the ongoing industrial polluting of the Bayne’s Spruit by the edible oil industry. This pollution continues despite pollution prevention and control provisions contained in national legislation and local bylaws that are intended to reduce pollution by making the polluter responsible for

the costs associated with the pollution. Figure 3.1 illustrates the conceptual framework within which this research has been approached.

The main instruments for implementation of the PPP are those contained in the NWA, NEMA and the Pietermaritzburg-Msunduzi IEBs, and the research focuses on what factors are preventing the successful implementation of these provisions. Ongoing pollution of the Bayne's Spruit by the edible oil industry illustrates that some of these companies are failing to take the measures set out in section 19(1) of the NWA to prevent pollution of water resources. This ongoing pollution could be attributable to a lack of environmental ethic in the companies concerned, an emphasis on short term maximisation of profits or on other problems associated with disposal of their byproducts. The ongoing pollution also suggests that the provisions contained in the NWA, NEMA and the IEBs are not being successfully administered or implemented. These failures could be attributable to *inter alia* institutional issues, legislative deficiencies, enforcement complexities, and/or confusion over roles and functions.





**Figure 3.1: Conceptual framework**



3.4 PROCESS OF ENQUIRY

The process through which this research has been approached is illustrated in figure 3.2.

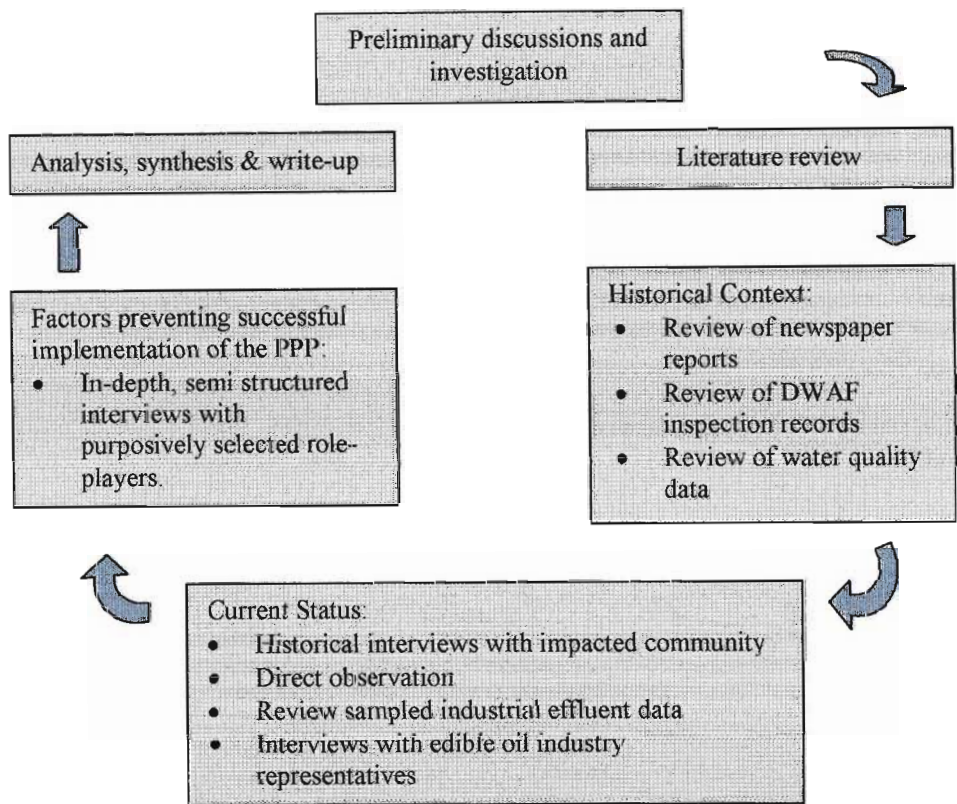


Figure 3.2: Process of enquiry

3.5 HISTORICAL CONTEXT

3.5.1 Review available newspaper reports

A review of available newspaper reports was conducted to set the historical context of pollution of the Bayne’s Spruit by the edible oil industry. This review is based on reports sourced from the Natal Witness and Sunday Tribune newspapers.

3.5.2 Review of DWAF inspection records

Information relating to recent inspections conducted by DWAF in respect of three of the edible oil companies was obtained from DWAF under the Promotion of Access to Information Act 2 of 2000. This information has been reviewed to supplement the available contextual data.

### **3.5.3 Review of available water quality data**

A review of available bio-monitoring and chemical data has been conducted to assess the impact of pollutants on the Bayne's Spruit over a period of time.

## **3.6 CURRENT STATUS**

### **3.6.1 Impact of pollution on the Sobantu community**

In-depth interviews were conducted with members of the Sobantu Environment Desk Network 96 (SEDN96), a community-based environmental organization, and with the chairperson of a community farming co-operative (co-op 1). These interviews were conducted to determine whether the historical pollution problems associated with the Bayne's Spruit were still ongoing, and to ascertain what impact pollution is having on the downstream Sobantu community.

### **3.6.2 Direct observation**

A reconnaissance of the Bayne's Spruit was conducted early on in the research to determine whether any signs of pollution could be observed, and if so to ascertain whether this pollution could be connected with the edible oil industry. This reconnaissance was supplemented by periodic informal monitoring of the Bayne's Spruit to gauge the frequency of industrial effluent discharges from a storm water point source discovered during the first reconnaissance, and to monitor other possible sources of industrial effluent for evidence of discharges. Visible signs of pollution were documented photographically and on videotape.

### **3.6.3 Analysis of industrial effluents**

Samples of trade effluent flowing from a pipe-end into the Bayne's Spruit were taken during the course of the research and handed to Umgeni Water for testing. This data is supplemented by a review of the results from further testing of trade effluent sampled by Umgeni Water. Effluent was sampled on the same storm water drainage line but on a later date and at a different point. An ISCO automatic sampler was used to take samples every two hours over a 48-hour period. The data from both sample points are reviewed in chapter 5.

### **3.6.4 Edible oil industry: effluent treatment and disposal problems**

Representatives from two edible oil companies were interviewed to identify what difficulties, if any, the industry had in respect of complying with its duty to take all reasonable measures to prevent pollution of the Bayne's Spruit. Two interviews were opportunistically arranged when the researcher was introduced to representatives of two edible oil companies at a

meeting on pollution of the Bayne's Spruit convened by the Pietermaritzburg Chamber of Commerce and Industry (PCCI). An interview was conducted with Mr A.A. Moosa, the owner of the largest vegetable oil and soap manufacturing company in Pietermaritzburg (Willowton Oil and Cake). A further interview was conducted with Mr Ebrahim Seedat, the Technical Manager of a smaller firm (Springold Investments (PTY) Limited t/a Capital Products). A decision was made not to interview the other edible oil companies given that the information provided was of a highly sensitive and potentially incriminating nature. In addition, a number of "off the record" comments made during one of the interviews devalued the usefulness of the information generated.

### **3.7 FACTORS PREVENTING SUCCESSFUL IMPLEMENTATION OF THE PPP**

Interviewees were purposively selected to ensure that those responsible for implementation of the PPP at local and regional levels were represented. These interviews were conducted to identify relevant issues from the interviewees' perspectives and experiences as government officials and water service providers involved with implementing the PPP. A flexible approach to the interviews was taken whereby a set of questions was used as a guide to key topics and as a checklist. It was not possible to conduct structured interviews as the role of each interviewee was not clear prior to the interviews. Topics in the set of questions were covered in no particular order given that each interviewee discussed the PPP from their own perspective and within their own terms of reference. New issues raised during the interviews were also explored, and some matters that were glossed over by interviewees were returned to later in the interviews for more detailed information.

An attempt was made to interview role-players engaged at both a managerial and operational level in an effort to triangulate data generated. Interviewees were selected due to the positions they held, although availability for interviewing was also a factor in selection. Interviews were conducted with the following role-players:

- Hilton Ryder, Chief City Environmental Health Officer;
- Jimmy Pather, the local council's Deputy Chief City Environmental Health Officer;
- Johan van der Merwe, the local council's Legal Advisor;
- Mike Greatwood, the local council's Deputy City Engineer;
- Charles Joubert, Deputy Director: Water Quality, DWAF regional government;
- Ashwin Seetal, Director: Catchment Management, DWAF regional government;
- Chris Fennemore, Senior Scientist, Umgeni Water, Darvill;
- Garth Mulder, Water Quality Control Officer, Umgeni Water, Darvill.

An interview was also conducted with three members of Durban Metro's pollution control section with a view to obtaining comparative information.

### **3.8 STAKEHOLDER PARTICIPATION IN RESEARCH PROCESS**

Efforts were made during the course of the research to facilitate participation of stakeholders in the research process. These efforts included assistance given to the SEDN96 in drafting memoranda on the issue that were handed to the PCCI and the MEC for Environmental Affairs and Tourism. Volunteers from the SEDN96 also participated in the informal periodic monitoring of the Bayne's Spruit.

The researcher attended meetings of the Msunduzi Catchment Management Forum (CMF), and flowing from these meetings an initiative was undertaken as part of the case study to convene a meeting of the relevant enforcement authorities, Umgeni Water, the CMF and the SEDN96. This meeting aimed in part at providing the SEDN96 with an opportunity to appeal to the relevant authorities for assistance in dealing with pollution of the Bayne's Spruit. The meeting also sought to provide a forum at which the problem could be focused upon, and possible remedies strategised. It was agreed at this meeting that a Bayne's Spruit task team should be established to investigate the illegal polluting of the Bayne's Spruit by the edible oil industry, and to take necessary action if required.

## CHAPTER 4: HISTORICAL CONTEXT

### 4.1 INTRODUCTION

This chapter sets out to locate the case study within its historical context. This data demonstrates that pollution of the Bayne's Spruit by the edible oil industry has been an ongoing problem, while previous attempts to address this issue provide lessons on current pollution control efforts. In addition, the main legal instruments through which the PPP can be implemented (namely the NWA, NEMA and the municipal IEBs) were all promulgated in 1998. This historical context is thus informative with regard to whether these legal instruments have achieved any success in controlling pollution of the Bayne's Spruit.

### 4.2 REVIEW OF AVAILABLE NEWSPAPER REPORTS

#### 4.2.1 Bayne's Spruit Water Quality

In 1993, Umgeni Water's then Senior Scientist reported in the Natal Witness that the Bayne's Spruit is one of the most *"seriously polluted stretches of water in this part of Natal"*, and that *"even a sewage outfall is 'healthy by comparison'"* (Natal Witness: 24 May 1993). In addition to high faecal contamination, biotic index readings taken for the river had scored 0 and 5 points on two different occasions. According to the Senior Scientist, a reasonably healthy river should have scored between 80 and 200 points. The Senior Scientist stated that *"some insects enjoy a little mild pollution and will thrive. Even in the worst rivers organisms... called rat-tailed maggots will survive as they have a type of snorkel through which they can obtain oxygen from outside the river. By last week, all of them were dead and water has to be really bad for that to happen"* (Natal Witness 24 May 1993).

A Sunday Tribune report from 1994 shows that the impact on crops by polluted water from the Bayne's Spruit is not a recent phenomena. It is reported that Phathokwakhe Dumakude, who had been farming on the edge of the Bayne's Spruit since 1964, was *"ready to give up because the stream at Pietermaritzburg's Sobantu township is so polluted the water is killing his crops"*. The article goes on to report that *"[t]he Bayne's Spruit once meandered over a flood plain before it was canalised and now has major industries along its banks, including vegetable oil processing plants, which have been responsible for polluting the stream in the past"*. It is reported that Mr Dhumakude *"scratched huge blobs of what looked like brown petroleum jelly from the rocks. It smelt revolting, like rancid margarine"*. The 1994 article advises that Mr Dumakude *"recalls fish being plentiful in the stream until a few years ago when children were pulling them out with their hands and they knew something was wrong. It*

*seemed they were ill and the children were discouraged from taking them. Now there is none. No crabs or water insects, not even a dragon fly”* (Sunday Tribune 19 April 1994).

#### **4.2.2 D.H.Brothers (PTY) Limited, trading as Willowton Oil and Cake Mills (“Willowton”)**

The Natal Witness reported on 03 May 1990 that that Willowton was found guilty of polluting the environment. The company was found to have unlawfully discharged effluent from its premises in excess of permitted standards. It is reported that Mr F. Muller, an advocate acting for the company, argued in court that the problem could have arisen from malfunctioning pumps designed to prevent overflows, or from a severe storm. He advised the court that in excess of R100000 had been spent rectifying the problem. The State Prosecutor is reported as having pointed out that a rainfall report showed that there was no storm in the area on the date of the discharge (Natal Witness 03 May 1990). Willowton received a fine of R5000 for discharging effluent with a Chemical Oxygen Demand (“COD”) of approximately 4000 (the standard was set at 75) and suspended matter “*nearly 24 times the Government set level of 25*” (Natal Witness 23 May 1990). The Natal Witness reported that samples taken from the Bayne’s Spruit by Umgeni Water a week after the court case showed evidence of fresh pollution. This was denied by the owner of Willowton, Mr Ali Akbar Moosa (Natal Witness 23 May 1990).

The Natal Witness (02 July 1993) also reported that Willowton had the previous year allegedly built a brick wall in a pipe to divert the flow of it’s trade effluent from its storm water drains into the city sewer system. It is reported that an Umgeni Water spokesperson, Mr Garth Mulder, advised the journalist that this unauthorized connection enabled Willowton to by-pass Umgeni Water’s regular water sampling point. Mr A.A. Moosa denied any knowledge of the wall.

#### **4.2.3 Feedmill Developments (Pty) Ltd t/a Capital Oil Mills (“Capital”)**

In December 1992, the Natal Witness reported that city scientists investigating a discharge of industrial effluent into the Bayne’s Spruit were forced to summon a police escort to gain entrance to Capital. Managers at the factory had refused to allow Umgeni Water access to the plant. On emerging from the factory, Senior Pollution Scientist Dr John Howard reported that a discharge of trade effluent into a storm water pipe had been discovered (Natal Witness 22 December 1992).

On 11 May 1994, the Natal Witness reported that about 5000 liters of oil from Capital had been spilt into the Bayne’s Spruit while workers were offloading a rail tanker (Natal Witness 01 November 1994). While workers from Capital were attempting to recover the spilt oil, a citizen erroneously accused them of ‘dumping toxic waste’ into the river.

In 1996, Capital paid a R300 admission of guilt fine for contravening the trade effluent standards prescribed in the municipal bylaws for discharges into the municipal sewer. Umgeni Water personnel had traced a heavy flow of vegetable oil into Darvill back to Capital, where a *“flexible hose was connected to a tank outlet within the factory and was bypassing the factory effluent plant to discharge directly into the sewer”* (Natal Witness 08 May 1996). Capital was also reported to have been contesting the existing prosecution brought under the Water Act (1956) on constitutional grounds. The judgment handed down in this matter is summarized in table 4.1.

**Table 4.1:** Summary of reported judgment handed down in Feedmill Developments (Pty) Ltd & Another v A-G, KZN (1998) 4 All SA

<p>The applicants had been charged with contravening various provisions of the Water Act 54 of 1956. It was alleged that they had failed to purify their trade effluent before discharging it into a public stream. A police docket had been opened in February 1994, and in March 1997 the applicants had been asked to plea. The matter was adjourned to allow the applicants an opportunity to apply to the High Court for an order setting aside the charges against them, and for an interdict restraining the prosecuting authorities from taking any further steps against the applicants. The application was based on the provisions of section 35(3)(d) of the SA Constitution (Act 108 of 1996), which guarantees every accused person the right to have their trial begin and conclude without unreasonable delay. The applicants contended that the delay between taking the samples and issuing the summons had been unreasonable.</p> <p>The Court found that cases of this nature were complex and of a technical nature, and that the verification and proper consideration of test results could not be considered a waste of time. Regarding the applicants’ contention that the delay had prejudiced them in their ability to gather the evidence to prepare a defence, the Court noted that the 2<sup>nd</sup> applicant had not raised this contention when he had appeared in Regional Court for trial on 06 February 1995, and that he had allowed 2 years to lapse before raising this issue when he appeared in Court on 10 March 1997. Almost all of the adjournments which had taken place between the issuing of the summons and the trial date had been at the 2<sup>nd</sup> applicants instance. The Court held that it was not persuaded that trial prejudice had been suffered, and dismissed the application with costs</p>
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In 1997, the Natal Witness reported that effluent discharged into the Bayne’s Spruit had been traced by Umgeni Water staff to Capital. Prosecution samples from Capital’s storm water drain had been forwarded to the Department of Water Affairs and Forestry for legal action (Natal Witness 26 April 1997).

In June 1998 it was reported that Haroon Essack failed to appear in court to face charges that he, in his personal capacity as director of Capital, negligently and unlawfully polluted the



Bayne's Spruit by allowing untreated effluent to be discharged into the stream via a storm water conduit. A warrant of arrest was issued but its execution stayed to 17 July 1998, the date of the trial (Natal Witness 05 June 1998). Another case against Haroon Essack for a similar pollution offence was postponed because he was unable to appear in court due to his attending another court matter. A warrant of arrest was stayed until 01 July 1998 (Natal Witness 16 June 1998).

On 19 June 1998, the Natal Witness reported that Haroon Essack's father had made application for the liquidation of Capital on the basis that he was owed R88000 by the company. In the application, it was alleged that Capital's current liabilities of R48 million had exceeded the company's current assets of R36 million. In a separate court action the previous month, Merchant Trade Finance had obtained a court order to take possession of Capital's moveable assets to secure its loan claim of R14 million (Natal Witness 19 June 1998).

Charges against Mr Haroon Essack for negligently and unlawfully polluting the Bayne's Spruit were withdrawn in the Regional Magistrates' Court on 01 July 1998. The state prosecutor, Zubeida Khan, is reported as having stated that the Attorney-General declined to prosecute as the *"company is going under provisional liquidation in the High Court"* (Natal Witness 02 July 1998).

#### **4.2.4 Sealake Industries ("Sealake")**

The Natal Witness reported that Sealake was charged under section 21 of the Water Act (1956) for allegedly not complying with standards set for the discharge of effluent into the Bayne's Spruit. Charges related to trade effluent discharged into the Bayne's Spruit on 21 February 1991 and 08 May 1991 (Natal Witness 25 September 1992, 08 December 1992, 15 December 1992). City councilor Yvonne Spain called for a boycott of Sealake's products following the discovery of the industrial effluent discharges into the Bayne's Spruit. Spain explained that *"[i]t is the ratepayers who will have to pay to get this stream cleaned up"* (Natal Witness 21 December 2001).

On 12 January 1993, the Natal Witness reported that Sealake denied an allegation that a tanker owned by them had dumped industrial effluent in the Greytown Road area over the previous weekend. This denial was in response to an eyewitness report that a truck bearing the markings 'Sealake Industries' was seen dumping effluent in the veld.



A later article (Natal Witness 02 July 1993) reported that a trial Magistrate had criticized another request for an adjournment of a pollution trial brought against Sealake as time and legal costs were being wasted. The adjournment was requested by Sealake's legal representatives, who wanted more time to study scientific information.

In November 1993, it was reported that Umgeni Water chemists gave evidence in the trial of Goolam Essack, director of Sealake, in respect of vegetable oil pollution found in the Bayne's Spruit below Sealake in 1991. The trial was postponed to 21 February 1994 (Natal Witness 16 November 1993).

In June 1995, the Natal Witness reported that the *"four-year-old Sealake Industries water pollution trial resumed in the Regional Court"* the day before. The delay in the trial was *"partly due to the fact that the analysis was not carried out to SABS guidelines, and every step of the analytical procedure now has to be tested in court"* (Natal Witness 13 June 1995).

In May 1996 it was reported that Sealake and director Goolam Hoosen Essack were acquitted on charges of releasing untreated industrial effluent into the Bayne's Spruit on 21 February 1991. Water sample testing procedures stipulated in the Government Gazette had not been followed precisely, and as a result the charges had not been proved beyond reasonable doubt. In addition, state witnesses had given contradictory evidence. The trial Magistrate found that the chain of evidence (leading from taking prosecution samples to the analysis of these samples in a laboratory) was *'murky'*, and the possibility of contamination was not ruled out. According to the report the *"... five-year prosecution was undertaken in terms of the Water Act... and its failure cost the taxpayer many thousands of rands in fruitless expenditure"* (Natal Witness 28 May 1996).

#### **4.2.5 Darvill**

In December 1992, a serious incident of effluent dumping into the city's sewer system was reported, as a result of which approximately 10 tons of vegetable oil and soap waste had clogged up the Darvill Wastewater Works (Natal Witness 02 December 1992). An unnamed factory blamed dumping on an *"accidental lapse on the part of their inexperienced workers replacing strikers..."* (Natal Witness 03 December 1992). Notices were sent to Willowton, Capital and Sealake notifying the companies that their sewer accesses would be sealed off should they continue to discharge untreated trade effluent into the sewer system. The city council's Emergency Committee on Pollution spokesperson stated that Darvill was not

designed to handle trade effluent of the sort discharged, and that *“Umgeni Water has informed us that so far it has cost about R250000 to deal with the problem since May of this year”* (Natal Witness 18 December 1992). On 18 December 1992 the city council sealed off the sewer access of Willowton, Capital and Sealake due to continued discharges of untreated industrial effluent into the city’s sewer system (Natal Witness 19 December 1992).

It was reported that the manager of water quality at Umgeni Water stated that effluent can be treated at Darvill if it meets municipal standards. However, to achieve these standards Willowton, Capital and Sealake would have to *“upgrade their effluent treatment and run them efficiently with adequately trained staff. However, even efficient plants produce a sludge which, until recently, could be trucked to Darvill and buried very cheaply in trenches. After this practice was stopped by water affairs, companies now have to transport the sludge to Durban at great expense”* (Natal Witness 22 December 1992).

In 1994, it was reported that the city ratepayers were footing the bill for the illegal dumping of industrial waste into the city sewer system (Natal Witness 28 July 1994). Each dumping incident was alleged to have cost the city around R20000 to clean up. Steve Terry, Umgeni Water’s then Pollution Prevention Scientist, reported that of South Africa’s 17 edible oil refineries, 4 were located in Pietermaritzburg. He stated that the factory managers had been approached regarding management of their waste, and that some of them had responded ‘indifferently’.

### **4.3 DWAF INSPECTIONS**

DWAF conducted inspections of the factory premises of Willowton Oil & Cake and Sealake on 14 June 2001 and the factory premises of Capital Products on 15 July 2001.

In letters addressed to Willowton and Sealake dated 15 June 2001, DWAF commended Willowton’s management on progress they had made in upgrading effluent treatment and disposal systems, and commended Sealake’s management on the current state of its effluent treatment and disposal systems. However, both companies were advised to address the bunding of their storage tanks to contain spillages and minimize storm water contamination. The companies were also advised that it was imperative that regular and ongoing maintenance of pipe leakages, equipment and the structural integrity of sumps be conducted to prevent oil spillages.

In a letter addressed to Capital Products dated 26 July 2001, DWAF advised the company that it was appalled at the current state of the effluent management and general housekeeping practices taking place on the company premises. DWAF stated that it viewed the pollution of stormwater by factory effluent, and any impacts on the Bayne's Spruit, in a very serious light, and advised the company to implement corrective action immediately. The company was advised to address the bunding of its storage tanks and process areas to contain spillages, to store drums containing sludge, effluent or any other contaminated products in a bunded enclosure, and to repair all structurally compromised floor areas to prevent groundwater contamination. The company was also advised that it was imperative that regular and ongoing maintenance of pipe leakages, equipment and the structural integrity of sumps to prevent oil spillages. In addition, the company was advised to remove from the vacant area near the new effluent plant all drums containing waste products (to be disposed of using a suitable waste disposal company), and to uplift the ground on which effluent had been spilled. DWAF requested Capital Products to reply in writing within 14 days with an outline of how these issues were going to be resolved, and also to indicate when the new effluent treatment plant would be commissioned. DWAF advised that failure to comply with the requirements of *inter alia* the NWA could result in the department instituting legal proceedings against the company. Capital Products replied to DWAF with its proposals in a one page facsimile dated 07 August 2001. The company did not contest any of the issues raised, but pointed out that the premises had been purchased 'as is'.

#### **4.4 REVIEW OF AVAILABLE WATER QUALITY DATA**

##### **4.4.1 Riverine ecosystems and water quality**

Functional riverine ecosystems normally support a range of different organisms, although there are regional and zonal differences. Within each region or zone, the composition of the aquatic community is determined by various factors, including the quality of the water in the system. Riverine ecosystems can be affected by physical water quality variables (such as suspensoids) and chemical water quality variables (including *inter alia* pH, total dissolved solids (TDS), conductivity and dissolved oxygen). These variables can have positive and negative effects on aquatic organisms, while the overall effect of these variables in combination depends on whether they act synergistically or antagonistically. The effect of these variables on organisms within the riverine ecosystem is influenced by the tolerance levels of these individual organisms (Dallas & Day 1993). The ranges over which a species can survive are known as the tolerance ranges, and the upper and lower values are known as tolerance limits. The optimal range is that to which organisms are most ideally suited and in

which growth rates, fecundity and other measures of health are greatest. While organisms of a given species may survive either side of the optimal range, as the tolerance limits are approached more and more abnormalities become evident. The first signs are usually behavioral (e.g. fish may tend to avoid non-optimal conditions). Beyond this physiological stress may become evident (respiratory, metabolic or excretory rates may increase, and may be accompanied by a decrease in egg/sperm production and thus fecundity). Further, as tolerance levels are approached, organisms may become more susceptible to parasites, pathogens and food shortages. Adults may survive, but juvenile stages are far more sensitive (Dallas & Day 1993).

Human activities affect the quality of water in aquatic ecosystems. Since each species has natural tolerance limits, and because these differ from species to species, alterations in water quality will affect different species to a greater or lesser extent. Incremental deterioration in water quality will gradually alter the constituent species of a biotic community. Some examples of these changes include: a shift in the physical position of a community of riverine organisms; the introduction or loss of key species; reduction in diversity as a result of very small increases in the concentration of toxins such as trace metals; and reduced ecosystem functioning (Dallas & Day 1993).

#### **4.4.2 Physical and chemical monitoring**

Monitoring of the physical and chemical constituents of water is important for ascertaining the type and concentration of pollution entering a river. However, the data collected is essentially a 'snapshot' of the physical and chemical constituents entering or present within the river at the time when the sampling was conducted. Thus *"if these collections are periodic (which they almost invariably are), then intermittent releases of effluents may not be recorded"* (Dallas & Day 1993: 30). It is also impossible to test for all toxins that could be degrading the aquatic ecosystem, while chemical monitoring alone cannot detect the synergistic effects of toxicants. As a result, monitoring of biota is becoming common (Dallas & Day 1993).

#### **4.4.3 Biological monitoring and diversity indices**

Aquatic organisms are regarded as being a more sensitive and reliable measure of water conditions than chemical and physical monitoring (Warren 1971 cited by Dallas & Day 1993) as biological communities demonstrate cumulative impacts and integrate the effects of multiple stresses (Plafkin *et al.* 1989 cited in Metcalfe-Smith 1991 cited in Dallas & Day

1993). Bio-monitoring is therefore regarded as a “sensitive way of determining the effects of pollutants, especially the effects of chronic (continuous, low level) exposure” (Dallas & Day 1993). Methods to monitor biota include the use of diversity and biotic indices. One method that has been developed for the rapid bio-assessment of water quality in riverine ecosystems is the SASS (South African Scoring System). This system is based on the presence or absence of macroinvertebrate groups, and yields mathematical representations including the SASS score and Average Score Per Taxon (ASPT) (Dallas 1997).

**4.4.4 Bio-monitoring data on the Bayne’s Spruit**

Bio-monitoring data on the reach of the Bayne’s Spruit below the edible oil industry indicates that the stream has consistently suffered some degradation (SASS < 100; ASPT < 4). The SASS score of 6 and the ASPT score of 2 for October 2001 indicates that the Bayne’s Spruit had deteriorated and was severely polluted (SASS < 20. ASPT < 2). The scores for the period June 2001 to October 2001 are set out in the table 4.2 below.

**Table 4.2: Bio-monitoring scores June to October 2001**

Date	SASS	ASPT
15 June 2001	28	3.1
20 July 2001	64	4.3
07 August 2001	27	3.0
20 September 2001	36	5.1
10 October 2001	6	2.0

*Source: Umgeni Water*

**4.4.5 Chemical monitoring**

Data on the chemical constituents of the Bayne’s Spruit downstream of the edible oil industries has historically been compiled by Umgeni Water. Unfortunately however, no record exists of testing for soap, oil and grease, while many of the other chemical testing records are not relevant for the purposes of this discussion. In addition, it has been emphasized above that the data collected is essentially a “snapshot” of the chemical constituents entering or present within the river at the time when the sampling was conducted. These samples have been conducted periodically, and will thus not record intermittent releases.

The pH and conductivity graph (see figure 4.1) sets out the results of tests conducted over the period January 1988 to July 2001. The graph reflects that there have been periodic spikes in respect of both pH and conductivity. These spikes are indicative of pollution events.

#### **4.5 SYNTHESIS**

The newspaper reports show that there has been an ongoing problem with pollution of the Bayne's Spruit by the edible oil industry that dates back over a decade. The reports indicate that this pollution has impacted negatively on farmers in the downstream community of Sobantu. The reports also suggest that the riverine ecosystem has been degraded by this pollution, with reports of fish dying and a diminishing of bio-diversity in the stream. Reported prosecutions all predate 1998 and were brought under either the Water Act of 1956 or the old municipal bylaws.

DWAF inspections conducted in June and July 2001 show that there were some problems with bunding and maintenance of pipes and equipment in respect of Willowton and Sealake, while Capital's environmental housekeeping and effluent management was severely criticised (and legal action was threatened). These files were accessed in November 2001, and show no evidence of the PPP provisions of section 19 of the NWA having been resorted to. Follow-up inspections were expected to take place in or around December 2001 (Joubert 2001 *personal communication*).

The historical bio-monitoring data on the Bayne's Spruit, which covers the period from June to October 2001, indicates that the riverine ecosystem worsened from a degraded classification in June 2001, to a severely degraded classification in October 2001. The chemical data from January 1988 to July 2001 shows periodic spikes in pH and conductivity. Unfortunately, this chemical data only provides a 'snapshot' of the chemical constituents in the water at the time of the sampling, and pollutants released between sampling are not likely to have been recorded.

In combination, the historical data presented in this chapter demonstrates that there has been an ongoing problem with pollution of the Bayne's Spruit by the edible oil industry dating back over a decade. Attempts to prosecute under the Water Act 54 of 1956 and the old municipal bylaws were either unsuccessful, or resulted in low penalties that provide little disincentive to the polluting companies. The historical data shows no evidence of the PPP provisions contained in the NWA or NEMA having ever been implemented or enforced. In

addition, there was no evidence that any of the edible oils industries were prosecuted for offences relating to the IEBs after 1998.

# BAYNE'S SPRUIT

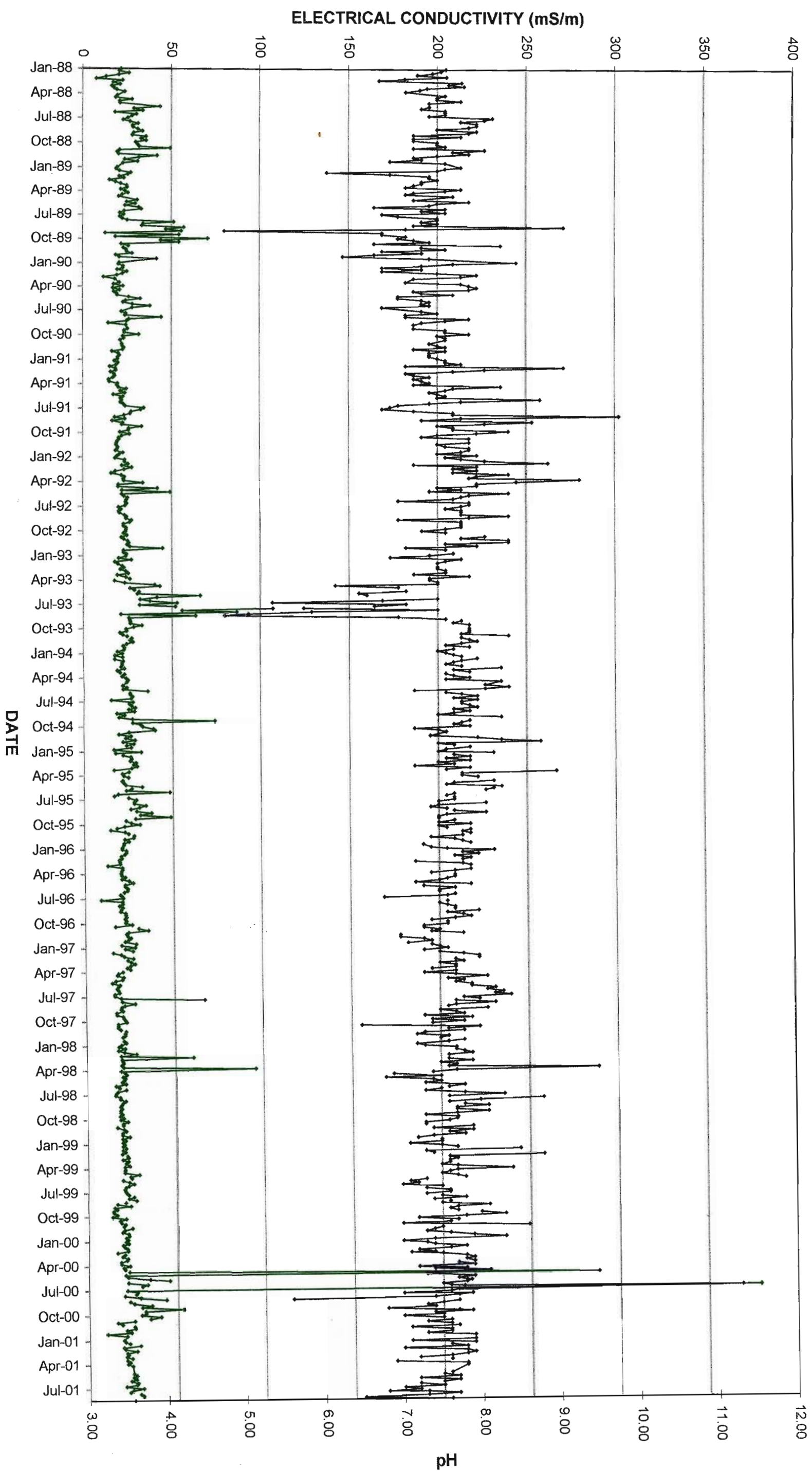


Figure 4.1: pH and electrical conductivity graph (Source: Umgeni Water)



## CHAPTER 5: PRESENT STATUS

### 5.1 INTRODUCTION

Chapter 4 indicated that the edible oil industry has been associated with pollution of the Bayne's Spruit for over a decade, and that pollution has impacted adversely on the downstream Sobantu community and on the riverine ecosystem. The chapter also demonstrated there is no evidence of the PPP provisions contained in the NWA, NEMA and the IEBs having been successfully implemented.

This chapter locates the case study in its present context. It commences with information provided by members of the SEDN96 and the chairperson of co-op 1 (a community farming co-operative that farms on land adjacent to the Bayne's Spruit). The purpose of obtaining this information was to establish whether historical problems were still being experienced in the present. This information is supplemented by data gathered through direct observation of the Bayne's Spruit, which was conducted to corroborate community complaints to the Msunduzi Catchment Management Forum concerning ongoing pollution problems. Effluent sampled during the course of conducting direct observation, together with additional data on effluent sampled by Umgeni Water, is also analysed.

### 5.2 IMPACT OF POLLUTION ON THE SOBANTU COMMUNITY

Residents of Sobantu recall that the Bayne's Spruit was a clean and healthy river two decades ago. At that time, the community used the river for irrigation of crops, swimming (one swimming pool in Sobantu services a community estimated to number 36,000 people, and even this pool is out of reach of many who are unable to pay the entrance fee) and subsistence fishing (Mngadi & Sithole 2001, Appendix B). However, when firms engaging in edible oil refining were set up in the Willowton industrial area upriver of the Sobantu township, a change in the river was noticed: *"There was just that smell... people here in Sobantu... used to do fishing there, but one day, it was early 1984... people got dead fish... all these living animals in the river was destroyed in those days"* (Mngadi & Sithole 2001, Appendix B: 23). Community members have at times noticed changes in color in the river (Mncwabe 2001, Appendix B: 72; Sithole 2001 *personal communication*), have discovered *"something sticky like oil"* (Mncwabe 2001, Appendix B: 72) attached to stones in the river, and have complained about a strong chemical odor from the river that is noticeable throughout Sobantu, especially at night (Sithole 2001 *personal communication*). As a consequence of this pollution, members of the SEDN96 complained to the Msunduzi Catchment Management

Forum. In addition, the SEDN96 staged a protest march in Pietermaritzburg on 14 September 2001, and handed a memorandum to the Pietermaritzburg Chamber of Commerce and Industry (PCCI) calling for their assistance.



**Figure 5.1:** SEDN96 member handing over memorandum to PCCI

As a result of this demonstration, the PCCI environmental committee called a meeting of companies and interested and affected parties on 09 October 2001. Consensus was reached at this meeting that the Bayne’s Spruit had been severely impacted by pollution, and companies present agreed to ensure that their processes were not impacting on the river. Agreement was also reached to conduct a clean-up of the Bayne’s Spruit, which took place on 29 November 2001.

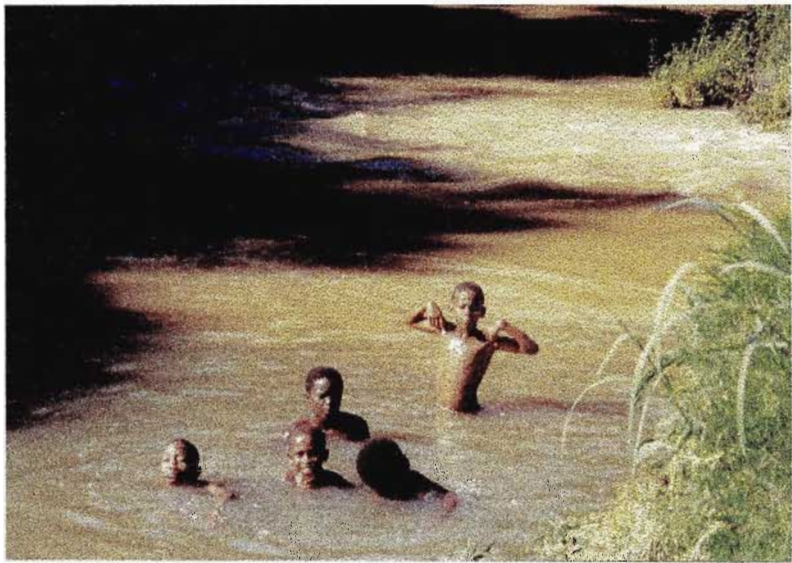




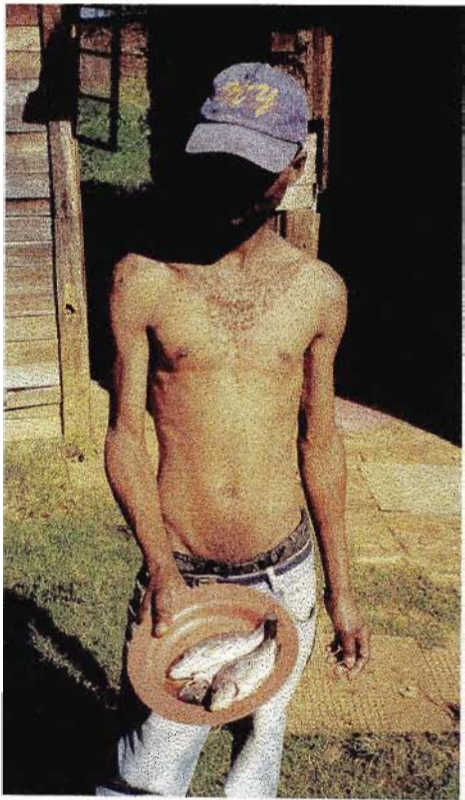
**Figure 5.2:** Clean-up day on the Bayne's Spruit, 29 November 2001

Mr Mncwabe, the chairperson of Co-op 1, reports that pollution of the river is causing problems to their irrigation system. He states that the garden is totally reliant on this river water for irrigation outside of the rainy season. He advises that a mixture of oil and other pollutants is clogging the filters of their water pumps, as a result of which they have to clean the filters every time they irrigate. In addition, he fears that the irrigation pipes are being clogged up, and that in time they will not work. He reports that “[e]ven now we can feel the smell of the water once we start irrigating... [t]he first water comes out of there is black and smelly” (Mncwabe 2001, Appendix B: 70). The chairperson reports that they will not be able to afford to dig up the irrigation pipes and have them cleaned. This is seen as a serious problem given that about 66 people are dependent on food grown in the community garden (Mncwabe 2001, Appendix B). And while the co-op lists problems associated with their irrigation system as their main fear, Mncwabe advises that they are also concerned that it is ‘dangerous’ to eat vegetables that have been irrigated with water from the Bayne’s Spruit. As a consequence, the co-op uses water from a small seep dam to clean the vegetables before they are used or any surplus sold within the community (Mncwabe 2001, Appendix B).

Despite community concerns over the health implications associated with the Bayne’s Spruit, some community members continue to make use of the resource for swimming and small-scale subsistence fish harvesting.



**Figure 5.3:** Children swimming in the Bayne’s Spruit, October 2001.



**Figure 5.4:** Fish caught in the Bayne’s Spruit, October 2001.

### **5.3 DIRECT OBSERVATION**

On 25 September 2001, a reconnaissance of the industrial reach of the Bayne's Spruit adjacent to the edible oil industries was conducted to identify and document any signs of industrial pollution.

#### **5.3.1 Orientation**

Willowton Oil & Cake is situated adjacent to wetland areas on the right-hand bank of the Bayne's Spruit. A storm water trench has been channeled into the riparian zone to serve as a conduit connecting two of Willowton Oil & Cake's storm water pipe-ends with the Bayne's Spruit (see figure 5.5, point A).

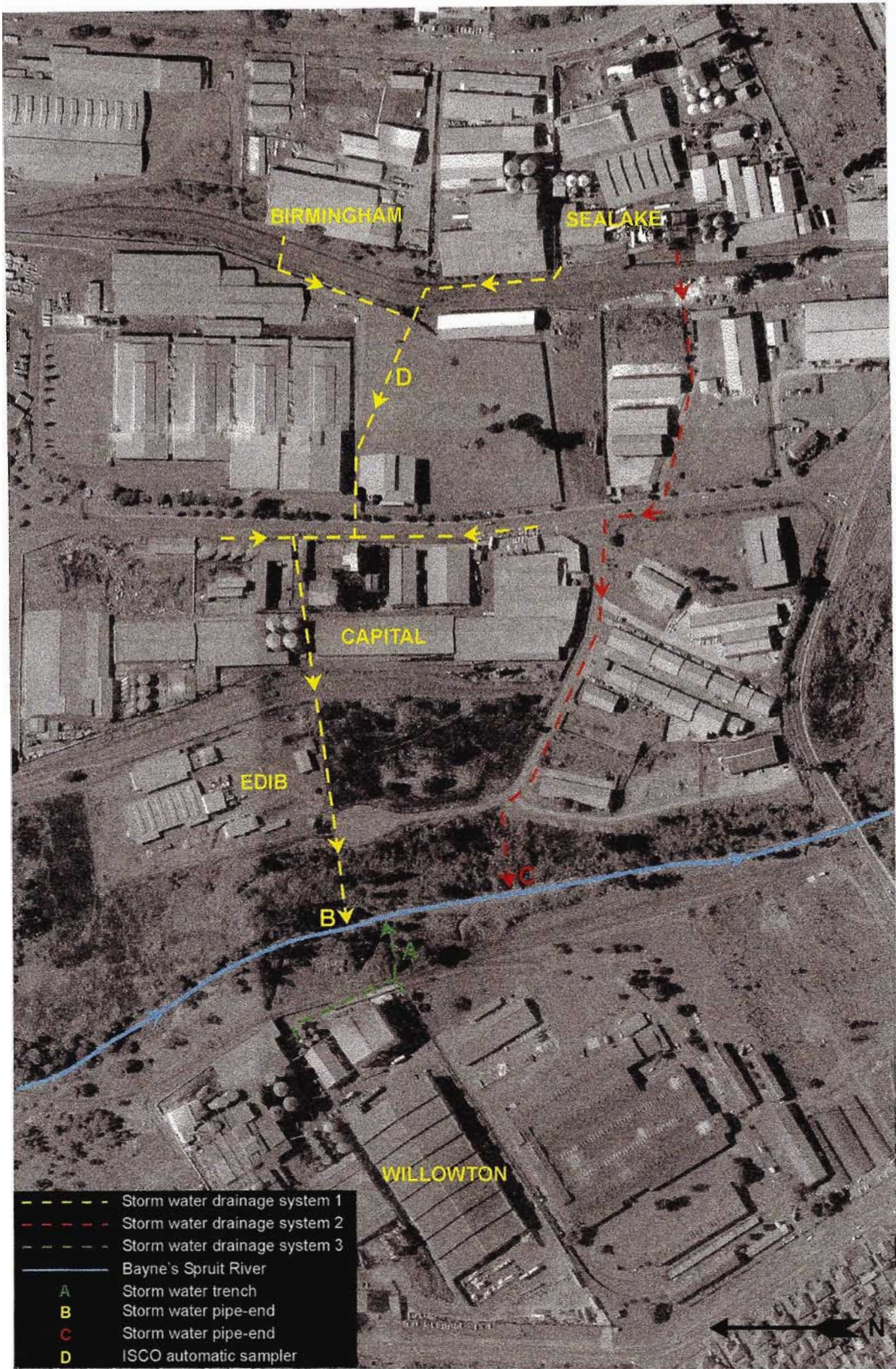
Adjacent to Willowton Oil & Cake but on the opposite bank, another storm water pipe-end protrudes into the Bayne's Spruit (see figure 5.5, point B). This storm water drain runs through a wetland area and beneath Edib Oils before connecting with Capital Products, Birmingham Oil and Sealake respectively. Slightly downstream, a second storm water outlet connects Sealake to the Bayne's Spruit (see figure 5.5, point C). This pipe-end is obscured by heavy vegetation in the riparian zone.

#### **5.3.2 Signs of pollution**

The direct observation conducted on 25 September 2001 was during early spring when the flow of the Bayne's Spruit was fairly weak. Darvill's weather station recorded rainfall of only 1mm on 25 September 2001. The last rainfall recorded prior to this was 10 days earlier, when 0,2mm of rain had been recorded on 15 September 2001.

The reach of the stream adjacent to the edible oil industries had a very strong, unpleasant smell that was noticeable from the riverbank. Sewage fungus dominated the riverbed and was attached to boulders lying within the watercourse, and a dark oily substance was noted attached to boulders. A liquid was observed pouring into the Bayne's Spruit from a storm water pipe-end, and a slick of cream-colored effluent was floating on the surface of the stream below the pipe-end (see figure 5.6). On 13 October 2001, tallow was discovered in the streambed opposite the storm water pipe-end (see figure 5.7).





**Figure 5.5:** Aerial photograph of the Bayne's Spruit and the edible oil industries.  
(Adapted from storm water plans supplied courtesy of Pietermaritzburg-Msunduzi Local Council)





**Figure 5.6:** Effluent discharging from storm water pipe into the Bayne's Spruit  
25 September 2001.



**Figure 5.7:** Tallow discovered in the Bayne's Spruit.

Pollution of the Bayne’s Spruit was not, however, limited to the area adjacent to the edible oil industries. The stream was generally choked with litter and garbage, including plastic bottles and polystyrene cups and plates, while the banks of the stream opposite an informal settlement was contaminated with feces. Patches of effluent similar to that discovered beneath the storm water pipe-end was evident trapped between rocks at various points downstream.

Having identified the storm water drain as a point source of current pollution, periodic informal monitoring was conducted on weekends and week days over the following months to ascertain whether these discharges were infrequent occurrences or of a more persistent nature. Table 5.1 provides a list of the days upon which informal monitoring of the Bayne’s Spruit was conducted. The table indicates whether or not the storm water drain was discharging on the date of the observation, and rainfall data for the day of the observation and for the most recent rainfall event are also provided. It should be noted, however, that rainfall is measured from 08h00 on the day in question to 08h00 the following day. As a result, some of the rainfall indicated on the date when observations were conducted transpired after the observations had taken place.

**Table 5.1:** Dates of observation of storm water pipe end and rainfall data

Date of observation	Status of storm water drain	Rainfall in mm's on date of observation*	Date of most recent rainfall iro date of observation	Rainfall on most recent date in mm's
25 September 2001	Discharging	1	15 September 01	0.2
12 October 2001	Discharging	0	09 October 01	3.4
13 October 2001	Discharging	4.3	09 October 01	3.4
16 October 2001	Discharging	15.5	15 October 01	0.8
18 October 2001	Discharging	0.3	16 October 01	15.5
24 October 2001	Discharging	2.3	21 October 01	6.5
31 October 2001	Discharging	11.5	30 October 01	11
02 November 2001	Discharging	0	01 November 01	0.8
05 November 2001	Discharging	0	01 November 01	0.8
23 November 2001	Discharging	0	22 November 01	2.2
25 November 2001	Discharging	2	22 November 01	2.2

\* Rainfall data supplied by Umgeni Water, Darvill weather station

On every occasion the storm water pipe-end linking to Capital Products, Birmingham Oil and Sealake was discharging a liquid. On most occasions no rain events had taken place before the



monitoring was conducted. On four of these occasions no rainfall had taken place on the day when the direct observation was conducted, and no significant rainfall events in excess of 2.2 mm had occurred on the preceding day.



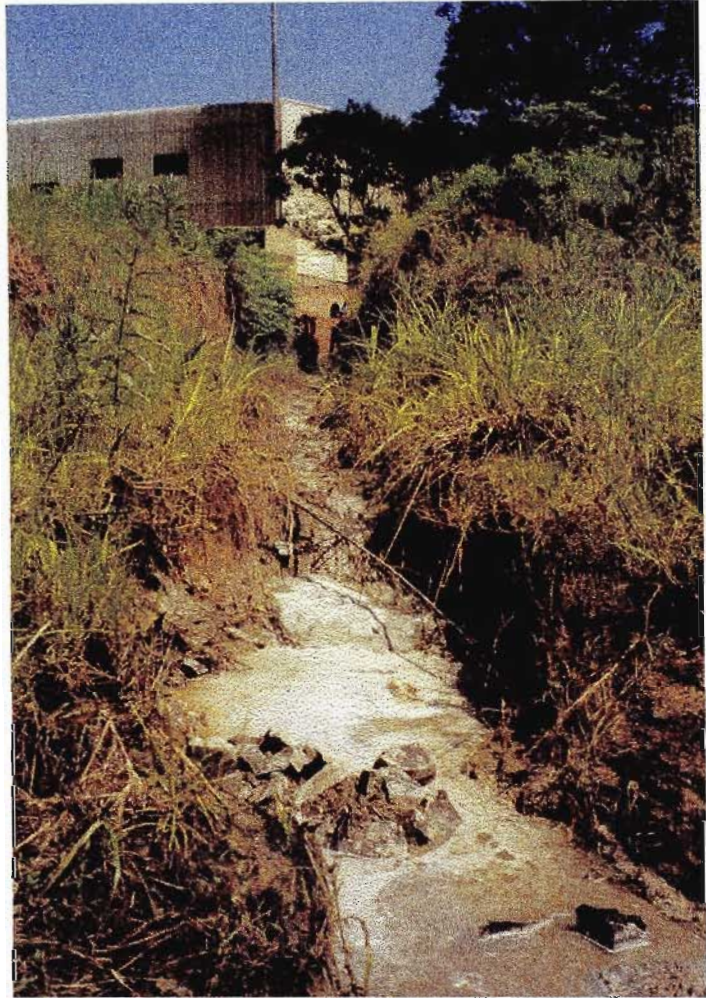
**Figure 5.8:** Effluent discharging from storm water pipe on 13 October 2001.



**Figure 5.9:** Simple flow test conducted on 13 October 2001.

The informal monitoring also checked on the storm water trench linking Willowton Oil & Cake to the Bayne’s Spruit. While no active discharges were noted, on a number of occasions there was evidence of a prior discharge. Such evidence included what appeared to be the

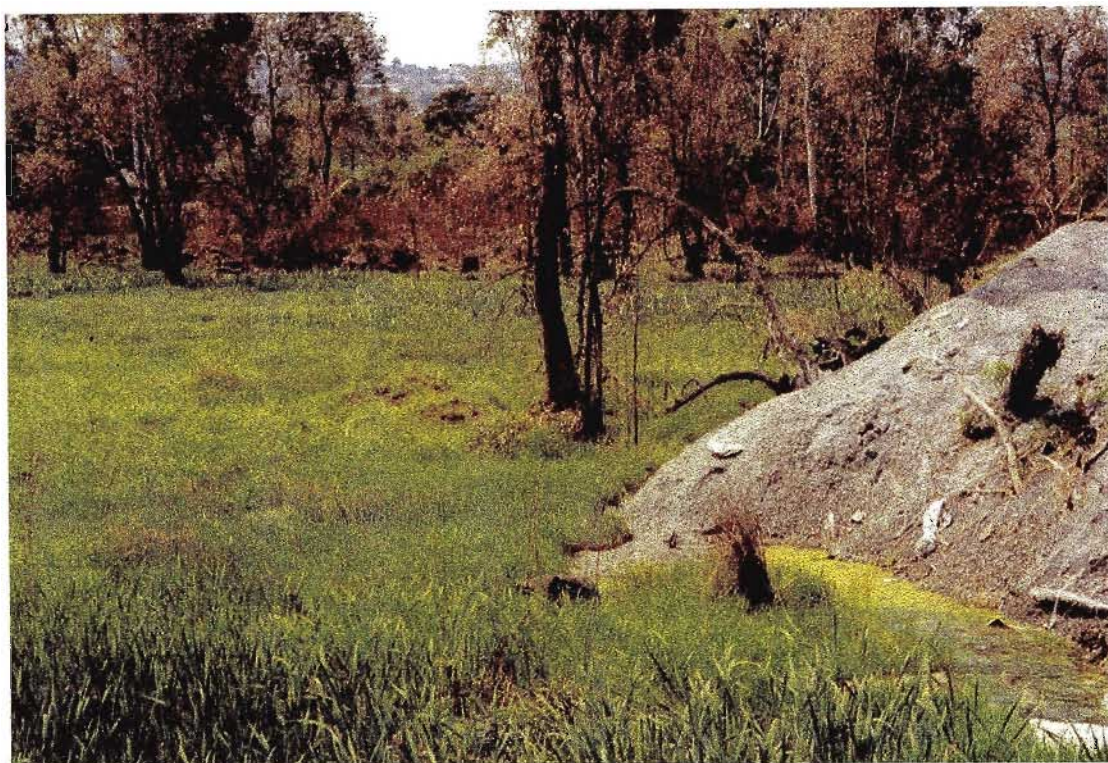
remains effluent in the storm water trench on 24 October 2001. It is interesting to note that rainfall of only 2.3 mm was recorded on that date, and the previous rainfall event had taken place on 21 October 2001 with 6.5 mm of rain being recorded.



**Figure 5.10:** Willowton’s storm water trench on 24 October 2001.

On other occasions a black oily substance was found adhered to vegetation on each side of the trench at about knee-height. In addition, what appeared to be boiler ash was discovered dumped on a wetland area adjacent to Willowton Oil & Cake.





**Figure 5.11:** Boiler ash dumped on wetland adjacent to Willowton.

## **5.4 ANALYSIS OF SAMPLED INDUSTRIAL EFFLUENT**

### **5.4.1 Storm water pipe-end**

On 12 October 2001, samples were taken of a heavy discharge of effluent pouring out of the storm water pipe-end that connects the Bayne's Spruit to Capital Products, Birmingham Oils and Sealake and was recorded on video tape. Over a three-hour period, this discharge changed color from clear to opaque to dark brown and to clear again. A simple flow test was conducted using a five-liter bucket and a stopwatch, which indicated that approximately 7,000 liters per hour was being discharged (another simple flow test conducted the following day yielded similar results). The water upstream of the storm water pipe-end was sampled, and five samples of effluent discharging from the pipe-end were taken. These samples were sent to Umgeni Water for testing, and the results are set out in the table 5.2 below.

**Table 5.2:** Test results for effluent sampled on 12 October 2001

	pH	SOG mg/l	COD mg/l	Conductivity mS/m	TDS mg/l	Odour
<i>Upstream</i>	7.47	16.4	10	20	125	Very mild oily
<b>SWD 13h45</b>	6.17	133	4789	60	1897	Very strong earthy
<b>SWD 13h45</b>	3.35	108	2106	300	2413	Very strong oily
<b>SWD 14h00</b>	6.29	62.6	1685	160	1460	Very strong earthy
<b>SWD 14h00</b>	-	368	2306	5300	2631	Very strong oily
<b>SWD 14h30</b>	3.26	1759	1907	310	20738	Mild oily
<i>Reg. 3.7 *</i>	5.5-7.5	0	30	50-100	-	-
<i>IEB 11**</i>	6.5-9.5	250	350***	400	5000	-

(Source: Umgeni Water)

*\* Regulation 3.7 of GNR 1191 to the National Water Act (1998) provides general and special wastewater limit values applicable to a discharge of wastewater into water resources. As a tributary of the Umgeni river, the Bayne's Spruit is listed in Table 3.4, and thus the special limits in Table 3.2 are applicable. Notwithstanding this, discharges of industrial effluent into the Bayne's Spruit are illegal under the IEBs read with Section 7(2).*

*\*\* Bylaw 11 of the IEBs sets out compliance standards for discharges into the municipal sewer system, and are provided for illustrative purposes only.*

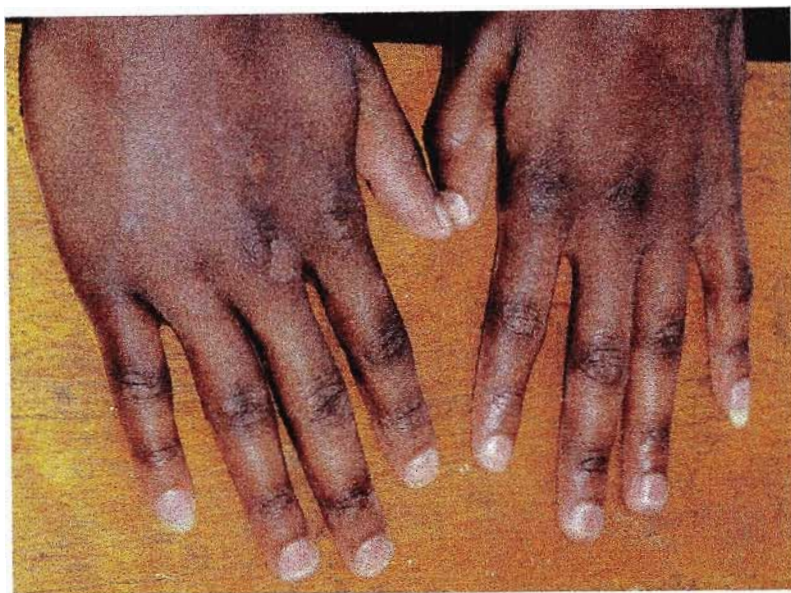
*\*\*\* COD is used to calculate effluent charges (in addition to volume charges). Only discharges into the municipal sewer that exceed 350 mS/m are subject to charges based on a specified formula.*

**5.4.1.1 pH**

The sample taken upstream of the pipe-end had a pH reading of 7.47. Most fresh waters in South Africa are more or less neutral, with pH ranging from 6 to 8 (Dallas & Day 1993). However, two of the effluent samples had pH readings of 3.35 and 3.26 respectively, indicating high acidity. The addition of acid into a river affects the pH of the river, and can alter the degree to which nutrients, trace metals and biocides adhere to large molecules and particulate matter in water. A change in pH can also alter the ionic and osmotic balance of individual organisms within a river. Studies have indicated that a change in pH in streams can have severe effects upon the biota within the riverine ecosystem (Dallas & Day 1993). Unfortunately, no sample was taken downstream of the pipe-end to measure the extent to which this acidic effluent affected the pH of the Bayne's Spruit. It is interesting to note that a sampler's hands peeled after he inadvertently touched the wet sampling bottle. A community



member who was present at the time fell into the river near the storm water pipe-end. The skin on his hands and on the inside of his legs also peeled.



**Photograph 5.12:** Xolani's skin peeled after he fell into the Bayne's Spruit near the storm water pipe-end.

It is interesting to note that three of the samples would not have complied with the standards set out in the IEBs for discharges into the municipal sewer system. Two of these samples were in excess of the special limits set out in table 3.2 of GNR 1191.

#### **5.4.1.2 Soap, oil & grease (SOG)**

The test results show that the effluent sampled was high in SOG content. The highest result was 1759 mg/l, which far exceeds the maximum limit of 250 mg/l prescribed in bylaw 11 of the IEBs. The results all exceeded the special limit of zero for SOG as prescribed in table 3.2 of GNR 1191.

#### **5.4.1.3 Chemical oxygen demand (COD)**

The test results also show that the effluent sampled has high COD readings, ranging from 1685 mg/l to 4789 mg/l. These readings again far exceed the limit of 30 mg/l prescribed by table 3.2 of GNR 1191, while the company/s discharging the effluent would also have been liable for payment of effluent charges in terms of the IEBs.

Aquatic organisms are dependent on the characteristics of the surrounding medium for their survival, and *“[o]ne of the most important abiotic factors relating to the survival of most*

*aquatic organisms is the concentration of dissolved oxygen in the water*" (Dallas & Day 1993: 102). The breakdown of certain chemicals results in dissolved oxygen concentrations being lowered, and COD measures the oxidation of reduced chemicals in water, or the "*reducing capacity*' of an effluent" (Dallas & Day 1993: 104). The extent to which organisms are affected by a decrease in dissolved oxygen depends upon that organisms dependence on water as a medium. Fish are totally dependent upon oxygen for respiration and are highly sensitive to a low concentration (Alabaster & Lloyd 1980 cited in Hellawell 1986 cited in Dallas & Day 1993). Insufficient oxygen can result in the death of exposed fish (Drewet & Abel 1983 cited in Dallas & Day 1993). Insects that respire with gills or by direct cuticular exchange are subject to the same stresses as fish (Nebeker 1972 cited in Dallas & Day 1993).

#### **5.4.1.4 Conductivity**

The electrical conductivity of the effluent sampled varied considerably, ranging from a low of 60 mS/m to a high of 5300 mS/m. The special limit prescribed in table 3.2 of GNR 1191 is 50 mS/m above intake to a maximum of 100mS/m. This limit is exceeded by all five effluent samples tested. The limit of 400 mS/m for discharges into the municipal sewer is also exceeded by one of the samples tested. Conductivity is one way of measuring the quality of a water sample by having reference to the total amount of material dissolved in it (Dallas & Day 1993). Conductivity measures the ability of a sample of water to conduct an electric current, and according to Dallas & Day (1993) is often used as a surrogate for TDS.

#### **5.4.1.5 Total dissolved solids (TDS)**

The test results also indicate that the effluent sampled was high in TDS, with readings ranging from a low of 1460 mg/l to a high of 20738 mg/l. This high reading was well in excess of the limit of 5000 mg/l prescribed in the IEBs for discharges into the municipal sewer. TDS is also a way of measuring the quality of a water sample by having reference to the total amount of material dissolved in it, and correlates closely with salinity in fresh waters. The total amount of materials dissolved determines what purposes the water can be put to for human use, and also determines the biotic characteristics of aquatic ecosystems (Dallas & Day 1993). TDS represents the total quantity of dissolved organic and inorganic material in a sample of water. Tolerance to TDS is species-specific, and freshwater organisms have a limited tolerance of <2000 mg/l (Hart *et al* 1991 cited in Dallas & Day 1993) or <3000 mg/l (Williams 1981 cited in Dallas & Day 1993), while many blue-greens and bacteria can adapt to TDS values of between 7000 and 14000 mg/l (Hart *et al* 1991 cited in Dallas & Day 1993).

**5.4.2 Storm water drain sampled below Sealake / Birmingham Oils**

On 16 November 2001, Umgeni Water installed an ISCO automatic sampler on the storm water pipeline immediately below Sealake and Birmingham Oils (see figure 5.5, point D). The ISCO sampler was set to take one sample every two hours for a period of 48 hours. The results of this sampling are set out in the table below:

**Table 5.3:** Effluent sampled by Umgeni Water on 16 November 2001 *(source Umgeni Water)*

Start Date / Time	16 November 2001 @ 12h30
Sampled By	Isco Autosampler
Duration	1 sample every 2 hours for 48 hours
End Date / Time	18 November 2001 @ 10h30

Number	PH	Conductivity (mS/m)	Date / Time of Sample
1	1.6	702	16/11/2001 @ 12h30
2	6.4	125	16/11/2001 @ 14h30
3	6.1	25	16/11/2001 @ 16h30
4	0.5	13260	16/11/2001 @ 18h30
5	0.7	4410	16/11/2001 @ 20h30
6	1.4	660	16/11/2001 @ 22h30
7	2.3	103	17/11/2001 @ 00h30
8	3.0	65	17/11/2001 @ 02h30
9	4.7	40	17/11/2001 @ 04h30
10	4.6	39	17/11/2001 @ 06h30
11	0.7	7860	17/11/2001 @ 08h30
12	1.1	1290	17/11/2001 @ 10h30
13	0.8	5030	17/11/2001 @ 12h30
14	1.0	1790	17/11/2001 @ 14h30
15	0.5	15380	17/11/2001 @ 16h30
16	0.3	Off scale of meter	17/11/2001 @ 18h30
17	0.6	3410	17/11/2001 @ 20h30
18	1.1	400	17/11/2001 @ 22h30
19	1.5	167	18/11/2001 @ 00h30
20	1.8	116	18/11/2001 @ 02h30
21	1.9	90	18/11/2001 @ 04h30
22	2.1	74	18/11/2001 @ 06h30
23	2.6	48	18/11/2001 @ 08h30
24	1.2	1001	18/11/2001 @ 10h30

These results show that industrial effluent was being discharged via the storm water drainage system. Solutions with a pH of '1' are very concentrated, and effluent discharged with such low pH readings is equivalent to discharging pure acid. The effluent also had very high conductivity readings. All of the samples tested lower than the minimum pH limit of 6.5 set out in the IEBs for discharges into the municipal sewer system, while twelve of the samples were in excess of the IEB limit of 400mS/m prescribed for electrical conductivity. All but two of the samples were lower than the minimum pH special limit of 5.5 prescribed in Regulation 3.7 of GNR 1191 for discharges of wastewater into authorised water resources, while sixteen of the samples exceeded the maximum limit of 100 mS/m prescribed in Regulation 3.7 of GNR 1191 for electrical conductivity.

## 5.5 EDIBLE OIL INDUSTRY: EFFLUENT TREATMENT AND DISPOSAL PROBLEMS

### 5.5.1 Willowton

Willowton admits that it has a poor history of pollution up to about 1994, but now classifies itself as a clean industry. The refining process entails a lot of wet processes, and the company has installed holding ponds and pumping facilities. This holding pond has a sluice gate that can be opened, but it is kept closed in the dry season. Moosa concedes, however, that the company does discharge if there is a very heavy storm event and the pumps are unable to cope with the volumes of water (Moosa 2001, Appendix B). The company states that it traps oils from the surface of the holding ponds and recycles it into their soap manufacturing plant.



**Figure 5.13:** Willowton's sluice gate and holding pond.



The direct observation conducted during the course of this research discovered what appeared to be a large pile of boiler ash dumped on a wetland adjacent to Willowton (see figure 5.11). In response to a question regarding this pile, Moosa stated that it could be boiler ash and Trysol (a product used in place of bleaching earth to take the color out of oils when refining). He said that the company was experiencing a problem disposing of this waste as the Pietermaritzburg landfill site had stopped accepting Trysol about two years previously (Moosa 2001, appendix B). Attempts to dispose of this waste at Hammersdale were being hindered by a lengthy approval procedure. Interestingly, Moosa stated that “[w]e used to dump there... 2 years ago when we were getting the analysis done, and they didn’t give us their blessing, but turned a blind eye ...DWAF and others... turned a blind eye to these products being dumped outside” (Moosa 2001, Appendix B: 94).

### **5.5.2 Capital Products**

Capital Products claimed that it was not refining any oils at the time of the interview, but was only bottling refined oil and producing margarine. As a result, it was claimed that Capital Products was not producing any waste products. Speaking hypothetically, Seedat stated that the company would need to refine 1000 tons of oil a month for it to be profitable. Such production would result in 4 tons of neutral oil loss, and “*ideally this water and oil will land up in the effluent plant, it will have to be skimmed off the top of your tanks in your effluent plant*” (Seedat 2001, Appendix B: 102). Speculating on why a company might pollute the Bayne’s Spruit, Seedat commented that a company would do so to save itself money. He felt that dumping illegally into the sewer rather than into the Bayne’s Spruit would be the “*lesser of two evils*” (Seedat 2001, Appendix B: 105). Seedat believes that the solution to the problem lies in the companies being assisted to find affordable effluent treatment plants.

## **5.6 SYNTHESIS**

This chapter has shown that in addition to historical pollution and general litter problems, the Bayne’s Spruit is also being subjected to ongoing pollution from the companies engaging in the edible oil manufacturing industry. The samples of discharges sampled in the storm water system shows that these discharges are not of storm water. The sample results suggest that this effluent would not have satisfied the standards for trade effluent that is permitted to be discharged into the municipal sewer system, and that it may well be untreated waste. Many of the samples would also have been in violation of the Regulation 3.7 of GNR 1191 special limits if they were applicable to the Bayne’s Spruit (it has been set above that no discharges are permitted into the Bayne’s Spruit). The bio-monitoring data shows that the river system

reached a severely degraded status in October 2001. This evidence supports the contention of stakeholders in the Sobantu community that the Bayne's Spruit is continuing to be polluted by the edible oil industry. Representatives of two of these companies were interviewed, but understandably neither company volunteered to claim responsibility for polluting the Bayne's Spruit.

The information in combination suggests that the PPP provisions contained in the NWA, NEMA and the IEBs have not been successfully implemented, and that companies are continuing to free ride on the waste disposal services provided by the Bayne's Spruit. The next chapter sets out the core findings of semi-structured interviews conducted to identify the factors preventing the successful implementation of the PPP.

## **CHAPTER 6:**

# **FACTORS PREVENTING THE SUCCESSFUL IMPLEMENTATION OF THE PPP**

### **6.1 INTRODUCTION**

It is evident from the literature review set out in chapter 2 that, for the purposes of this case study, the main instruments applicable in respect of implementation of the PPP are contained in the IEBs, the NWA and NEMA. This chapter sets out the core findings of the qualitative semi-structured interviews conducted to identify what factors are preventing the successful implementation of the PPP provisions contained in these bylaws and legislation. Given that the NWA obliges polluters to take reasonable measures to prevent pollution of water resources, this chapter will commence by setting out factors relevant to the failure of the edible oil industry to take these measures. The chapter will then proceed to set out the factors preventing successful implementation of the provisions contained in the NWA and in the IEBs respectively. Enforcement complexities applicable to implementation of the criminal sanction provisions contained in both the NWA and the IEBs are dealt with thereafter as a separate category of factors preventing successful implementation of the PPP.

### **6.2 EDIBLE OIL INDUSTRY**

#### **6.2.1 Uncooperative attitude & lack of environmental ethic**

The NWA imposes an obligation on polluters to take reasonable measures to prevent pollution of water resources, and the IEBs stipulate that industrial effluent may not be disposed of other than into a municipal sewer system. However, the evidence presented in chapters 4 and 5 indicates that the edible oil industry is not complying with these obligations.

Contraventions of these provisions are referred to by a number of the interviewees. Greatwood, for example, expresses his opinion that pollution problems result because these companies are not complying with the spirit of the IEBs. He advises that most industries in Pietermaritzburg are co-operative when approached to improve their effluent treatment systems, “[b]ut it seems the oil industries just see things in a different way” (Greatwood 2001, Appendix B: 41). On some occasions in the past, edible oil companies confronted with evidence of illegal discharges have deflected blame towards their workers. Greatwood relates being advised by an edible oil company confronted with an illegal discharge that they had “fired the guy... who was operating the pre-treatment works was always drunk, and that’s why things have gone the way they have etc, we’ve fired him, it won’t happen again, we’re

*bringing someone in now, and they're gonna fix up the pre-treatment plant"* (Greatwood 2001, Appendix B: 40). He also mentions that when pressure has been placed on these companies to improve their effluent treatment plants, they have employed consultants to prepare reports. However, *"that's as far as it would go... Umgeni would try to push them, and they would say well you know we are working on it, but just getting the funds together and it would delay and delay and delay and delay it until they had absolutely no option but to then do something"* (Greatwood 2001, Appendix B: 41).

Joubert also comments that the owners of these factories have a major attitude problem, and that they are notorious for *"for not giving two hoots about the environment"* (Joubert 2001, Appendix B: 62). He goes on to state that he thinks that the *"biggest problem is a lack of awareness of the environment"* (Joubert 2001, Appendix B: 63) and also points to a lack of education. Joubert states that, unlike most companies that will take pride in their factories, the edible oil companies on the whole do not properly maintain their plant and equipment, and do not pay much attention to environmental housekeeping. As a result, the edible oil factories look *"like a dog's breakfast"* (Joubert 2001, Appendix B: 63).

A number of examples were cited by interviewees to illustrate the attitude and ethic of these companies. Greatwood, for example, refers to a case in the past when one of the edible oil companies was revealed to be illegally *"dumping a highly toxic acidic effluent at two, three in the morning"* (Greatwood 2001, Appendix B: 1), a time when discovery would have been less likely. However, because there was no other flow of domestic or industrial effluent into the sewer at this time of the morning, severe corrosion of the sewer system resulted. This corrosion led investigators to the premises of the offending company. The company settled a civil claim with the City Engineer's Department for the replacement cost of this sewer, on condition that the matter was not publicized.

Mulder (2001, Appendix B) cites another example where a company was discovered to have bricked up its storm water drain to illegally divert untreated trade effluent into the sewer. This incident was reported in the Natal Witness (see paragraph 4.2.2 above). He also advises that some of edible oil companies have been guilty of pumping effluent directly into storm water drains.

Some of the edible oil companies have also resorted in the past to illegally dumping effluent using tanker trucks. Greatwood advises that it is not unusual for some edible oil companies to “...go and take the effluent out in a tanker truck and go and dump into a sewer somewhere else, and how are you going to prove it was them, you know? There was a particular manhole a number of years ago where you could see effluent of high acidity, had been dumping effluent into it because...the brickwork and all the mortar between the brickwork had all been damaged (Greatwood 2001, Appendix B: 39).

Joubert comments that some of these companies can react aggressively to pressure placed on them to comply with the law “to the degree that they threaten if you get too involved in the situation...my boss... was actually threatened with his life at home” (Joubert 2001, Appendix B: 62).

### **6.2.2 Profit maximisation**

Speaking in general terms about the problem of pollution of the Bayne’s Spruit by the edible oil industry, Seedat offers the following speculative answer to the question of why these companies pollute: “Of course he’ll be doing this to save himself a couple of bob as far as effluent treatment is concerned... these are all basic scams to maximise profit and save on effluent treatment” (Seedat 2001, Appendix B: 104). Seedat believes that to approach the problem by encouraging the edible oil industry to improve its effluent treatment and environmental performance on the one hand, while seeking to achieve compliance through prosecutions on the other hand, will not work. He expresses the opinion that the effluent problem has to be addressed by finding a “cheap and equitable solution” (Seedat 2001, Appendix B: 102).

Seedat (2001, Appendix B) states that generally profit margins are under pressure in the edible oil industry, and that tonnage produced is of prime importance. As a result, it is difficult for small refiners in particular to contemplate spending hundreds of thousands of Rands on an effluent treatment plant “...even though you might suggest to me that, hang on, the bylaws stipulate that you must treat your effluent... I will do the bare minimum, in which case I will wait on the fringes, on the boundary of acceptability” (Seedat 2001, Appendix B: 102). Mulder echoes this statement, stating that he believes the edible oil companies have the money to install effective effluent treatment plants, but that “they don’t see the benefit of spending half a million Rand on an effluent plant” (Mulder 2001, Appendix B: 119).

The profit motive was also picked up by other interviewees. Joubert, for example, stated that in his experience “[w]herever we have dealings with these guys they couldn’t give a damn, it’s this that counts, the money that they make” (Joubert 2001, Appendix B: 62). He expressed an opinion that these companies appear to be unable to set aside funds for maintenance and upgrading of equipment an effluent treatment plants because they are “only interested in making money (Joubert 2001, Appendix B: 63).

Mulder also believes that the edible companies are illegally discharging effluent because it saves them money. Treatment of effluent or disposal through a waste disposal company can be costly, while discharging to the sewer renders the companies liable for payment of charges based on COD concentrations in the effluent. As a result, if the companies can “get away with it they will do it...they know that council and the law is not very effective at all” (Mulder 2001, Appendix B: 108).

Seedat is of the opinion that trying to lay blame on individual companies is not the way to approach the problem, however. He concedes that edible oil producers need to be “well within the bounds of environmental conscience. It is for this reason that I’m saying... we need to look at effective effluent treatment. And we need to look at cost-effective effluent treatment, and the maintenance thereof” (Seedat 2001, Appendix B: 105). Without these solutions, Seedat believes that all that monitoring will achieve will be a window period where the river is not polluted. However, once attention is no longer focussed on the problem, one of the companies will dump effluent and cycle will start again.

### **6.3 IEBs**

The IEBs make provision for implementation of the PPP by requiring companies applying for permission to discharge industrial effluent into the municipal sewer to be responsible for payment of the application costs. In addition, companies that are discharging trade effluent into the municipal sewer are liable to pay charges as calculated in terms of the industrial effluent tariff. Finally, the IEBs make it an offence not to comply with any of the provisions contained in the bylaws, which would include discharging waste elsewhere but into a sewer and discharging industrial effluent into the municipal sewer without permission or in excess of the limits set out in the IEBs.

#### **6.3.1 Permissions granted under old bylaws valid**

The IEBs contain wide-ranging provisions making a company liable for the costs associated with obtaining permission to discharge trade effluent into the municipal sewer. However,

companies like Willowton and Sealake were in existence prior to the inception of these bylaws in November 1998. This is significant as bylaw 22 deems *inter alia* that any permission granted under any bylaw repealed by the IEBs shall be deemed to have been granted under the IEBs. Greatwood points out that *“one of the problems with the polluter pays principle as it stands there is that it laid out the terms by which a new industry coming into Pietermaritzburg would have to apply to be a trade effluent user... But it didn't apply to anyone that was presently operating, and weren't changing their process in any way”* (Greatwood 2001, Appendix B: 40). As a result, the wide range of powers granted to the City Engineer by bylaws 3, 4 and 10, and which give effect to the preventative aspect of the PPP, are not applicable to edible oil manufacturing companies that were already operating when the IEBs came into effect in November 1998.

### **6.3.2 Discharging without permission**

One company that was established after the promulgation of the IEBs in 1998 is Capital Products, the successor to the insolvent Capital Oil Mills. Greatwood (2001, Appendix B) points out that Capital Products is presently operating without permission to discharge industrial effluent into the sewer. When the new company was formed after a management buy-out of the insolvent Capital Oil Mills (Seedat 2001, Appendix B), the company obtained a temporary permit to discharge effluent into the municipal sewer provided that they complied with a number of requirements in respect of upgrading their effluent treatment plant and storage tanks before final permission would be given. The company failed to meet these requirements, and as a consequence the City Engineer never granted permission for the company to discharge effluent into the municipal sewer. Greatwood states that to his knowledge this company is not producing oil and that their effluent is nominal (Greatwood 2001, Appendix B). Seedat (2001, Appendix B) also claimed that Capital Products was not refining oil, but was bottling refined oil and producing margarine.

However, it is possible that this company has discharged illegally into the sewer without permission. Mulder stated that Umgeni Water had recently *“caught them illegally discharging”* (Mulder 2001, Appendix B: 120), and at the time of writing this dissertation a docket had been forwarded to the City Legal Advisor for consideration of a prosecution.

### **6.3.3 Capacity restrictions to invoking the ‘two-year’ reapplication clause**

The shortcoming of the IEBs with regard to certain provisions being applicable only in respect of new applications for permission to discharge effluent into the municipal sewer is

remedied somewhat by the provisions of bylaw 7(5)(b), which provides that any permission granted by the City Engineer in terms of bylaw 7 (and presumably including permissions granted under existing bylaws as contemplated in bylaw 22) terminates two years from the date of the granting thereof. Thus every company operating with permission is required to reapply every two years, affording the City Engineer the opportunity to exercise the powers contained in bylaws 3, 4 and 10.

Van der Merwe refers to this as a “*sunset clause*” (Van der Merwe 2001, Appendix B: 53), and states that he believes that it is applicable to companies operating under permits issued in terms of the old bylaws.

Greatwood was uncertain whether the two-year clause would apply to companies operating prior to the promulgation of the IEBs. He was concerned that if they did apply, however, the City Engineers would be faced with a serious problem as they lack the capacity to send out the necessary letters to all the industries concerned and then process the applications. He explains that:

*“...one of the biggest problems is a matter of staff capability. I mean, for example I used to be the Chief Sewerage Engineer, I was then promoted to Divisional Engineer, Water and Sewage. It’s been two and a half years now that I’ve been that, and I have no Chief Sewerage Engineer... they don’t have money to find someone... But even if they did, that person hasn’t got a Chief Technician... hasn’t got an assistant branch head. I mean I’m still trying to do that work plus my own, you know. That’s where the difficulties lie, with capacity to actually provide that service”* (Greatwood 2001, Appendix B: 44). As a consequence, the two-year re-application provisions have not been implemented to date.

### **6.3.4 Inadequacy of tariffs**

Fennemore advises that Umgeni Water was involved with the city council in developing the 1998 IEBs, a component of which is the industrial effluent tariff. As it stands, companies that discharge trade effluent into the municipal sewer are charged on the basis of volumes discharged and COD concentrations. Fennemore complains, however, that the proposed trade effluent tariff and the parameters chosen were modified by councilors due to political considerations (Fennemore 2001, Appendix B). However, Fennemore feels that in general the tariff is working, but that they have had problems with the edible oil industry. To get around this problem, automatic samplers have been put into the sewers of these companies (Fennemore 2001, Appendix B). In circumstances where companies exceed the effluent



quality requirements but the discharges are of such a nature that Darvill can cope with it and it will not have an impact on the environment, Fennemore is in favour of the City Engineer giving a relaxation to the offending company, who would then pay for the increased costs of treating such effluent (Fennemore 2001, Appendix B).

### 6.3.5 Institutional paralysis

The Pietermaritzburg local council accepts that it has primary responsibility for addressing river pollution within their area of jurisdiction (Ryder & Pather 2001, Appendix B). Pather states that *"...in terms of our stalwart... duties that is one of our responsibilities, and therefore... we have an obligation to deal with it... in... Pietermaritzburg. Because... we take the lead... if there is a problem we go out there and we make sure that... we take action, and... we have various legislation which we can use..."* (Ryder & Pather 2001, Appendix B: 8).

Joubert concurs that the local Authority is responsible for ensuring river pollution control within its boundaries. He complains, however, that the local authority is not controlling pollution properly within its boundaries. Joubert states that *"you have got to rely on the local authority... and let me tell you they are not doing their job: full stop. They are doing nothing. If you really want it from me, from the horses mouth. And it's a source of huge frustration for us because we get pulled into a situation that's a bloody mess... and we have to sort it out, when they should have done their job and sorted it out themselves...there's a lack of urgency amongst most of the municipalities"* (Joubert 2001, Appendix B: 58). Mulder expresses a similar sentiment, that *"nothing's been done. Council don't want to do anything"* (Mulder 2001, Appendix B: 107).

Van der Merwe offers the following explanation for the institutional paralysis of council: *"...there are so many issues of priority with transformation of local government...there's been so many changes in legislation that's brought so many different duties on officials and Council that... I think to be honest with you people don't really know where to start... that's what I can say to you as far as implementation is concerned"* (Van der Merwe 2001, Appendix B: 53). Asked whether he was aware of any occasions when the powers contained in the IEBs had been exercised in respect of the edible oil industry, Van der Merwe replied *"No. I'm not aware... of an instance where...the powers granted to the council have been used by the council... and there are quite, I think, considerable powers vested in the City Engineer, and I don't think it's been used"* (Van der Merwe 2001, Appendix B: 54).

Greatwood admits that provisions many of the PPP provisions contained in the IEBs have not been used to date (Greatwood 2001, Appendix B).

### **6.3.6 Perception of reluctance to deal with edible oil industry**

Mulder states that the local authority says that it wants to address pollution problems associated with the edible oil industry, *“but they’re very scared to do anything because... one company is the biggest ratepayer in Pietermaritzburg”* (Mulder 2001, Appendix B: 107). Mulder (2001, Appendix B) believes that the local authority agreed to allow these companies to set up in Pietermaritzburg because they would provide jobs, even though one of the companies was ejected from Sea Cow Lake in Durban. This permission was granted despite a recommendation to the contrary from the trade effluent section of the local council (where Mulder was employed at the time). Mulder thinks that the council has been too soft on the polluters for many years.

When queried on whether the city council felt pressure not to prosecute industry because of the importance of industry from a local economic and employment perspective, Ryder was adamant that the city council would not shy away from prosecuting even large companies. He conceded, however, that businesses have raised the issue of whether the local authority is trying to encourage or chase businesses away. He says that *“they try to get more concessions but I can honestly say in this section we’ve never taken it into consideration”* (Ryder & Pather 2001, Appendix B: 17)

### **6.3.7 Perceptions of corruption**

Some of the interviewees raised the possibility that the edible oil companies have been able to get away with their polluting activities for so long as a result of unnamed councilors being on their payroll.

Greatwood, for example, speculated that *“... you know it doesn’t take much to pay kick backs to people to look the other way, or not to...to take the sample given to them rather than the sample they take personally. I think that’s what would happen. If the guys would say ‘what’s it going to cost us to bribe this guy’, because once you’ve bribed him once you’ve had him, you’ve got him, and that’s the problem. The guy makes one slip and that’s it, he’s hooked in”* (Greatwood 2001, Appendix B: 49). He also makes reference to political interference, stating that it is necessary to try and implement the bylaws and *“... let’s see what political interference we get”* (Greatwood 2001, Appendix B: 49).

Mulder also refers to the perception of corruption. He speculates that *"they've got... I would say a couple of councilors and all these boys in their pocket because I don't know how they get away with it... I think they just pay everybody off, quite honestly. That's my honest opinion"* (Mulder 2001, Appendix B:107).

## **6.4 NATIONAL LEGISLATION**

As set out in Chapter 2, the NWA and NEMA contain provisions consistent with the PPP. The NWA provides the legal framework for the management and protection of South Africa's water resources. Sections 19, 151 and 155 of the NWA provide potentially potent legal options that could be implemented to give effect to the PPP.

### **6.4.1 Local authority not directly empowered to implement the NWA & NEMA**

Van der Merwe points out that while the local authority has primary responsibility to deal with pollution of rivers within its boundaries, authority to prosecute under the NWA or NEMA has not been delegated to the local council (Van der Merwe 2001, Appendix B). He advises that the NWA is being administered and prosecuted by DWAF, and is of the opinion that if it could be proved that effluent was illegally entering a public water, it would be appropriate to use the provisions set out in the NWA (Van der Merwe 2001, Appendix B).

This conflicts with Joubert's understanding that local authorities can take legal action in terms of the NWA (Joubert 2001, Appendix B).

### **6.4.2 DWAF playing a secondary role**

Joubert is of the opinion that DWAF's role in dealing with pollution of a water resource in a local area is secondary to that of the local authority. He does, however, recognise that DWAF must become involved if there is direct pollution of a water resource *"... because we administer the National Water Act. And... we can take legal action under that Act in terms of sections 19, 20 and various other sections of the Act... So that the first line of defence is them. We come in as the second line"* (Joubert 2001, Appendix B: 58).

### **6.4.3 DWAF lack of capacity**

Joubert states that DWAF does not have the staff to sample rivers, and that if the department was expected to do, it would never be able to do their job properly as there are a number of other major priorities in Natal. He states that DWAF is *"very thin on the ground. We can't be expected to patrol the river on a 24 hour basis"* (Joubert 2001, Appendix B: 58).

#### 6.4.4 Responsibility for monitoring rivers: hiatus between legislation and implementation

Fennemore explains that the Water Services Act of 1997 set out the functions that a water services provider such as Umgeni Water could provide, and that as a result they were no longer able to continue their river monitoring functions unless they could find a customer to pay for these services. DWAF is reported to have declined to pay for these services, and Umgeni Water is awaiting the establishment of Catchment Management Agencies to see whether they will be contracted to provide this service due to their ten years of experience in this area (Fennemore 2001, Appendix B). As a result, the river testing service being provided by Umgeni Water has been cut back (Fennemore 2001, Appendix B).

Asked who was responsible for monitoring now, Fennemore replied that *"[i]t is the Department of Water Affairs and Forestry's responsibility as the custodian of the water resources. They may hold the municipality responsible to a large degree for the monitoring of the rivers going through their property, so it would sort of be a joint thing between Water Affairs and the municipality. When the Catchment Management Agency comes into play, it will be their responsibility, and then Water Affairs would have a sort of a supervisory...gamekeeper type function"* (Fennemore 2001, Appendix B: 32).

Greatwood states that he is particularly concerned about Umgeni Water cutting back on their monitoring of the Bayne's Spruit. He feels that *"Umgeni water are playing quite a political game with councils at the moment, that's really half the problem. They're peeved off with the fact that that we're refusing to pay their water charges that they have set, and so we're just going into arrears with them... and almost as a backlash to that, they are saying 'we've got to cut costs, and therefore we can't afford to provide the service unless you pay us'"* (Greatwood 2001, Appendix B: 41). Greatwood points out that it's not as simple as just paying them, as the local council might decide that the service does not matter to them, or that environmental consultants might be able to provide the service cheaper than Umgeni Water. Greatwood goes on to point out that *"...I've had a fight with the Department of Water Affairs and said DWAF must step in here... and fund it..."* (Greatwood 2001, Appendix B: 41).

Given the capacity problems experienced by DWAF, it is unlikely that they would be able to monitor rivers for pollution. On this issue, Joubert stated unequivocally that DWAF *"rely on the local authority, it's their area, they must sample the river: full stop"* (Joubert 2001, Appendix B: 58).

#### **6.4.5 Confusion over functions**

It is evident that the local authority's Environmental Health Department is unclear of its responsibilities and authorities in terms of the NWA and NEMA, and they have made contact with DWAF and the Department of Environment and Agriculture in an attempt to clarify what their responsibilities are in terms of the new legislation. Pather raised the lack of co-ordination between DWAF, Umgeni Water and themselves as a problem. He cites an example of a recent occasion when he went to inspect a company, only to be advised by company officials that a regional authority official had recently been there and was satisfied with the company's arrangements. Pather explains that he saw problems, but that this situation made it difficult for him to raise any objection. He felt that "... *these officials should... at least contact us and say that they're going to this factory... and then we can say to them... 'no problem, can we go with?' and we could then go with one voice to try and sort out the problems... together*" (Ryder & Pather 2001, Appendix B: 9).

Pather expresses further concern that other organs of state "...*go to these places, we don't even know what's discussed, and they don't follow this thing through...and... you find that they make a whole lot of... demands... Then you find nothing happens. Because they're not accountable to the people. We're accountable. Because they go in there, make all these demands, and you find they don't deliver. They create this bad... feeling as well with the people. And then you find that we have to now go and... sort out the mess that was left behind*" (Ryder & Pather 2001, Appendix B: 10).

On the same theme, Ryder expressed concern that there is a trend towards more fragmentation again. He felt that integration was important, and that there needs to be clarity on the functions performed by each sector due to the confusion that the present situation is causing for government and industrialists (Ryder & Pather 2001, Appendix B).

#### **6.5 ENFORCEMENT COMPLEXITIES**

It is evident from the data set out above that the local authority is regarded as having the primary responsibility for dealing with pollution within its municipal boundaries, and that DWAF only becomes involved when these efforts fail. This section provides an overview of the factors preventing successful enforcement of the criminal sanction provisions contained in the IEBs, and goes on to set out the factors associated with enforcement of criminal sanctions in general. Factors relating to investigation difficulties are applicable in respect of both the IEBs and the NWA.

### 6.5.1 Inadequacy of penalties under the IEBs

The IEBs make it an offence for any person to discharge trade effluent other than into the sewer, or to discharge trade effluent into the sewer without permission or in excess of the standards set out in the IEBs. However, in terms of bylaw 21, a person found guilty of such offences is liable on first conviction to a fine not exceeding R500 or to imprisonment for a period not exceeding six months (or both). Mulder, who has 26 years of experience in the field of pollution control, complains that the local authority has for years been too soft on companies transgressing the bylaws. In illustration of this point, he points out that *“if you discharge over the limit and we take you to court the fine’s like R50 or R500”* (Mulder 2001, Appendix B: 111), whereas it could cost approximately R2000 for one waste skip to transport the effluent away.

Joubert also raises the inadequacy of penalties contained in municipal bylaws generally, and comments that *“unfortunately bylaws throughout the country are very lax, they’ve got no teeth”* (Joubert 2001, Appendix B: 59).

### 6.5.2 Enforcement set up at council

The local council’s legal advisor, Johan van der Merwe, describes the enforcement set up as a strictly vertical system where each separate department within the local council is responsible for enforcing the bylaws that pertain to their specific line functions (Van der Merwe 2001, Appendix B). Thus the City Engineer’s Department is responsible for enforcement of the provisions of the IEBs, while the Environmental Health department is responsible for the health implications of river pollution (Ryder & Pather 2001, Appendix B).

Van der Merwe is tasked with conducting prosecutions on behalf of the council (Ryder & Pather 2001, Appendix B). The limitations of this vertical system are illustrated by his frank admission that *“my role is more that of the last person in the chain in the event that the department concerned decides to institute a criminal charge. So I’m like a state prosecutor, I don’t deal with the day-to-day management or operation of and administration of bylaws at all. In fact I don’t know what’s going on in the field”* (Van der Merwe 2001, Appendix B: 55). For the purpose of instituting prosecutions, van der Merwe relies on the quality of the evidence in the dockets forwarded to him by the various departments. Some departments *“know exactly how we think and what we need and... if we go to court there is a very good chance that we will be successful. But the problem is where I get a file and the basic things haven’t been done, and I certainly don’t have the capacity to send files back and forth. The*

*only problem is I have no choice... if we don't have the evidence there is no way we will issue summons, it's as simple as that"* (Van der Merwe 2001, Appendix B: 56).

Van der Merwe is of the opinion that the high rate of littering, dumping and industrial effluent problems in Pietermaritzburg are *"...just an indication on a smaller scale as to the bigger problem with law enforcement in the council, where you don't have a coordinated approach where you have one department that could deal with all prosecutions"* (Van der Merwe 2001, Appendix B: 57).

### **6.5.3 Lack of administrative and enforcement capacity**

The department with the line function to administer and enforce the IEBs is the City Engineer's Department. Mike Greatwood freely admits that *"one of the problems has been that, from an enforcement point of view, I don't have the staff to do enforcement"* (Greatwood 2001, Appendix B: 38).

Commenting on the lack of capacity in the City Engineer's Department, van der Merwe states *"...never mind enforcing the principle of polluter pays, but if we're not set up to administer the day to day operation of the by-laws, we are way behind... it is not a question of lack or inadequateness of legislation"* (Van der Merwe 2001, Appendix B: 53). He also states that the IEBs are not being pressed.

### **6.5.4 Separation of operation of municipal sewer works and prosecution of IEBs offences**

Where companies exceed quality requirements for effluent discharged into the sewer, Umgeni Water send out a written notification to them. However, these notifications are seen as meaningless as *"we are unable to get a prosecution off the ground"* (Fennemore 2001, Appendix B: 24). Umgeni Water has compiled dockets for the purpose of prosecuting offending companies, which have been handed to the City Legal Advisor to deal with. Fennemore explains that the City Legal Advisor is overloaded with work and these prosecutions have not been pursued. Umgeni Water does have an agreement with the city council to conduct their own prosecutions, but Umgeni Water does not have funds to appoint private attorneys (Fennemore 2001, Appendix B).

Van der Merwe (2001, Appendix B) feels that there is uncertainty within the local authority, as well as between the local authority and Umgeni Water, regarding their respective roles. He

points out that in the past an agreement was reached between the local council and Umgeni Water, in terms of which Umgeni Water was to take over criminal prosecutions on behalf of the council for discharges in exceedance of the standards set out in the bylaws. He says that Umgeni Water “...endeavored to prosecute two or three companies but they were not successful and... I get the impression that Umgeni Water now feels that it’s too expensive and doesn’t work” (Van der Merwe 2001, Appendix B: 52). As a result, he confirms that Umgeni Water has reverted to the local authority asking them to conduct the prosecution of cases investigated by Umgeni Water.

Van der Merwe stresses that it is the City Engineer and the local authority who are legally responsible for enforcing the bylaws, not Umgeni Water. However, when the operation of Darvill was taken over by Umgeni Water approximately a decade ago, staff with expertise went over to Umgeni Water. Prior to this, the council had its own inspectors with right of access to company premises that he says did institute prosecutions. Van der Merwe is of the opinion that the consequences of the take-over on law enforcement were not investigated fully, and as a result lack of enforcement is a major area of concern to him (Van der Merwe 2001, Appendix B).

Greatwood is also of the opinion that some of the problems (with enforcement of the bylaws) stem from Darvill wastewater works being operated by Umgeni Water, who are also in charge of monitoring discharges into the sewer. He states that if the City Engineer “*were the operator of the sewage works, and we had staff that worked directly under me, then the process might be a little easier*” (Greatwood 2001, Appendix B: 38).

#### **6.5.5 Identification of the polluter (causation)**

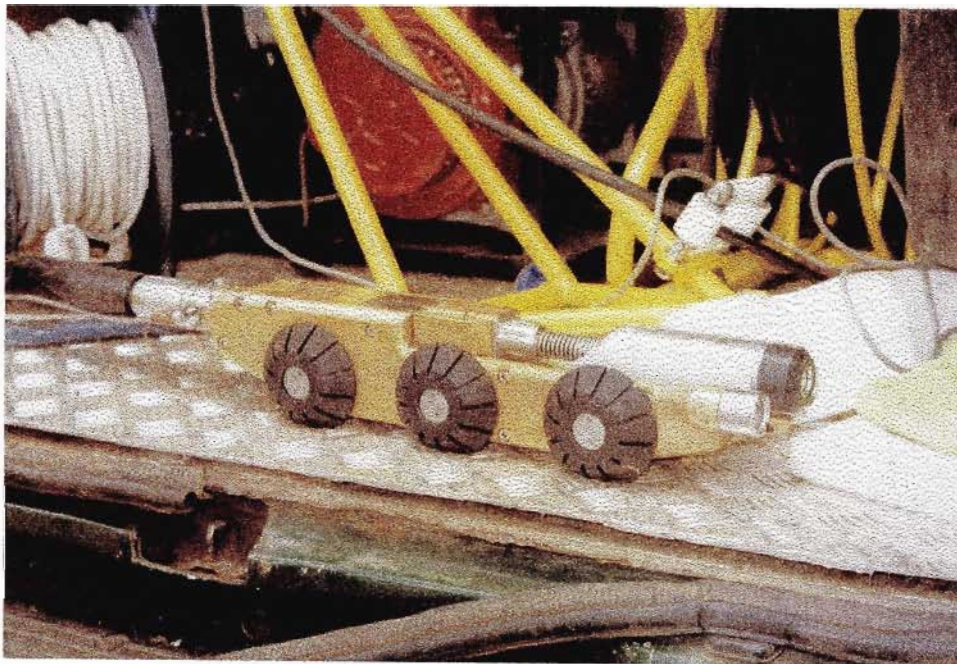
Ryder states that if the local council “*can find acceptance of responsibility*” (Ryder & Pather 2001, Appendix B: 8), then it has little difficulty in making the polluter pay for the cleanup costs associated with that pollution.

However, it is not often the case that the edible oil industry accepts responsibility for polluting events. Three of Pietermaritzburg’s five vegetable oil and soap manufacturing companies are connected to a common storm water system. As is evident from figure 5.3, the storm water system that originates at Sealake also connects to Birmingham Oil Mills and Capital Products. Thus effluent discharged from this storm water conduit and into the Bayne’s Spruit could potentially originate from one or more of these companies.



The local council is aware of this ongoing pollution. Pather, for example, stated that “[y]ou will find... a storm water drain which is continuously running with all kinds of liquid stuff. Now that is a common drain which... goes right up into Cardiff Road, Birmingham Road and Chesterfield Road” (Ryder & Pather 2001, Appendix B: 2). When shown a copy of a photograph indicating effluent being discharged into the Bayne’s Spruit from a storm water pipe-end, Pather advised that they had also taken similar photographs and knew of the problem (Ryder & Pather 2001, Appendix B).

The local authority proposes to solve the problem of identifying the source of pollution from this storm water conduit by making use of an expensive remote control camera that could be used to trace the source of the industrial effluent (See figure 6.1). However, at the date of writing this dissertation, the camera had not been put into use due to the wheels being too small for it to operate, and also because the light on the camera was found to be inadequate for taking video footage (Ryder & Pather 2001, Appendix B). However, the City Engineer employee trained in the use of this camera cast doubts on whether the highly expensive camera could be employed in storm water drains discharging highly acidic industrial effluent. He was concerned that the wheels and cable would be corroded (Fryer 2001 *personal communication*).



**Figure 6.1:** Remote controlled camera

Joubert commented on the difficulties inherent in identifying the offending polluter from a DWAF perspective, and stated that *“[t] problem lies in that a lot of the storm water drains fuse as they enter the river, so it’s very hard to tell which factory is actually causing the problem”* (Joubert 2001, Appendix B: 58).

#### **6.5.6 Access to company premises**

The difficulty of positively establishing the identity of a company polluting the Bayne’s Spruit from a shared storm water drainage system is exacerbated by difficulties experienced by the enforcement authorities in gaining access to the premises of companies suspected of discharging the effluent. High perimeter walls encircle these companies, and armed guards control the gates.

Pather referred to difficulty of gaining access to these companies, and points out that navigation of the security procedures causes a delay of up to half an hour. As a result, if the company concerned is illegally discharging effluent into the storm water drainage system, *“they’ve got... time to switch off the pumps... and switch off certain things that they would not want us to... pick up”* (Ryder & Pather 2001, Appendix B: 7).

Ryder cites an example of such a delay, and states that *“without exaggerating I think I’ve waited something like an hour outside a gate of a factory, at night in that Selford Road area. Parked there at night, hammered on the... cell phone, got the fire department out... tried to get hold of the manager and you’d find that there’s some guy in charge who won’t let you in and ja, that’s the sort of hopeless situation you have”* (Ryder & Pather 2001, Appendix B: 14).

Greatwood also raises the problem of gaining access to the companies, and states that *“whenever we wanted to gain access, whatever naughties they were doing they would just delay us at the gates long enough that we couldn’t get in, not we but Umgeni Water couldn’t get in”* (Greatwood 2001, Appendix B: 42).

This problem is shared by Umgeni Water in respect of identifying the point of origin of untreated industrial effluent discharged into Darvill. Mulder comments on the difficulties inherent in determining which company is responsible for an illegal discharge into the municipal sewer system. He states that if *“you go... even while it is flowing like in your pictures here from an industry... if you start tracing it by the time you get to that factory that*

*flow would have stopped and they would have flushed it, cleaned up everything. I've actually seen them using fire hose reels to pump effluent out of tanks into storm waters... we've caught them... When you go to one of these oil industries, they'll make you go to the receptionist, and the receptionist phones... Mr so-and-so, then you've got to fill in the thing, then you go to the security, by that time everything is packed away and clean. So it's access into the premises that is actually slowing... the whole tooty down"* (Mulder 2001, Appendix B: 108). Mulder mentions that some of these firms have staff on lookout duty, and that they sound the alarm if they see Umgeni Water vehicles approaching.

### **6.5.7 Open access to storm water drainage system**

Ryder advises that pollution of the Bayne's Spruit via the storm water system is partly a result of the open access drainage system in place. He states that "*...this open access to drains, it's an open card, you can play it when you like, at midnight, one 'o clock, flexible hose, another drain*" (Ryder & Pather 2001, Appendix B: 15).

Mulder also points to the open-access characteristic of the storm water drainage system as a problem, and comments that "*unfortunately there are storm water drains around, so if the guy can put it there and not pay that's it*" (Mulder 2001, Appendix B: 111). These drains provide these companies with the opportunity to discharge untreated effluent into the Bayne's Spruit at no cost.

### **6.5.8 Previous failed prosecutions**

It is evident that failed past attempts to prosecute the edible oil factories have resulted in the enforcement authorities taking a highly cautious approach to prosecuting the offending company. This point is illustrated by Ryder, who stated that he thinks "*the worst case scenario for us would be to go into a legal situation and lose the case, because... it would only add strength to... someone who's doing something illegal... for they should feel that they could actually succeed and then... put us in... a weak position. We would like to have conclusive evidence*" (Ryder & Pather 2001, Appendix B: 3). Ryder states that if there is any uncertainty, they would rather not prosecute than risk the embarrassment of losing the case. He acknowledges that the public might perceive the local authority as being a little soft, but is adamant that this is not the case. He says that the local authority is cautious because they want to be 100% certain that they will succeed with any prosecution.

Joubert points out that DWAF has also experienced difficulties in prosecuting the edible oil companies in the past. These prosecutions would have been instituted under the Water Act 54 of 1956, as no prosecutions have been instituted against the edible oil companies under the new NWA. Joubert states in respect of the Bayne's Spruit that *"...one of the major impacts in terms of pollution there is the oil factories along that river, we've had a war with them for the last seven years"* (Joubert 2001, Appendix B: 58). However, DWAF appears to have lost this war, as Joubert advises that there *"wasn't enough evidence to nail them. So we spent about 2 years messing around, and at the end of the day these guys weren't fined, they weren't jailed, nothing"* (Joubert 2001, Appendix B: 58). Joubert laments that *"I might sound a bit emotional but it really gets to you. There's not a hell of a lot you can do, you know, you take legal action and nothing comes of it"* (Joubert 2001, Appendix B: 63).

#### **6.5.9 Reliance on the criminal justice system**

Ryder advises that difficulties are experienced in relying on the criminal justice system for enforcement of criminal sanctions in respect of pollution offences. He states that *"[t]he legal process is also quite lengthy in terms of... actually getting to court... It's a slow process...one can resort to interdicts but they are also... very expensive, and there again you've got to have served the relevant notices and you've got to have exhausted the processes as well, so it's not something one could enter into lightly"* (Ryder & Pather 2001, Appendix B: 7).

Van der Merwe draws attention to the inherent difficulties associated with prosecuting environmental offences. He states that *"[c]riminal proceedings... could take a hell of a long time, and everything depends on the evidence. If you don't have sufficient evidence you're not going to be successful"* (Van der Merwe 2001, Appendix B: 54).

Fennemore believes that another problem with prosecuting polluters is that state prosecutors having conduct of such cases are unfamiliar with the complexities of prosecuting environmental cases as *"you're dealing with chemistry... they're not trained in chemistry and they don't understand the issues"* (Fennemore 2001, Appendix B: 54). Fennemore suggested that there is a need to educate prosecutors, and that it would be advisable to have a team of people to deal with the issues.

Mulder states that even when Umgeni Water has been successful in tracing the source of oil discharges illegally to Darvill via the sewer system, *"[t]hese guys have got enough money, they'll take us to court, it will be four years down the line, some small technicality and they*

get off it... so we're really battling to bring these people to justice" (Mulder 2001, Appendix B: 107). He suggests that the prevalence of violent crime in South Africa means that prosecutions for rape and murder take precedence over prosecution of environmental offences. He also refers to the length of time it takes to bring criminal prosecutions to trial, which often results in prosecutors being changed: "[b]y the fourth year... by the time you get into court, the poor guy, public prosecutor knows nothing about it" (Mulder 2001, Appendix B:113). Mulder advises that these time delays create problems for witnesses who took prosecution samples, as their recollection is understandably obscured by time. This can result in difficulties proving the chain of evidence, and can also result in witnesses no longer being available to testify (Mulder 2001, Appendix B).

### 6.6 SUMMARY

The findings set out above identify a number of factors preventing successful implementation of the IEBs. A critical discussion of these factors, which are summarised in table 6.1 below, is presented hereafter.

**Table 6.1:** Summary of factors preventing successful implementation of the PPP

<p><b>1. Edible Oil Industry</b></p> <p>1.1 Uncooperative attitude and lack of environmental ethic</p> <p>1.2 Profit maximisation motive</p> <p><b>2 Local authority &amp; the IEBs</b></p> <p>2.1 Permissions under granted under old bylaws valid</p> <p>2.2 Discharges without permission</p> <p>2.3 Capacity restrictions to invoking the '2-year' reapplication clause</p> <p>2.4 Inadequacy of Tariffs</p> <p>2.5 Institutional paralysis</p> <p>2.6 Perception of reluctance to deal with edible oil companies</p> <p>2.7 Perception of corruption</p> <p><b>3 National Legislation</b></p> <p>3.1 Local authority not empowered to use NWA and NEMA</p> <p>3.2 DWAF playing a secondary role</p> <p>3.3 DWAF lack of capacity</p> <p>3.4 Responsibility for monitoring river pollution: hiatus between legislation and implementation</p> <p>3.5 Confusion over functions</p> <p><b>4 Enforcement complexities</b></p> <p>4.1 Inadequacy of penalties under IEBs</p> <p>4.2 Enforcement set up at local council</p>
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- 4.3 Lack of enforcement and administrative capacity (City Engineer)
- 4.4 Separation of operation of municipal sewer system and prosecution of IEB offences
- 4.5 Identification of polluter (causation)
- 4.6 Access to company premises
- 4.7 Open access to storm water drains
- 4.8 Previous failed prosecutions
- 4.9 Reliance on criminal justice system

The preceding section of this chapter presented the perspectives of the various interviewees on the factors they perceived to be preventing the successful implementation of the PPP in respect of the Bayne's Spruit. The following section explores each of these factors under the same headings.

## **6.7 DISCUSSION**

None of the role-players or stakeholders interviewed contested the notion that the PPP was not being successfully implemented. There appeared to be consensus that it was not.

### **6.7.1 Edible Oil Companies**

#### **6.7.1.1 Uncooperative attitude and lack of environmental ethic**

The interviews conducted suggest that the edible oil industry is a particularly problematic one. The industry has historically been generally uncooperative with officials trying to reduce pollution, and some companies have actively sought to take advantage of institutional, regulatory and infrastructural shortcomings. Such abuses include illegal dumping of untreated trade effluent into the Bayne's Spruit, onto open land or into the sewer system. In general, it appears that housekeeping in these companies is poor, and that this situation exacerbates pollution problems. The DWAF inspection records reviewed in chapter 4 above, for example, indicate that these factories still need to pay attention to bunding, maintenance of their effluent treatment plants and to leakages. This information, in combination with the opinions of the interviewees, suggests that these companies lack a well-developed environmental ethic.

#### **6.7.1.2 Profit maximisation motive**

These uncooperative attitude and lack of environmental ethic seems to stem from the primary importance these companies place on maximising short-term profit. 'Free riding' provides an opportunity for these companies to reduce costs of production in an industry where profit margins are low, and where volume of production is crucial to profitability. Effluent treatment equipment is expensive and only provides long-term benefits, while effluent treatment and

lawful disposal can be costly. Thus if companies can get away without having to pay for the costs of treating their effluent, they are doing so. Importantly, given the competitive nature of the industry, free riding gives offending companies a competitive edge over their opposition by reducing production costs. This may then encourage other edible oil companies in the vicinity to follow suite, especially where they see their neighbor discharging illegally, for free and with impunity.

### **6.7.2 IEBs**

It is evident from the interviews conducted that there is general consensus that the local authority has the primary role to play in implementing the PPP in its area of jurisdiction. This means that the IEBs, the local authority's main legislative tool for dealing with trade effluent generated within the confines of the municipality, is the primary instrument through which the PPP can be realised at a local level. The findings show, however, that the IEBs have not been successful in implementing the PPP despite them being designed with the PPP in mind.

#### **6.7.2.1 Permissions granted under previous bylaws**

It is evident from the bylaws and the findings that companies operating with permissions granted prior to the inception of the IEBs in November 1998 were excluded from having to reapply for permission. As a result, none of the then existing edible oil industries were required to make such an application, to advertise their intent, or to provide information or to execute any works under these bylaws. Thus when the researcher requested sight of any information held by the local authority detailing the layout of the factories, the activities undertaken and nature of effluents produced by the edible oil companies, the local authority replied that it did not hold any such information in its possession (Greatwood 2001 *personal communication*). This is a serious shortcoming in the IEBs, as the very companies who were known to be polluting the Bayne's Spruit, and who were also discharging effluent problematic to the wastewater treatment works, were exempted from the application process and the PPP provisions such applications invoke.

#### **6.7.2.2 Discharges without permission**

The data presented suggests that one company is operating without permission to discharge trade effluent into the sewer, but may be discharging effluent despite this. If this allegation is true, then it appears that the permission provision may easily be circumvented. Such illegal discharges can be dealt with by way of criminal sanctions, and the difficulties associated with enforcing these sanctions are discussed in the section on enforcement complexities below.

#### **6.7.2.3 Capacity restrictions to invoking the '2-year' reapplication clause**

The shortcoming of the IEBs outlined in section 6.7.2.1 above can be addressed by invoking the provisions of bylaw 7(5)(b), which states that any permission granted by the City Engineer in terms of bylaw 7 would terminate two years from the date of such permission having been granted. Read with bylaw 22, which provides *inter alia* that any permission granted under the provisions of any bylaw repealed by the IEBs shall be deemed to have been given under the IEBs, it appears that this subsection is also applicable in respect of permissions granted under the old bylaws. As it stands, more than two years has passed since the IEBs were promulgated under M.N. 93, 1998. Thus all companies operating under permissions that are more than two years old are required to reapply for permission. This gives the City Engineer a unique opportunity to obtain information on the processes, waste generation and treatment capabilities of edible oil companies that were operating when the former bylaws were in force. The notice provision would also give affected parties, such as the downstream Sobantu community, the opportunity to make representations to the City Engineer, who could in turn invoke the PPP provisions of bylaws. However, Greatwood stated that the City Engineer's department lacks the capacity to undertake this administrative function. As a result, it is unclear when or whether the two-year renewal clause will ever be invoked. Thus the City Engineer's lack of capacity to administer the industrial effluent bylaws is an important factor preventing the successful implementation of the PPP through the mechanisms provided in the IEBs.

#### **6.7.2.4 Inadequacy of tariffs**

Another factor highlighted during the interviews was the inadequacy of the industrial effluent tariff. Fennemore advises that when the IEBs were finalised, COD was the only parameter incorporated for raising charges. This means that exceedances of the other parameters (e.g. SOG, Conductivity, pH etc) are only punishable as an offence. The tariff does not take into account the degree to which the effluent exceeded the standards (other than in respect of COD), and does not impose charges related to the costs of treating this effluent. This aspect of the IEBs could result in companies struggling to satisfy certain parameters looking to avoid criminal sanction by discharging such effluent into the sewer at times when it was unlikely to be caught, or alternatively directly into the Bayne's Spruit.

#### **6.7.2.5 Institutional paralysis**

There is a general perception that the local authority is either not doing enough, or is alternatively doing nothing to deal with the problem of industrial pollution of the Bayne's Spruit. This reality must be seen in light of the City Engineer's lack of capacity to administer



and enforce the bylaws, while very real enforcement complexities are in all likelihood exacerbating the perception of institutional paralysis. Van der Merwe agrees that the IEBs are not being pressed, and casts doubt on whether they are even being administered. He attributes this failure in part to the many issues of priority and new duties facing transforming local councils.

#### **6.7.2.6 Perception of reluctance to deal with the edible oil industry**

Mulder is of the opinion that local council does not want to do anything, and feels that this reluctance is due to the companies being important ratepayers and employers in Pietermaritzburg. This allegation is denied by the local authority, and Ryder gives an assurance that it will not shy away from prosecuting even large companies.

#### **6.7.2.7 Perceptions of corruption**

The possibility that some councilors may be corrupt fuels speculation about the local authority's failure to deal with pollution of the Bayne's Spruit by the edible oil companies. While there may be truth to these perceptions, this research was unable to obtain first hand evidence that this was the case. It is therefore debatable whether corruption is a factor preventing successful implementation of the PPP, although perceptions of corruption may well be hampering its implementation.

### **6.7.3 National legislation**

As discussed in section 2.3.7.5 above, the WDCA is in the process of being designed and its implementation is some years away. In any event, within the context of the case study it will only really be relevant in respect of discharges by Darvill into the Msunduzi river as the Bayne's Spruit (a tributary of the Umgeni River), is excluded from the General Authorisations contained in the NWA in respect of discharges of waste into water resources. In addition, efforts to achieve integrated pollution control are still in the formative stages, having reached the stage of a White Paper.

Thus within the context of this case study, two national Acts play an important role with regard to implementation of the PPP: the NWA and NEMA. Section 19 of the NWA and Section 28 of NEMA give effect to the preventative and punitive aspects of the PPP, and are the product of South Africa's environmental law reform process. As such, it is reasonable to expect that they would play a central role in implementing the principle that the polluter should pay.

#### **6.7.3.1 Local authority not directly empowered to implement the NWA and NEMA**

The NWA is the national framework legislation aimed at managing and protecting South Africa's water resources. Section 19 of the NWA gives wide powers to CMAs to issue directives requiring polluters to remedy pollution of water resources. In lieu of the polluter taking such steps, the CMA may do so itself and recover costs from the polluter. Section 151 of the NWA also makes it an offence to fail to comply with such a directive or to pollute a water resource. CMAs are still in the process of being set up and are some years away from becoming operational (Seetal 2001, Appendix B), and thus in the interim this authority vests in the Minister of Water Affairs and Forestry.

However, the local authority and the regional DWAF authority concur that it is the local authority who has primary responsibility to address pollution of rivers in their municipal boundaries, despite the Minister of Water Affairs and Forestry being the custodian of the nation's water resources in terms of the NWA. This is problematic because according to the City Legal Advisor, the local authority is not authorised to institute prosecutions under the NWA or NEMA. It is submitted that in addition the local authority does not have the power under these Acts to issue directives. In reality, this means that the local authority must in the first instance rely on its own bylaws to implement the PPP and prosecute offending polluters, which has the effect of relegating the NWA to a role secondary to that of the local bylaws.

This is unfortunate as the PPP provisions contained in the NWA are more comprehensive than those contained in the IEBs. Unlike the NWA, the IEBs do not make provision for non-criminal legal instruments, such as the issuing of directives or making applications to the High Court for interdicts or other appropriate orders. This means that potentially effective legal instruments that could be used to implement the PPP have remained unused in respect of pollution of the Bayne's Spruit by the edible oil industry. The local authority must instead rely on the more limited provisions of the IEBs, or alternatively on provisions contained in other laws (such as the Health Act 63 of 1977).

The PPP could also conceivably be implemented through section 28 (4) of NEMA, which gives wide powers to the Director-General or Provincial Head of Department (Environmental Affairs and Tourism) to issue directives against polluters (who fail to take the measures set out in section 28 (3)) to investigate, evaluate and report on specific activities and to take specific reasonable measures. This section provides for consultation with any other organ of state when exercising this power, but does not empower local authorities to independently

issue directives. The local authority would have to rely on the provisions of section 28(12) where the Director-General or Provincial Head of Department failed to do so, which would entail giving 30 days notice prior to applying to court for an order directing the Director-General or provincial head of department to take any of the steps listed in section 28(4).

NEMA does, however, provide another potential option to the local authority. Section 32 provides that any person (including a juristic person) or group of persons may seek appropriate relief in respect of any breach of any provision of NEMA or any other statutory provision concerned with the protection of *inter alia* the environment. Thus it is conceivable that the local authority could utilise this section to apply to court for relief in respect of pollution of the Bayne's Spruit, on the basis that the polluting company was violating its duties under section 19(1) of the NWA and section 28(1) of NEMA. However, this entails a court application and does not compare with the powers vested in the Minister of Water Affairs (in lieu of the establishment of a CMA) under the NWA, nor does it compare with the powers vested in the Director-General or Provincial Head of Department (Environmental Affairs and Tourism) under NEMA, to issue directives without having to obtain a court order.

Section 33 of NEMA provides that any person may, in the interests of the public or in the interest of protecting the environment, institute and conduct a private prosecution in respect of any breach or threatened breach of any duty in any national or provincial legislation or any local bylaw. It is submitted that the local council could potentially opt to privately prosecute a company polluting the Bayne's Spruit for violating section 151(i) of the NWA. This may be a better option than prosecuting for a breach of the bylaws given that section 151(2) does not limit the fine for which a polluter is liable upon conviction for a first offence (unlike the IEBs which limit the fine to R500).

#### **6.7.3.2 DWAF playing a secondary role**

Joubert stressed that DWAF plays a secondary role to the local council in respect of river pollution within municipal boundaries, and comes in only as a second line of defence. It is not clear under what circumstances DWAF would get involved, especially in light of it having other priorities throughout the province. DWAF has been involved in inspecting the edible oil companies and has threatened to issue a directive under Section 19 if certain 'housekeeping' shortcomings are not attended to. At the date of writing this dissertation, no section 19 directives had been issued to the edible oil companies by DWAF.

#### **6.7.3.3 DWAF lack of capacity**

Joubert points out that DWAF does not have the capacity to monitor and sample rivers. He says that responsibility for monitoring is a grey area, but that DWAF relies on the local authority to fulfil this function as DWAF simply does not have the capacity to monitor rivers itself.

#### **6.7.3.4 Responsibility for monitoring rivers: hiatus between legislation and implementation**

The local authority has historically relied on Umgeni Water to perform the function of monitoring rivers for pollution. This has recently become a major problem because Umgeni Water's interpretation of the Water Services Act is that this is no longer a core function, and that it can only provide these monitoring services if it finds a client to pay for them. Greatwood points out that if the council has to pay for these services, they would need to consider firstly whether they need them, and secondly whether the service could be provided more cheaply by consultants.

#### **6.7.3.5 Confusion over functions**

It appears that the promulgation of the NWA and NEMA has resulted in some confusion over whether functions are to be performed by the local authority or DWAF. This has resulted in duplication of certain functions, such as conducting inspections of factory premises, which is frustrating for officials and confusing for industry. This has also proven confusing to the Sobantu community, who were uncertain whom they should report pollution of the Bayne's Spruit to (Mngadi & Sithole 2001, Appendix B).

### **6.7.4 Enforcement complexities**

The IEBs and the NWA both make provision for criminal sanctions to bolster or compliment the PPP provisions. However, problems with enforcement of criminal sanctions against the edible oil companies were highlighted by most of the government officials interviewed as an important factor preventing successful implementation of the PPP.

#### **6.7.4.1 Inadequate penalties under the IEBs**

Mulder stated that it is cheaper for polluting companies to pay a fine under the IEBs than it is, for example, to pay a waste disposal company to transport effluent for disposal at a licensed dumpsite. The IEBs make it an offence to discharge industrial effluent elsewhere but into a sewer, and require companies discharging trade effluent into the sewer under permission to ensure that the effluent does not exceed the standards set out in bylaw 11. Any person who contravenes or fails to comply with any provision in the IEBs is guilty of an offence under

bylaw 21 and will be liable upon first conviction to a fine not exceeding R500 or to imprisonment not exceeding 6 months. Thus any company discharging illegally into the Bayne's Spruit faces a maximum fine of R500 for a first offence, as would any company caught discharging into the sewer without permission or in exceedance of the standards set out in the IEBs. This penalty pays no regard to any costs incurred by the receiving environment, nor does it deal with costs borne by the downstream Sobantu community (including opportunity costs) or by Darvill (and ultimately the ratepayer of Pietermaritzburg) in having to treat the waste. This penalty is inadequate in implementing the PPP even if a conviction is handed down by court.

#### **6.7.4.2 Enforcement set up at council**

The enforcement set up at the local council is described by van der Merwe (City Legal Advisor) as having been a major problem within the council for years. He describes the set up as a strictly vertical one, where each separate department is responsible for enforcing the bylaws that pertain to their line functions. No department exists to co-ordinate prosecutions (or for that matter to conduct investigations). Van der Merwe complains that he is dependant on the quality of evidence in dockets handed to him, and given that he is responsible for a broad range of the local council's legal work, he does not have the capacity to keep sending deficient dockets back to departments to be tightened up. Van der Merwe attributes the general litter, dumping and industrial effluent problems to the enforcement set-up at the local council. Umgeni Water complain that they have compiled dockets in conjunction with the City Engineer's Department, but that these have not been prosecuted by van der Merwe (Fennemore 2001 *personal communication*). For some time this has been a source of frustration to Umgeni Water, who has been involved in investigating pollution incidents. At one point, an agreement was reached between Umgeni Water and the local council permitting Umgeni Water to appoint its own lawyers to prosecute. However, lack of funds and an unsuccessful prosecution has resulted in Umgeni Water reverting to reliance on the City Legal Advisor for these prosecutions. Whether the City Legal Advisor is best placed to prosecute offences under the IEBs is a concern, given the complex technical nature of such prosecutions combined with the high workload of Van der Merwe. He admits freely that he does not know what is going on in the field. It might be advantageous for whoever is to prosecute these cases to be more involved with the investigation so that cases can be compiled with legal input with a view to prosecution.

#### **6.7.4.3 Lack of enforcement and administrative capacity (City Engineer)**

The City Engineer's Department lacks capacity to administer and implement the IEBs. As a result, the local authority's main legal instrument for implementing the PPP remains largely unused.

#### **6.7.4.4 Separation of operation of municipal sewer and prosecution of IEB offences**

Greatwood attributes the problem of enforcing the IEBs to the fact that responsibility for the operation of Darvill (Umgeni Water) is separate from the responsibility to enforce the IEBs (City Engineers). It appears that when Darvill was taken over by Umgeni Water some years ago, a number of city council staff moved across as well, eroding the expertise and capacity of the City Engineers Department to conduct investigations. However, it is apparent that Umgeni Water and the City Engineer's Department do co-operate on investigations. This cooperation is of crucial importance if the IEBs are to be effectively enforced.

#### **6.7.4.5 Identification of the polluter (causation)**

The positive identification of the source of pollution is a prerequisite to prosecuting a polluter (under the IEBs, the NWA or NEMA), to issuing a directives under section 19 of the NWA (or Section 28 of NEMA), and to the Minister or Water Management Institution making application to the High Court for an interdict or other appropriate order. The Local Authority, Umgeni Water and DWAF emphasized difficulties that they have experienced in trying to establishing a *causal nexus* between pollution events in respect of the Bayne's Spruit (or in respect of the sewer) and the company responsible.

One of the main reasons for this difficulty emanates from the design of the storm water infrastructure in the case study area. Three edible oil companies are serviced by one storm water drain system that discharges directly into the Bayne's Spruit (see figure 5.5, storm water drainage system 1). Thus although the local authority is aware of continuous trade effluent charges emanating from this pipe-end, it has been unable to establish which of the three edible oil companies serviced by this drainage is responsible for the discharges. On at least one occasion, Umgeni Water traced these discharges to a point below Sealake and Birmingham Oil Mills (*personal observation*). However, this did not exclude the possibility that Capital Products was also discharging. In addition, there were no access points to take samples above the point where the Birmingham Oil Mills and the Sealake storm water drains connected, other than in the companies themselves. This is undesirable as gaining entrance to the companies would alert the companies to the investigation. Birmingham Oils is understood to not be operating any more, and thus suspicion is cast on Sealake as the offending company.

However, without being able to positively exclude the possibility that Birmingham Oils is discharging, reasonable doubt exists. This is a problem not only in respect of criminal prosecutions with stringent standards of proof to satisfy, but is also a problem in respect of issuing directives under section 19 of the NWA where a less stringent standard of proof would be applicable. These complexities would also face any concerned citizens or private individuals that wished to privately enforce the provisions of the NWA or NEMA.

#### **6.7.4.6 Access to company premises**

This problem of identifying the offending polluter is compounded by difficulties that the local authority and Umgeni Water have experienced in gaining quick access to the premises of companies suspected of discharging illegally into the storm water system or illegally into the sewer. Ryder, Pather, Greatwood and Mulder stressed the fact that the edible oil companies are characterized by high perimeter walls and tight security. A signing-in procedure at these companies results in a time delay that gives the suspected company the opportunity, if it was discharging illegally, to wind up its flexible hoses and clean the area with fire hoses. Greatwood and Mulder refer to isolated occasions where they were able to gain quick access and caught the offending company pumping effluent directly into the storm water drain.

#### **6.7.4.7 Open access storm water drains**

Another factor preventing implementation of the PPP is the open access of the storm water drainage system. This facilitates companies dumping effluent into the storm water system at will. In addition, this can create confusing situations such as with Willowton, where storm water that mixes with effluent is trapped in pits, but where a sluice gate is operated by the company, giving it the means to discharge this effluent and water into the Bayne's Spruit. Willowton's owner assures that no effluent is usually discharged through this sluice gate and that the effluent is recycled. However, he admits that during serious storm events, their pumps cannot cope with the volumes and that the sluice gate is then opened, discharging storm water and effluent into the Bayne's Spruit. Evidence of effluent deposits in the storm water trench linking Willowton to the Bayne's Spruit were observed during the course of this research, including on occasions when no recent rainfall events had been experienced. This raises the possibility that the company is abusing the current system.

#### **6.7.4.8 Previous failed prosecutions**

As a result of the open access, shared drainage system and the difficulties in gaining access to companies to sample effluent being discharged, the local authority and Umgeni Water have

largely been thwarted in their efforts to positively identify the source of trade effluent being discharged illegally into the Bayne's Spruit or of oil slugs discharged illegally into Darvill.

This has resulted in the City Environmental Health Department taking a highly cautious approach to prosecutions, with Ryder wanting conclusive evidence before instituting prosecutions. This is even more onerous than the standard of proof required for criminal cases (proof beyond reasonable doubt), and is perhaps a 'knee-jerk' reaction to previous unsuccessful prosecutions. DWAF also reported despondency over the possibility of successfully prosecuting the edible oil companies based on previous experience.

#### **6.7.4.9 Reliance on criminal justice system**

These failings are in part attributable to problems with the criminal justice system in South Africa. Interviewees pointed out that the criminal legal process is very lengthy, that prosecutors changed regularly, that the cases are expensive to conduct, and that state prosecutors and magistrates are mostly unfamiliar with complex environmental cases reliant on scientific evidence and chains of evidence. Mulder in particular drew attention to the realities of contemporary South Africa, where serious violent crimes take precedent in criminal courts.

Kidd (1998) argues that holding up the criminal law as a solution to environmental problems is misguided, and questions the suitability of looking to the criminal law to enforce environmental laws. Kidd (1998) points out that the essential difference between criminal law and other methods of securing compliance with the law is that it is only through the criminal process that fines and imprisonment can be imposed. However, there are disadvantages to using criminal law. Kidd (1998) states that "*[s]ome disadvantages will always be present, whilst others will be contingent on issues like political will and adequate resources for enforcement*" (Kidd 1998: 188). The ever-present disadvantages include the cost and time involved in criminal prosecutions, its reactive rather than preventative nature, problems of proof and obstacles presented by 'due process' safeguards. Kidd (1998) argues that other weaknesses in criminal prosecutions in South Africa include inadequate policing, lack of public awareness, difficulties of investigation and inadequacy of penalties. Kidd (1998) states that the lack of expertise of court officials is another problem. He points out that prosecutors are often young and have expertise in prosecuting common-law crimes and everyday statutory offences, and "*[b]ecause environmental prosecutions are few and far between.... there is no expertise in prosecuting these offences, which often require proof of difficult scientific facts*"



(Kidd 1998: 190). He goes on to state that even where cases are successfully prosecuted, *“magistrates can sometimes be intimidated by the intricacies of the scientific evidence into requiring proof beyond any doubt rather than reasonable doubt”* (Kidd 1998: 191). This statement echoes Ryder’s caution in approaching prosecutions. Kidd (1998) concludes that criminal law should be kept for serious cases. In other circumstances other available instruments should be effectively utilised.

## CHAPTER 7 – CONCLUSION & RECOMMENDATIONS

### 7.1 CONCLUSION

The process of global industrialisation has placed a tremendous amount of pressure on the earth's natural environment. Part of this pressure results from the disposal of industrial byproducts into the natural environment. The literature review conducted in Chapter 2 showed that in the past many nations attempted to deal with the challenge posed by pollution by prescribing standards to industries and specifying how byproducts should be treated before disposal. This approach is commonly referred to as a command and control approach to pollution control.

In the current global context, the free market system has manifested itself as the dominant economic system worldwide. However, the traditional approach to economics calculated the costs of production without reference to environmental costs, which were regarded as an externality. This resulted in the pollution assimilation capacities of the various environmental media being treated as a free good. The emerging discipline of environmental economics questions why people behave in ways that pollute the environment, and suggests that people pollute because it is the cheapest way of disposing of problematic waste and byproducts within the existing framework of economic and social institutions (Field 1997).

The PPP has been advocated by environmental economists as a potential solution to the failure of the market system to internalise the costs of environmental degradation. It is suggested that the use of economic instruments to achieve internalisation of these costs is a more efficient and cost effective option than the traditional command and control approach, which requires expensive monitoring, analysis and the institution of legal proceedings. In theory, environmental instruments are intended to provide price incentives for polluters to improve their environmental performance and minimise waste production. To achieve this, the polluter has to be charged an amount that makes it more expensive for him/her to dispose of waste into the environment than it is to install and/or operate effluent treatment equipment. The PPP also satisfies notions of justice, in that it is equitable that polluters, and not society, should be responsible for the costs of treating, disposing and cleaning up pollution.

The PPP was incorporated into the 1992 Rio Declaration, a product of the first Earth Summit on sustainable development. In line with the provisions of Principle 16 of the Rio Declaration, South Africa has endeavored to incorporate the PPP into its local and national legislation. As

such, the principle forms a cornerstone of pollution control and waste management (Glazewski 2000) in this country. Its successful implementation is crucial if South Africa is to achieve its objective of development that meets the needs of current generations without impacting adversely on the needs of the environment or on the ability of future generations to meet their needs. While DWAF is still in the process of setting up a WDCS, the PPP has been on the statute books since 1998. It was during that year that the PPP was incorporated into the NWA and NEMA, while Pietermaritzburg's IEBs were also designed with the PPP in mind.

However, despite the PPP being incorporated into these legal instruments, certain rivers in South Africa continue to be subjected to industrial pollutants. This research has focused on one such river, the Bayne's Spruit, as a case study. The research aimed to identify factors preventing successful implementation of the PPP in respect of the Bayne's Spruit, and employed a largely inductive, qualitative methodology to achieve the research objectives.

The research set out initially to explore the historical context of pollution of the Bayne's Spruit. A review of newspaper reports showed that the problems with pollution of the Bayne's Spruit by companies in the edible oil industry have been ongoing for more than a decade. This review also showed that pollution has been negatively impacting on farmers in Sobantu since at least 1994. Some companies have deliberately discharged untreated effluent into the Bayne's Spruit via the storm water drainage system, and some have contravened the IEBs by discharging oily effluent into the municipal sewer system. Criminal prosecutions have been brought against these companies, but at best they have only resulted in a small fine being levied against the offending company and/or director. At worst, these prosecutions have taken over four years and much state expenditure to reach an unsuccessful conclusion. The review of current DWAF files showed that the edible oil companies have room to make improvements in their environmental management and maintenance or installation of effluent treatment equipment. A review of historical bio-monitoring and chemical monitoring data confirms that the Bayne's Spruit has been consistently severely degraded by pollution. The instream ecosystem is largely dead in the reach of the river adjacent to and below the edible oil industries. This historical context confirms that the problem of industrial polluting of the Bayne's Spruit is an ongoing problem, while the bio-monitoring data indicates that the problem worsened in the period June to October 2001. This is cause for concern given that the PPP was incorporated into the NWA, NEMA and the IEBs in 1998. Assuming that successful implementation of the PPP would achieve the objective of minimising waste and pollution,

this data suggests that the PPP has not been successfully implemented in respect of pollution of the Bayne's Spruit by the edible oil industry.

The research also set out to determine what the current status of the Bayne's Spruit was, and to see whether physical evidence corroborated complaints made by community environmental organisations. Interviews conducted with representatives of the SEDN96 and co-op 1 confirmed that pollution continues to impact negatively on the downstream Sobantu community. This pollution threatens their ability to irrigate crops, and has also cost the community the opportunity of safely using the Bayne's Spruit for recreation and subsistence fishing. Community members who do swim and eat fish caught in the Bayne's Spruit face unknown health risks. Direct observation of the reach of the Bayne's Spruit adjacent to the edible oil industries revealed strong evidence of industrial pollution. The stream had a pungent chemical aroma, sewer fungus was prevalent in the stream and patches of effluent were observed floating on the surface of the stream. A storm water outlet that connects to three edible oil companies was witnessed discharging large volumes of effluent on several occasions. This pungent effluent was sampled, and test results indicated that the effluent was at times highly acidic. The effluent was also shown to have high COD and conductivity levels. Effluent was later sampled further up this storm water drainage system by Umgeni Water using an ISCO automatic sampler. Readings over a 48 hour period showed that effluent being discharged was very low in pH and had high conductivity readings. The effluent sampled on both occasions would have exceeded the standards for discharges into the municipal sewer system, and shows that companies within the edible oil industry may be avoiding payment of charges by free riding on the waste disposal services provided by the Bayne's Spruit. This evidence of industrial effluent being discharged illegally into the Bayne's Spruit via the storm water drainage system is a strong indication that the PPP has not been successfully implemented in respect of the Bayne's Spruit.

Having established the historical context and current environmental status of the Bayne's Spruit, the research focussed on identifying factors that were preventing the successful implementation of the PPP. This necessitated looking at what factors were preventing successful implementation of the PPP provisions contained in the NWA, NEMA and the IEBs.

Interviews conducted with representatives of the edible oil industry suggested that these companies lack a strong environmental ethic, and that the industry in general lacks a strong

environmental ethic. Some of these companies are polluting the Bayne's Spruit because it affords them the opportunity to reduce waste treatment and disposal costs, and thereby maximise profits.

In-depth, purposively sampled semi-structured interviews were conducted with representatives of the local authority, DWAF and Umgeni Water. The interviews suggested that the PPP was not being successfully implemented for a number of reasons. Some of the PPP provisions contained in the IEBs have remained latent because they were not applicable to companies that existed prior to these bylaws coming into effect. This shortcoming is exacerbated by the City Engineer's Department lacking the capacity to effectively administer the IEBs. As a consequence, the provision requiring all companies to reapply for permission to discharge pollution every two years remains unused. The tariff applicable to discharges of trade effluent into the municipal sewer was identified as another factor preventing successful implementation of the PPP. The tariff was based on COD concentrations only, and thus fails to take other pollutants into account. Other factors identified included institutional paralysis, perceptions of corruption at the local council and perceptions that the local council was reluctant to deal with the edible oil industry. Insofar as institutional paralysis is concerned, it is submitted that determined, firm and visionary action by the council will be required if pollution of the Bayne's Spruit is to be addressed by successfully implementing the PPP. Suggestions of corruption, and of an unwillingness to deal with the edible oil industry given its economic importance, were not substantiated by first-hand evidence, and remain perceptions only. History has shown that the council has been prepared to prosecute these companies in the past, and the perceptions referred to may result from a frustration that the edible oil industry has not been decisively dealt with. It is submitted, however, that the council faces very real enforcement complexities that are hindering successful implementation of the PPP.

Custody of South Africa's water resources vests in the Minister of Water Affairs and Forestry. The framework legislation for water management is the NWA, which vests power in the Minister (until CMAs are established) to issue directives to polluters and fulfill other pollution control functions. DWAF at a regional level believes that its role in respect of river pollution is secondary to that of the local authority. This is unfortunate as it has resulted in the PPP provisions contained in the NWA remaining largely unused. The reality that DWAF lacks the capacity to monitor rivers is a cause for concern as management of the nation's water resources should be the department's primary responsibility. Monitoring is a particular problem given that Umgeni Water is no longer officially tasked with this function, and a gap

has resulted. This gap might be filled by the establishment of CMAs, or if local authorities decide to employ consultants to perform the function. In the interim, it is commendable that Umgeni Water unofficially continues to monitor the Bayne's Spruit for pollution.

An important factor preventing successful implementation of the PPP in respect of the edible oil industry are difficulties associated with enforcement complexities. Companies with a weak environmental ethic but a strong profit maximisation motive will continue to discharge effluent into the Bayne's Spruit for as long as they can do so for free and with impunity. Effective enforcement is crucial to successful implementation of the PPP, as it would limit opportunities for polluters to evade payment of charges. This is desirable as carefully designed and implemented charges could be used to provide an incentive for companies to improve their environmental management and effluent treatment systems, provided that the charges were set at an appropriate level and were effectively enforced. Setting charges at a rate that provides longer-term opportunities to save costs by improving environmental performance may succeed in harnessing the tendency of the edible oil industry to want to maximise its profits. Enforcement is presently being hampered by a number of factors. The penalties provided for in the IEBs are set too low to act as a disincentive for companies to pollute (the maximum fine for a first conviction is R500, lower than the cost of a single waste skip). The enforcement set up at the local council is a vertical system that relies upon each department conducting its own investigations and submitting dockets to the City Legal Advisor. The City Engineer is responsible for implementing the IEBs but lacks the capacity to effectively enforce them. The City Health Department has more capacity, but does not institute prosecutions under legislation that incorporates the PPP and instead relies on other legislation such as the Health Act 63 of 1977. In reality, investigations of pollution of the Bayne's Spruit and of illegal discharges into the sewer are conducted by Umgeni Water in conjunction with the City Engineer's Department. Umgeni Water has been given the authority to hire attorneys to conduct prosecutions in respect of offences relating to exceedances of limits prescribed in the IEBs, but after an unsuccessful attempted prosecution it does not have a budget to continue instructing private attorneys. As a result, all prosecutions relating to IEBs offences are submitted via the line department to the City Legal Advisor, who does not get involved with investigations and has no specialised knowledge of environmental matters. Prosecution of an edible oil company was under consideration at the time of writing this dissertation, but according to Umgeni Water the matter did not seem to have progressed (Fennemore 2001 *personal communication*).



Other factors relating to enforcement complexities include the shared drainage, open access storm water system that makes it easy for companies to discharge effluent into the Bayne's Spruit, while making it difficult for the enforcement authorities to identify the offending company. In addition, prosecutions instituted under the Water Act 54 of 1956 were largely unsuccessful, and have resulted in some disillusionment on the part of enforcement officials.

Finally, problems inherent to using the criminal justice system constitute a factor preventing successful implementation of the PPP. Lengthy delays result in matters coming to trial years after the event, by which time witnesses may no longer be able to recall details or may no longer be available. Prosecutors may also change over the passage of time. Prosecutors and magistrates have little experience in dealing with environmental offences, and can be overwhelmed by the technical nature of the evidence presented. As a result, it is difficult to secure convictions, which sends a message to the edible oil industry that they can continue to avoid the costs of treating or disposing of their effluent properly by discharging it into the Bayne's Spruit with impunity and for free.

## **7.2 RECOMMENDATIONS**

### **7.2.1 IEBs**

#### **7.2.1.1 Two-year reapplication clause**

It is imperative that the 'two-year' reapplication requirement of the IEBs be invoked by calling upon polluting industries to reapply for permission to discharge trade effluent into the municipal sewer. Given that the City Engineer's Department lacks the capacity to perform this administrative function, consideration should be given to making a budgetary allocation to contract consultants to perform this function on behalf of the department.

#### **7.2.1.2 Enforcement of IEBs**

Enforcement of the IEBs in general needs to be tightened up. This requires proper coordination between the City Engineer and Umgeni Water, who have been engaged in investigating pollution incidents (of the river and the sewer). The provision of training to investigation staff on the laws of evidence and other requirements for successful prosecutions would be useful, while consideration should be given to instructing an environmental lawyer to provide input into investigations and to conduct prosecutions in court.

## **7.2.2 National Legislation**

### **7.2.2.1 Cooperation and coordination**

Protocols need to be developed to facilitate co-operation and co-ordination between local authorities and DWAF in respect of prosecutions and inspections.

### **7.2.2.2 Delegation of authority to issue directives**

Given that DWAF lacks the capacity to use the powers set out in section 19 of the NWA, these powers should be delegated by DWAF to water boards where they have capacity. This is permissible in terms of section 63(e) of the NWA, which provides that the Minister may, in writing and subject to conditions, delegate a power and duty vested in him/her in terms of the NWA to a water board. In the context of the case study, the water board is Umgeni Water.

### **7.2.2.3 Integration of investigations**

There is a clear need to integrate investigations of pollution problems, and perhaps a regional or national agency specialising in such action is required.

## **7.2.3 Enforcement Complexities**

### **7.2.3.1 Sampling points**

The simplest way to resolve the problem of identifying which company is responsible for discharging industrial effluent into the storm water system is for the local authority to install sampling points. These sampling points should be strategically placed to ensure that any effluent sampled could only have emanated from the company concerned. This would be of particular use in respect of companies such as Sealake, which is situated at a point where the storm water conduit begins. Capital Products is situated further down the shared line and a storm water drain runs along a servitude through its premises. Thus it would be necessary to confirm that readily accessible sampling points outside of the company existed immediately above and below the company. This would facilitate investigators sampling the effluent below the company while simultaneously being able to monitor at a point above the company. If no effluent was being conveyed in the storm water drain above the company but effluent was being conveyed immediately below, this should be sufficient to positively establish the identity of the company for the purposes of issuing a directive or instituting a prosecution.

### **7.2.3.2 Engineering solutions**

There may be engineering solutions to the problem of open access drains. If so, the costs of such engineering solutions will be a major consideration in assessing their viability. In any event, readily accessible monitoring points in the storm water system should negate the need

for major infrastructural changes. However, this will have to be bolstered by effective monitoring of these drains to remove the temptation to engage in ‘midnight evaporation’ of non-recyclable effluent. It would be useful to investigate using ISCO automatic samplers installed randomly in securely constructed monitoring points to monitor these drains more effectively for discharges. Another solution might be to install tanks in these systems with a certain holding capacity (Mulder 2001 *personal communication*). Regular inspections of these tanks could facilitate the sampling of what had been discharged over the last, for example, 24-hour period.

#### **7.2.3.3 Use of non-criminal legal instruments**

It is imperative that the non-criminal legal instruments contained in the NWA be used effectively in respect of pollution of water resources such as the Bayne’s Spruit. Options available include issuing directives to the polluting company, which can include a directive to cease any process causing the pollution. This is important as it would be very costly for an offending company to be forced to cease its production of edible oils. Another option is for the Minister of Water Affairs and Forestry to apply to the High Court for an interdict or other appropriate order requiring any company in contravention of the NWA to discontinue any activity causing the contravention and to remedy the adverse effects thereof. Kidd (1998) advises that the Department of Environmental Affairs has resorted to interdicting offenders in respect of contraventions of the Atmospheric Pollution Prevention Act due to the inadequate penalties prescribed in the Act. He states that the major advantage of this approach is that *“the result of closing down operations constitutes a major disincentive to the offender who will suffer losses as a result of inactivity far in excess of the fine which could have been imposed”* (Kidd 1998: 193). The issuing of directives or the option of applying to the High Court for interdicts under the NWA seems to provide the most favorable prospects of success. The issuing of directives is immediately effective, while applications to the High Court take much less time than criminal trials (although such applications can be very costly). In addition, a lower standard of proof is applicable while the ‘due process’ safeguards applicable to criminal cases is not. Exercising these instruments does not preclude instituting criminal prosecutions against the polluting company, which could still be exercised in respect of serious offences that are of an ongoing nature.

#### **7.2.3.4 Effective enforcement**

Effective enforcement of the PPP provisions of the IEBs and the NWA are imperative to provide a disincentive to these companies to engage in illegal polluting activities. At the same

time, however, emphasis needs to be placed on working cooperatively with these companies to engender an environmental ethic and to help find the cost effective and affordable effluent treatment highlighted by Seedat (2001, Appendix B). Training could be provided to these companies in this respect, while future research and the use of environmental auditing as a tool could be aimed at helping the companies to improve their environmental management.

#### **7.2.4 Recommendation for further study**

Given the poor environmental performance of the edible oil industry as a whole, it would be useful to conduct research into the environmental ethic and environmental management systems within individual edible oil companies. Environmental auditing could be used as an instrument during the course of the research, which should be conducted co-operatively with the companies with the aim of assisting them to improve their environmental performance.

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## **APPENDIX A**

PIETERMARITZBURG – MSUNDUZI TRANSITIONAL LOCAL COUNCIL

**INDUSTRIAL EFFLUENT BYLAWS**

**(EXTRACT FROM THE PROVINCIAL GAZETTE OF KWAZULU NATAL)**

1. In these bylaws unless the context indicates otherwise -

**"City Engineer"** means the official of the Council appointed to that post in the Council's service or, in his or her absence, the Deputy City Engineer;

**"Council"** means the Pietermaritzburg-Msunduzi Transitional Local Council or its successor in title;

**"foul water"** means effluent, including sewage, customarily discharged into a sewerage system, which is not industrial effluent;

**"industrial effluent"** shall mean any liquid, either with or without any particles of matter in suspension therein, which is discharged from or wholly or in part produced by or in connection with or as a result of any manufacture, trade, mixing, mining or chemical process or industry carried on at any premises;

**"operator"** means Umgeni Water;

**"the industrial effluent treatment works"** means the Darvill Waste Water Works;

**"sewer"** means a sewer which is the property of or is vested in the Council.

2. (1) Save by any other lawful means, industrial effluent shall not be discharged elsewhere but a sewer.
- (2) No person shall discharge or cause or permit to be discharged into any sewer any industrial effluent, whether or not it complies with the provisions of bylaw 11, without first having obtained the written permission of the City Engineer in terms of bylaw 7 or, if such

permission has been obtained, otherwise than in accordance with any and all such conditions attached to such permission.

3. An application for permission to discharge industrial effluent into a sewer shall be accompanied by -
  - (a) a written consent from the owner of the premises, where the applicant is not the owner thereof;
  - (b) such plans, in triplicate, and such other particulars as are necessary to describe the premises, drainage system and any works, apparatus or plant from which the industrial effluent is to be discharged and to identify the sewer to which the discharge is to be made and the point of discharge;
  - (c) particulars of the anticipated nature, composition, temperature, volume and rate of discharge of, and the proposed method of any treatment of the industrial effluent and the period or periods during which the industrial effluent is to be discharged;
  - (d) a general description of the process or activity giving rise to the discharge;
  - (e) a description of the techniques to be used for preventing the discharge into any environmental medium of such industrial effluent;
  - (f) proposals for monitoring the discharge of such industrial effluent;
  - (g) any additional information which the applicant wishes the Council to take into account in considering the application; and
  - (h) a nominated address at which the applicant agrees to accept service of all notices contemplated in these bylaws.
4. (1) Simultaneously with the making of an application contemplated in bylaw 3, the applicant shall publish in a newspaper designated by the City Engineer notice of such application.

(2) A notice under sub-bylaw (1) shall contain, as a heading, the words "Discharge of Industrial Effluent" and shall -

- (a) state the name of the applicant;
- (b) give a general description of the industrial effluent;
- (c) state the nature of the trade or industry;
- (d) state the name and location of the premises from which the industrial effluent is to be discharged;
- (e) state the place at which, and period during which the application may be inspected; and
- (f) state the date by which, and the place at which objections may be lodged.

(3) The application shall lie for inspection by interested parties in the office of the City Engineer, for a period of 14 (fourteen) days after publication of the notice.

5. (1) Where notice of any application has been published under bylaw 4, any person having an interest in the matter may, within 14 (fourteen) days after the date of such publication, lodge any objections or representations in writing addressed to the City Engineer, stating -

- (a) the person's name and address;
- (b) the person's interest in the matter;
- (c) the matter in respect of which the person is objecting to the application or in respect of which a representation is being submitted;
- (d) the grounds for objection or representations; and
- (e) whether or not a hearing is requested.

- (2) The City Engineer shall consider every application and any objection thereto and shall consult the operator and may consult such persons and authorities as he or she deems necessary for the purposes of considering such application and any objections thereto.
  - (3) Every applicant and objector shall, during the consideration of an application and any objections thereto, be entitled to attend before the City Engineer in person or, if such person is a body corporate, to be represented by a person authorised thereto by such body corporate and shall be entitled to be heard.
  - (4) The City Engineer shall, if requested by the applicant or any objector, and may, if he/she considers it necessary, convene a hearing; in which event he/she shall give notice thereof by letter sent by ordinary post to the applicant and every objector of the date, time and place of the hearing.
6. Any interested person may inspect any documents relevant to the application until the application is determined.
7.
  - (1) If, after consideration of an application and any objection thereto and after consultation with the operator, the City Engineer is satisfied that -
    - (a) the capacity of the sewer and the sewage treatment works will be sufficient to permit the conveyance through the sewer of industrial effluent;
    - (b) the industrial effluent will receive such preliminary treatment before discharge into the sewer as in the opinion of the City Engineer will ensure that it does not unduly endanger the health and safety of persons working in the sewer, and will render it innocuous to the materials of which the sewer is constructed and to the plant and equipment of the treatment works;
    - (c) the industrial effluent will comply with the standards prescribed in bylaw 11;
    - (d) the industrial effluent will be of such a nature as not to interfere or will not be likely to interfere with the free flow of the contents

of the sewer and will be of such a nature as to be capable of effective treatment and disposal at the treatment works;

- (e) the approval of all plans and particulars, if any, required by the Council in terms of the National Building Regulations and Standards Act, 103 of 1977, have been obtained;
  - (f) the execution of any drainage and sewerage works, if any, including storage, pre-treatment and metering installations, and the provision of pipes, drains, fittings and the like required by the City Engineer in terms of bylaw 10, have been completed;
  - (g) the applicant has a satisfactory emergency response and management plan for the containment of spillages in place;
  - (h) the payment of a refundable deposit is made to make provision for the reinstatement of a sewer or other infrastructure or equipment which is the property of, or is vested in, the Council, as a result of damage caused by industrial effluent;
  - (l) any other conditions lawfully imposed by the Council have been complied with, the City Engineer may, subject to such conditions as to time and rate of discharge as he/she may impose, and the payment of such charges as prescribed in the Council's tariff of charges, grant written permission for industrial effluent from any trade premises to be discharged into the sewer; provided that the City Engineer shall not grant such permission except in consultation with the operator.
- (2) The City Engineer may, in his or her discretion, require the applicant to execute trial tests of discharges to evaluate the application.
  - (3) Testing of industrial effluent for the purposes of evaluating an application for permission shall be done at the operator's laboratory.
  - (4) In taking samples and making tests for the purposes stated in sub-bylaw (1) the City Engineer shall -
    - (a) notify the owner or occupier of the premises or the person in charge or apparently in charge of the premises and the operator



of his/her presence and his/her intention to take any sample or make any test or make any measurement and invite the applicant to be present at the taking of such sample or the making of such test or measurement;

- (b) take one sample of trade effluent and cause it to be placed in a container for analysis at the operator's laboratory.

(5) Any permission granted by the City Engineer in terms of bylaw 7 shall -

- (a) be personal to the applicant;
- (b) terminate two years from the date of grant thereof or such lessor period as the City Engineer may stipulate when granting the permission;
- (c) not be ceded, assigned or otherwise transferred without the written permission of the City Engineer.

(6) Where tests are to be carried out for the purposes of an application for a permit, the costs incurred in carrying out such tests shall be borne by the applicant.

8. (1) Subject to giving fourteen day's notice to the applicant the City Engineer may withdraw any permission to discharge industrial effluent in any sewer granted in terms of either bylaw 7 or bylaw 12(2) of these bylaws, if -

- (a) the industrial effluent discharged from the premises concerned fails to conform to the industrial effluent standards prescribed by these bylaws;
- (b) the holder of the permission fails or refuses to comply with any notice lawfully served on him or her in terms of these bylaws or contravenes any provision of these bylaws or any condition imposed in the permission; or
- (c) the holder of the permission fails to comply with any conditions

imposed by him or her in any permission granted under bylaw 7.

- (2) In the event of the City Engineer withdrawing permission to discharge in terms of sub-bylaw (1), he or she may:

- (a) in addition to any steps prescribed in this bylaw, and on 14 (fourteen) days written notice served on the holder of the permission and on the owner or occupier of the premises if they are not the holder thereof, close or seal the drainage connection of the said premises to any sewer and thereby refuse to accept any further industrial effluent; and
- (b) continue to refuse to accept any further industrial effluent until he or she is satisfied that the owner or occupier concerned has taken adequate steps to ensure that the industrial effluent to be discharged conforms to the standards prescribed in this bylaw or the permission concerned, whereupon he/she may re-open the connection or seal for such further charge as may be prescribed in the Council's tariff of charges.

- (3) In the event of the City Engineer withdrawing permission to discharge in terms of bylaw (1), the owner or occupier of the premises shall take all steps necessary to facilitate the disposal of industrial effluent by other lawful means.

9. (1) Every applicant for permission in terms of bylaws 7 or 12(2) or the holder of such a permission if he or she is dissatisfied with any decision of the City Engineer relating to a refusal to grant or renew such permission, or any conditions attached thereto, or any variation of such conditions, or any revocation of such permission may, within 30 (thirty) days after being notified of the decision of the City Engineer, lodge a written notice of appeal with the City Engineer, provided that notwithstanding any such appeal, any drainage connection closed or sealed shall remain closed or sealed.

- (2) Upon receipt of a notice of appeal the City Engineer shall forthwith inform the Council which shall thereupon take all steps necessary for the constitution of an appeal tribunal consisting of such councillors and

other persons as it may deem necessary.

- (3) The appeal tribunal so constituted shall as soon as practicable hear the appeal and may confirm or vary or cancel any decision of the City Engineer, or may make such other decision as it considers proper.
10. The City Engineer may, after consultation with the operator and by notice served on the holder of a permission or on the owner or occupier of any premises from which any industrial effluent is discharged or is to be discharged, require him or her, without prejudice to any other provision of these bylaws, to do all or any of the following things:
    - (a) to subject the industrial effluent before it is discharged to the sewer, to such treatment as will in the opinion of the City Engineer ensure that it conforms at all times to the provisions of bylaw 11(1);
    - (b) to restrict the discharge of industrial effluents to certain specified hours and the rate of discharge to a specified maximum, and to install at his or her own expense such tanks, appliances and other equipment as may be necessary for compliance with the said restrictions;
    - (c) to install a separate drainage system, at his or her own expense, for the sole purpose of conveying industrial effluent produced on the premises and to discharge the same into the sewer through a separate connection to be constructed in accordance with the bylaws, and to refrain from discharging the said industrial effluent through any foul water drainage system or any domestic sewage through the said separate connection;
    - (d) to construct at his or her own expense in any drainage system conveying industrial effluent to the sewer, one or more inspection, sampling or metering chambers of such dimensions and materials and in such positions as the City Engineer may prescribe;
    - (e) the execution of drainage and sewerage works, including

storage, pre-treatment and metering installations and the provision of pipes, drains, fittings and the like.

11. (1) No person shall without the written permission of the City Engineer applied for in terms of bylaw 3 and obtained in terms of bylaw 7, discharge into or cause or suffer to enter any sewer, any foul-water, industrial effluent or other liquid, which, measured in accordance with the methods listed in the First Schedule hereto -
  - (a) has a temperature exceeding 45 degrees centigrade at the point of entry to the sewer;
  - (b) has a pH value less than 6,5 or greater than 9,5 units;
  - (c) contains any calcium carbide or any other substance whatsoever liable to give off explosive or offensive gases or vapours in the sewer;
  - (d) contains any substance which has an open flash point of less than 65 degrees centigrade or which gives off a poisonous vapour below 65 degrees centigrade;
  - (e) has an electrical conductivity of greater than 400 milliSiemens per metre;
  - (f) includes any substance in concentrations expressed as milligrams per litre greater than those specified and listed as follows:

Milligram per litre

Solids in suspension (dried at 105 degrees C)	400
Grease and mineral oil, tar and tar oils not dissolve in the aqueous phase	50
Animal and vegetable oils, fats or waxes	250
Total sulphates (expressed as SO <sub>4</sub> )	250
Sulphides (expressed as S)	25
Copper (expressed as Cu)	5
Nickel (expressed as Ni)	5
Zinc (expressed as Zn)	5
Cadmium (expressed as Cd)	1
Cobalt (expressed as Co)	5
Chromium (expressed as CR(III))	25
Chromium (expressed as CR(VI))	0
Hydrocyanic acid and cyanides or other cyanogen compounds (expressed as HCN)	10
Molybdenum (expressed as Mo)	1
Lead (expressed as Pb)	5
Mercury (expressed as Hg)	1
Phosphate (expressed as P)	20
Arsenic (expressed as As)	1
Boron (expressed as B)	5
Fluoride (expressed as F)	5
Free and Saline Ammonia (expressed as N)	80
Selenium (expressed as Se)	1
Total Dissolved Solids	5 000
Total Sugars and Starch	1 000
Total Kjeldahl Nitrogen	100

- (g) contains any substance which, whether alone or in combination with other matter, may in the opinion of the City Engineer cause a nuisance of any kind to the public or, in particular, injury to, or danger to the health of, persons entering sewers or manholes or carrying out any work in connection therewith or working at the effluent treatment works, or which may be injurious to the sewers, effluent treatment works or any land used for disposal of

sewage, or which shall in any way injuriously affect any of the processes whereby sewage is treated or the re-use of treated sewage effluent.

- (2) Every owner and occupier of premises where industrial effluent, foul water or any other liquid is produced shall prevent any discharge prohibited by sub-bylaw (1) from entering or being discharged into any sewer, and every holder of a permission, owner and occupier who permits or negligently fails to prevent such entering or discharge, shall be guilty of an offence and upon conviction be liable to the penalties set out in bylaw 22.
- (3) Where it is shown that effluent discharging from any premises at the point where such effluent joins the sewer, does not conform to the limits prescribed in sub-bylaw (1), it shall be presumed, until the contrary is proved, that:
  - (a) the owner and occupier thereof and the operator of the industry being conducted thereon knew of such discharge; and
  - (b) the owner and occupier thereof and the operator of the industry being conducted thereon knew that such discharge did not comply with the said limits; and
  - (c) the measurements taken of the discharge at said point accurately reflect the measurements of the effluent being discharged from the premises.

- 12. (1) The City Engineer shall not grant written permission for a relaxation of any limit contained in bylaw 11(1) unless the operator has first been consulted by the City Engineer and agreed to the relaxation concerned.
- (2) In granting a relaxation in terms of bylaw 11(1) the City Engineer may impose such conditions as seem proper in the circumstances; which, without derogating from the generality of his or her powers, may relate to:
  - (a) the methods and time periods by which the applicant shall

comply with any or all of the limits prescribed in bylaw 11;

- (b) such additional treatment costs payable to the Council or the operator.

13. (1) The holder of a permission shall not make, or cause or permit to be made, any change to the premises or in the manner of running, using, maintaining or operating the premises or in any operation or process carried on at the premises, which change causes, or is intended or likely to cause, a material increase in the quantity or quality of industrial effluent or both, discharged from the premises, unless prior written approval of the City Engineer has been obtained for such change.
- (2) For the purposes of sub-bylaw (1), changes to the premises include:
  - (a) any change in the construction, structure or arrangement of the premises or any building serving the premises;
  - (b) any change in the construction, structure, arrangement, alignment, direction or condition of any channelling device, system or facility serving the premises; and
  - (c) any change of, to, or in any plant, machine, process or equipment used or installed at the premises which affects the production or treatment of any effluent.
- (3) An application for the approval of any changes as provided for in sub-bylaw (1) shall be made in writing to the City Engineer and the provisions of bylaws 3 to 8 and bylaw 12 shall apply *mutatis mutandis* to such application.
- (4) In the event of there being any change in circumstances arising from:
  - (a) any changes envisaged in sub-bylaw (1); or
  - (b) the introduction of new or revised standards prescribed by the Council or in terms of the Water Act, 1956 (Act 54 of 1956) or in terms of any other legislation; or



- (c) any amendment to these bylaws, or
  - (d) constraints from the nature and capacity of the treatment processes at the industrial effluent treatment works, the City Engineer may, after the expiration of 60 (sixty) days' written notice to the holder of a permission of his/her intention to do so, amend, modify or revoke such permission or any conditions attached thereto and/or impose additional conditions for the acceptance of any industrial effluent into any sewer or prohibit the discharge of any or all of such industrial effluent into such sewer.
- (5) The provisions of bylaw 9 of these bylaws shall apply *mutatis mutandis* to any notification given to an owner or occupier in terms of sub-bylaw (4).
14. (1) The holder of a permission and the owner or occupier of any premises shall ensure that all employees are instructed in procedures to avoid accidental discharges of industrial effluent into a sewer or generally into the environment, to remove, disperse or destroy any industrial effluent so accidentally discharged and to otherwise prevent, abate or mitigate any harmful effects caused by any such accidental discharge of industrial effluent.
- (2) (a) The owner and occupier of any premises shall forthwith furnish the City Engineer in writing with any information concerning an accidental discharge of industrial effluent and shall comply forthwith with any requirements of the City Engineer for the prevention, abatement or mitigation of the effects thereof.
- (b) The owner and occupier of any premises shall forthwith notify the City Engineer of any rupture or damage to or blockage of any sewer on the premises and take immediate steps to repair such sewer.
- (3) The City Engineer shall, if he/she considers such action necessary, immediately report the circumstances of any such accidental discharge to the operator and to the

Council and the action which he or she has taken in terms of sub-bylaw (2) hereof.

15. (1) The charges payable for the conveyance and treatment of industrial effluent shall be those published from time to time.
  - (2) In order to enable the Council to determine the charges payable in terms of sub-bylaw (1) the owner or occupier of the premises shall furnish the Council with all information necessary to determine such charges.
  - (3) For the purpose of determining the charges payable in terms of sub-bylaw (1) the City Engineer may require the owner or occupier of any premises to provide and maintain at his or her own expense such meters or other instruments measuring the total quantity of water drawn from any borehole, spring or other natural source of water and used on the premises.
- 
16. (1) The City Engineer shall be entitled to supply, install, operate and maintain, at the cost of the holder of the permission concerned, and in such position as he/she shall determine, in any drainage system conveying industrial effluent to the sewer, any meter or gauge or other device for the purpose of ascertaining the volume or composition of the said industrial effluent and it shall be an offence for any person to bypass, open, break into or otherwise interfere with or to damage any such meter, gauge or other device; Provided that the City Engineer may enter into an agreement with any person discharging industrial effluent into the sewer to establish an alternative method of assessing the quantity of industrial effluent so discharged.
  - (2) In cases where, in the opinion of the City Engineer, the method of calculation of the charges payable in terms of Council's tariff of charges does not, for any reason, give an adequate estimate of treatability of the industrial effluent, the Council shall be entitled to adopt any other scientific method of assessing the treatability of the industrial effluent and may also enter into a special agreement with the applicant or holder of the permission concerned whereby an alternative method of assessing the treatability of the industrial effluent and of calculating the industrial effluent charge is adopted.
  - (3) In the absence of any direct measurement, the quantity of industrial effluent discharged shall be determined by the City Engineer according to the quantity of water consumed on the premises during that period,

and in the determination of that quantity, deduction shall be made of the water used on the premises for domestic purposes, lost to the atmosphere during the process of manufacture or present in the final product.

- (4) Unless the City Engineer shall in any particular case agree otherwise in writing with the holder of the permission concerned, charges payable in terms of the Council's tariff of charges shall be levied monthly.
- (5) If a meter, whereby the quantity of water consumed on the premises is measured, is proved by the holder of the permission concerned to be defective, the appropriate adjustment shall be made to the quantity of industrial effluent discharged when calculated as prescribed by sub-bylaw (4). In the absence of such proof the meter shall be deemed to operate accurately.
- (6) Where industrial effluent is discharged into the sewer from more than one point, whether on the same floor or on different floors of premises, the City Engineer may, for the purposes of assessing the charge payable in terms of Council's tariff of charges and for the taking of test samples, treat each such point of discharge as a separate point for the discharge of industrial effluent into the sewer.
- (7) For the purposes of calculating the quantity of industrial effluent discharged from each point of discharge as aforesaid, the total quantity of water consumed on the premises shall be allocated, as accurately as is reasonably practicable after consultation between the City Engineer and the holder of the permission concerned, among the several points of discharge.

17. (1) Insofar as is permissible under law the Council shall, through its employees, and through its agents, contractors and their employees have access by reasonable force if necessary to or over any property for the purposes of -

- (a) exercising any power or performing any function or duty under these bylaws;
- (b) doing anything authorised or required to be done by the Council

under these bylaws;

- (c) installing, examining, reading, repairing or removing any equipment owned or in the care of the Council;
- (d) enquiring into and investigating the suitability of premises for any work, scheme or undertaking;
- (e) ascertaining whether any nuisance, unsightly condition or actual or potential source of danger exists;
- (f) ascertaining whether there is or has been a contravention of the provisions of these bylaws;
- (g) enforcing compliance with the provisions of these bylaws in terms of which powers, functions or duties vest in or are imposed on it or its employees.
- (h) inspect any buildings, land, equipment or other works, and take any samples considered necessary for ascertaining whether there is or has been a contravention of the provisions of these bylaws.

- (2) Any person who fails to give or refuses access to any person referred to in sub-bylaw (1), or obstructs or hinders him or her in the execution of his or her duties, or who fails or refuses to give information that such person may lawfully require, or who gives to such person false or misleading information knowing it to be false or misleading shall be guilty of an offence and liable on conviction to the penalties prescribed in bylaw 22 of these bylaws.

- 18. (1) The Council shall cause to be kept a register which shall be available for inspection by the public at all reasonable hours and shall contain the following particulars of every permission granted by the City Engineer under these bylaws and which continues to be in force:

- (a) the date of grant of the permission and the name and address of the person to whom it was granted;
- (b) brief details thereof, including any conditions attached to it;

- (c) the date and brief details of any variations thereto indicating whether the variations were effected in pursuance of an application or otherwise;
- (d) whether the permission was granted or varied in accordance with a direction given by the appeal tribunal; and
- (e) whether any legal action was taken against the owner or occupier and the outcome thereof.

(2) The particulars specified in sub-bylaw (1) shall be entered in the register within 14 (fourteen) days from the grant, or, as the case may be, variation or amendment, of the permission to which they relate.

19. Any person who discharges any industrial effluent into the sewer in contravention of these bylaws which damages any component of the sewer or the industrial effluent treatment works or which entails additional treatment costs shall be liable, in addition to prosecution under these bylaws, for the costs of the necessary repairs to the sewer and industrial effluent treatment works and the additional treatment costs thereby incurred.

20. Any fees, tariffs or other charges which are payable or which may be levied in terms of these bylaws shall, except where specifically provided for, be those prescribed by Council in its tariff of charges.

21. (1) Any person who:

- (b) contravenes or fails to comply with any provision of these bylaws or with the conditions of any permit or notice issued under these bylaws; or

- (b) wilfully obstructs, resists or hinders any employee or other person authorised by the Council in the lawful exercise or performance by him or her of any power, duty or function conferred or imposed upon him by or in terms of these bylaws or any other law, or who wilfully disobeys or disregards any lawful order served upon him in terms of these bylaws, shall, subject to the provisions of the Adjustment of Fines Act 101 of 1991, as

amended, be guilty of an offence and be liable on conviction to a fine not exceeding five hundred rand or to imprisonment for a period not exceeding six months or to both such fine and such imprisonment, and where any such provision is contravened or not complied with on a second or subsequent occasion, a fine not exceeding one thousand rand or imprisonment for a period not exceeding one year or to both such fine and such imprisonment, provided further that the Court may, in addition to the above, impose an amount equal to any costs and expenses found by the Court to have been incurred by the Council as a result of any breach of these bylaws.

- (2) No employee of the Council who contravenes any provision of these bylaws shall commit an offence if such contravention was necessary for the proper performance of his/her duties; provided that this provision shall, *mutatis mutandis*, apply in respect of any contractor of the Council when performing any act necessary for the proper fulfilment of his/her contract with the Council.

22. Subject to bylaws 8 and 20 any approval, exemption, licence or permission granted and any consent given, any application or direction made, any condition, requirement, restriction or suspension imposed, any notice or seal affixed, any notice served, any fees, tariffs or charges prescribed and any action taken or thing done under the provision of any bylaw or other enactment repealed by these bylaws shall be deemed to have been granted, given, made, imposed, affixed, served, marked and taken or done under the provisions of these bylaws.
23. Bylaws 1, 18, 19, 20 and 20 *bis* of the Council's Drainage Bylaws, published under Municipal Notice 267 on 1 August 1996, are hereby repealed.

**APPENDIX B**



### Joint Interview:

**Interviewees:** Hilton Ryder, City Chief Environmental Officer ('HR')  
Jimmy Pather, Deputy Chief Environmental Officer ('JP')

**Interviewer:** Adrian Pole ('AP')

**Date:** Wednesday 26 September 2001  
**Venue:** Municipal Building, PMB

- AP Basically this is a semi-structured interview, so I'm happy for you guys... to talk about anything that you think is important. As I explained on the telephone the research is about implementation... or problems with implementation of the polluter pays principle, in particular with regards to the vegetable oil and soap manufacturing industries along the Bayne's Spruit. We went along the river yesterday and videotaped some incidents of pollution. There was foam on the water from what looked like soap. There was films of oil for example, so clearly there's some kind of a problem coming out of the storm water drains for one thing, but we also understand from Darvill that there is some problems with uh... every now and again excessive loads come through despite the bylaws. So ... what is Council's policy regarding the polluter pays principle... maybe we can start with your ideas on that?
- HR I think Council's policy is in line with national policy and government policy that that is an entrenched policy. So Council obviously endorses that principle of the polluter pays. It is certainly an entrenched principle as far as we are concerned.
- JP And in line with that uh policy Council then changed the drainage bylaws, which is now called the industrial effluent bylaws.
- HR So that's embodied in those bylaws.
- AP OK, so its obviously firmly a policy of the Council. Um, have you guys experienced difficulties in trying to implement it?
- JP Um yes um we... we have quite a peculiar situation in Pietermaritzburg. All of our five oil mills are situated in the same uh area.
- AP Which ones are those?
- JP Uh... we've got Sealake, Capital Oil Mills, Gemtech and Birmingham Oil Mills. There's four of them on the one side of the Bayne's Spruit, and the one Willowton Oil and Cake Mills is on the other side. Now uh all these oil mills uh their drainage uh they make use of a common drainage system, whether its sewer or its storm water. And that would seem to be the difficulty in trying to pinpoint the uh the offender.
- HR To... to actually proportion it... uh responsibility is is more the difficulty than the polluter pays because that principle could come out in for example the prosecution... if the prosecution was successful. Um... and you could proportion a... proportion the responsibility on somebody then obviously the costs of the cleanup etc and the polluter pays... that aspect would follow. But... but the aspect, as Jimmy's mentioned, is more a question of a difficulty of proportioning who is responsible when you have a shared drainage system.
- AP So you don't necessarily know who... who's polluting (indistinct). But when we are talking about shared drainage is this now the sewers or the storm water drain?
- JP Um... you find...you find both. Because what happens is if you go along the Bayne's Spruit you will find that there is a manhole which is just on the river bank there, and you will notice that it is water marked as well... you would see that there is an overload as well on that system. And you will also find near that is a storm water drain which is continuously running with all kinds of uh liquid stuff. Now that is a common drain which... goes right up into Cardiff road, Birmingham road, and

Chesterfield. It seems to be a common drainage which then uh, the... the drainage from these properties link up into this storm water uh drain.

AP Is...is that the one... there's a small weir near it?

JP Correct. That is correct, yes.

AP We saw that yesterday, uh and that's one of the places where there's quite a bit of...

JP Yes, we've taken photographs of that. We know there's a problem. And what we do is... we went once...we followed this right up opening manholes, and uh... we... we couldn't, we couldn't identify...

HR Inconclusively, you know if you go up there you get like a herring bone system, so you know you could open manholes... um you need to proportion you know which...which factory is... is actually responsible. And that is our problem.

JP We now um have decided the only way out is to put a camera into the drain.

AP A camera?

JP A camera, yes. The City Engineers have purchased a camera, a very expensive camera, uh which landed here recently, but what we found was that the wheels were too small to... to get into storm water.

AP So... so are you part of the City Engineer's office?

JP No... no we not...

HR City Health is a separate division

JP But, but what happens is that um we're working together to try and catch uh the people which are discharging illegally to storm water and to... into the sewers as well.

AP So is this a remote camera?

JP Uh, yes, um now what they found was that the wheels were small and they had to then get engineers to put bigger wheels in. And also the light was not bright enough, so they have to improve the lighting as well so that when this camera goes through it can then photograph uh...the...the actual drain itself and where the effluent is coming in.

HR You see we'll be able to identify the nature of these discharges at various points with the camera and that should give us more factual evidence to present if we go to court on the issue... we can say that this is... at that point 5m down there was no evidence of oil or grease or so. At 10 m, at the junction it was noticed... there's photograph number B. That type of evidence is something which we've lacked in the past, and this is what we're trying to... to establish. Um, I think the worst scenario for us would be to go into a legal situation and lose the case, because um it would only add strength to... to someone who's doing something illegal... to...for they should feel that they could actually succeed and then...uh... you know put us in... in... in a weak position. We would like to have conclusive evidence.

JP Uh... this happened in the past...uh...one of these oil factories was prosecuted by the Department of Water Affairs...

HR Yes.

JP ...and they... they were found not guilty because... because the Water Affairs couldn't prove that that effluent uh was from that particular factory, there was doubt as to whether it was from that factory.

AP So it's a problem...

JP So on the basis of that extinguished...

AP ....establishing the causal link...

JP Correct yes.

HR Ja.

AP ...between the offender and the pollution

HR Exactly.

AP So to make the someone pay for pollution into the river... and to prosecute you've got to know who did it.

JP Yes.

AP Um... on the court side, what... how do you fit in with... with prosecutions? Do you do them yourselves, are you the authority that...

JP Yes.

AP ...enforces that.

JP Yes uh... all prosecutions are done by the Council, uh... that um... the state uh... has given Council that responsibility. We conduct our own cases in court. We've got a municipal prosecutor uh who's a legal advisor for Council... that deals with all Council uh... cases.

AP Uh... pollution cases or cases for anything?

JP All, all cases.

AP Is that a private person or is he employed by Council?

HR Employed by Council

JP He's employed by Council.

AP Who is that if I may ask?

JP Johan van der Merwe.

AP Johan van der Merwe?

JP Johan van der Merwe.

AP So has he been involved with the prosecutions before?

JP Ah yes, he's...

HR Almost every week we have court cases, so ah almost every Wednesday there's court cases... you know today there was court cases, health cases...you know, I won't say every week, but when we have a fairly strong flow of court cases.

AP Not...not from these companies, or from these companies?

HR Not from these companies but from...if you look at the range of our work it comes from food premises, food samples, it can be any aspect of health work, environmental health work. Um ja, so we have a constant relationship with the prosecutor. We collect the evidence, we make statements - sworn statements, we draw up the prosecution then we submit it to the prosecutor who then institutes the legal proceedings.

AP And that's Mr van der Merwe?

HR Ja.

AP And will he make a decision on prosecuting?

HR Ja.

AP Uhm...sure...so if, if there's a spillage say, or say someone uhm pumps effluents into the river, that's obviously illegal under the current water law. Uhm, if people make a complaint do they come to you with the complaint?

JP Yes they do...come to us.

AP City health.

JP What happens is sometimes they might go direct to Water Affairs, then we'd get a call from Water Affairs, uh then Umgeni might get a call. We all network uh and we all try and get together to try and uh sort out whatever problems there are.

HR When a clean up is done then we ask that it be done in accordance with the... or to the satisfaction of the Department of Water Affairs. So you know we working in... you know we conduct these things in a conjunction with them.

AP Who do you deal with at Water Affairs?

JP Ashwin Seetal a bit but he's now I think uh ...

AP Senior?

JP He's gone to another section, I think he's more in the... trying to uh...do the National Water Act... he's uh got another function. It's uh... it's Yakeen. Yakeen Atwaru. Uh, he's a ... the water pollution officer for this 'Maritzburg region

JP He's uh... he's aware of the problems as well in that area, and he's... and he knows we're trying to get on top of it, but unfortunately we thought we'd be able to sort it out when the camera came, but we didn't realise we'd have...

HR Technical problems.

JP ...technical problems using the camera.

AP So if... if there's a spillage with the camera you have to have the camera there and does it stay in the sewer... in... in the storm water drain waiting, or do you have to go...

JP No

AP ...(talked over)

JP You see what happens is um when we get a report of ah spillage because those... um... the area is being monitored by Umgeni Water, or even by our own department staff...

AP Is Umgeni still monitoring? I believe they are no longer engaged in monitoring as much as they used to... indistinct...change of roles.

Some indistinct.

JP They... they... yes,. But then they go take water samples uh at these points, and if they see there is a discharge they phone us up, and then we go out there, and then um... but this seems to happen on... on a fairly... on a fairly regular basis, uh these discharges, and surprisingly uh seems to be... *(breathes out audibly)* on quite a few cases it has been on a Friday, about you know, uhm...Friday afternoons. And it makes it very difficult on a Friday afternoon to get people together to go and uh you know and gather the information that's necessary.

HR The...the... Umgeni Water are doing industry... non-compliant industries... they send us reports *(reads)* August, Water Quality Department. They do the broader river sampling as well in the whole of the province... Uh... you can see *(pages through UW report)* that there's a large number of uh... industries that are warned. Non compliant industries... *(reads)* uh Willowton Oil and Cake Mills...

AP Is this non-compliant in terms of the river as opposed to the sewers?

HR Uh, these are discharges.

JP Ah, these are in terms of the Industrial Effluent Bylaws, because there's standards uh for ah for... for discharging into *(pause)*...

AP Into the sewers?

JP Into the sewer.

AP That's right.

JP So that is now in terms of the new Industrial Effluent Bylaws.

HR Then ah, you know there's... there's warnings given to them.

AP That's very interesting. With regards to the Industrial Effluent Bylaws, whose responsibility is it to uhm... to use those and to implement them.

HR Ah, if you've gone through those bylaws its quite clear that the City Engineer is vested with that uh power.

AP I'm seeing the City Engineer next Tuesday or Wednesday.

JP It is his uh direct responsibility to ensure that these applications are received, and uh processed and uh conditions are imposed regarding the uhm... the discharge of effluent into the sewers.

AP Do you deal with permitting at all, or is that again the City Engineers responsibility?

JP No, we don't deal directly with... with the permits. We don't deal with that, it's between Umgeni Water and... look at those bylaws... refers to the operator...

AP That's right.

JP The operator is Umgeni Water.

AP So that... you guys don't really deal with the sewer issue...

JP No...no *(in the background)*

AP ... but you do deal with the river issue because of the health implications.

JP Yes, we deal with the pollution aspect of that.

AP Of the river? Which includes prosecuting if necessary?

JP Correct.

AP Uhm, what other problems have you had with prosecuting? Obviously there's the causality issue that... that you've mentioned

JP Ja.

AP What other difficulties...

JP You know the big problem is uh... these, these industries uh... because of security reasons it's not easy for us to gain access to them uh...if we have to go there, by the time we get in it's about half an hour to an hour, and if they are doing anything that's illegal, they've got...they've got enough time to switch off the pumps... and switch off certain things that they would not want us to ...to sort of ah... pick up. So that is... that is a problem with regard to (prosecuting?).

HR The legal process is also quite lengthy in terms of... of actually getting to court... uhm... the remand process, the actual processes in court, I think you're quite aware of the length of time that it takes. We had a court case this morning that now is over a year old, and that's had twelve remands, and it was remanded this morning again because the magistrate was on leave, and they're fixing a date I think in January next year. So now we've got a case that's going on for two years that.. it was... the offence was in August last year, its gone August this year, that's a year and a month, and it looks like its heading for August next year, so it will be two years by the time its... all the evidence is lead.

AP So the criminal justice system has its own difficulties?

HR It... it's very, it's slow, ja. It's a slow process. Uhm, one can resort to interdicts but they are also uhm very expensive process, and there again you've got to have served the relevant notices and you've got to have exhausted the processes as well, so its not something one could enter into lightly.

AP Um, has any consideration ever been given to administrative penalties or something like that? Where... where for example you could penalise now the company without having to resort to courts of law?

JP In, in terms of these Industrial Effluent Bylaws, yes there is a penalty because if you don't comply you then pay a higher effluent tariff. Um then there are concessions as well that Council gives industrialists...um...

AP Is that the City Engineer again?

JP No, no its Council for... for services that ah that the Council provides to these industrialists. There again there ah... the a... the committee can then decide you know to... to sort of um withdraw some of those concessions that have been granted. I'm not sure whether that's happened up till now though.

HR No, I'm not sure whether that's (indistinct).

AP So obviously then the Effluent Bylaws don't really relate to the work that you do um for the health department.

HR It's more of an off shoot of that.

- AP And there's no... nothing specific in any of the bylaws that deals specifically with the Bayne's Spruit, we're talking more of the national uhm legislative framework. Is that right?
- JP That... er that we would deal with, ja.
- AP The prosecutions would be under... under what laws would you... would you prosecute?
- JP Well, see in... in terms of our stalwart uh duties that is one of our responsibilities, and therefore ah we... we feel that we have... we have an obligation to deal with it ah in... in Pietermaritzburg. Because um we take the lead... if there is a problem we go out there and we make sure that um we take action, and um we have various legislation which we can use... we can use the Health Act, we can use other legislation, as well out bylaws... we've got bylaws as well. Ah so we look at what is more appropriate depending on the circumstances. Ah we've got the Local Authority Ordinances as well that we can use, as we just look at our options and see which is the best means at our disposal.
- HR We would...we would do that in conjunction with the...
- JP With the legal advisor...
- HR ... the legal advisor.
- AP So if... if there's a spillage um that for example, perhaps a bit more serious than a wash through from a storm or something that that's gone into the storm water drains, who picks up the tab for that if you are not really able to show who um... is responsible, if you're not able to show which... which industry polluted.
- HR That...that sort of situation is fairly common, you... you find small leakages, or small episodes if I may call it that, um happening all the time and... and you know not all of them result in clean ups, so the damage is...sort of stays in there. I don't think there's provision in any of our municipal budgets for... for big cleanups like that, its really a very costly business, it costs uh quite a few thousand rand to... to have uh private companies clean up, um... some of the cleanups I've been involved with cost twenty, thirty thousand over a few days, so you might have specialised equipment um... vacuum extraction units... you, you might have uh equipment like drizit chemicals that need to be applied, uh labour intensive, its... its messy work, and then there's the disposal of the product again, it will have to go to Durban perhaps, to another disposal site. So if you add all that up its very expensive, and uh I would... I would say that there's... a lot of the smaller episodes that are happening are just left there.
- AP And the large episodes?
- HR Well, um we've got one at the moment that we're dealing with, but its not with... with cooking oil... if we... if...if we can...
- AP Is that the PJ Bison spill that was in the newspapers?
- HR Yes. Ja. If we can find acceptance of responsibility then it is clear cut, then... then the polluter pays principle is immediately ... in that sort of case uh we would apply that and they would pay for it.
- AP So would you have to get their consent to pay?
- HR They... they... they would commission the work themselves, and they would sign the documents and say yes go ahead and clean it up.
- AP If they didn't...lets say there was a... a spill went down the Bayne's Spruit, if we speak hypothetically, and people from Bayne's Spruit... I'm sorry form Sobantu phoned up and... and told you guys, and you went down there and saw it, um would you instruct...and lets say you are not able to determine which company straightaway did it. Um would you actually clean that up yourselves?



HR No we don't have that capacity.

AP So who would do that?

JP Um, that would go to City Engineers. City Engineers ah because I... a... we've got City Engineers the a... they fall under the road section... the... the... the roads section of the uh City Engineers. Ah, water catchment section there, a... they would then take a decision.

AP On whether or not to clean up?

JP On whether or not to clean up, yes.

HR We... we done that once before and the... after City Engineers made the decision, finally we found out who it was and then they claimed back from those people so... it does work that way so... so they only... they commissioned the work but they actually claimed back from the person when they accepted responsibility.

Ap Okay, that's great. Um, with regard to the national legislation, the National Water Act and the National Environmental Management Act, both of which incorporate the ppp. Uhm they've obviously been drafted nationally, has there been any coordination with Council on what they are doing, um do you have any idea of how they intend implementing it down here in a practical sense?

HR I... I would have... I think a lot of these things are still being formulated, you know the policies that follow the legislation and uh, we haven't had a lot of ah feed uh... policy feed... feed down to us in terms of that.

JP What we've done is um, we've made contact with DWAF, uh environmental affairs, department of agriculture, and environmental affairs in KZN... they've now got an environmental unit up in Cedara. We've made contact with them, we want to meet to try and get... get all these people together.

HR And iron out our...

JP And iron what... what our responsibilities are in terms of uh you know these... the new Act... uh... and uh... so that we be able to work together. Because what happens is that sometimes we find that when we go to industry, we're told that somebody from environment affairs is there, someone from ah water affairs is there, someone from Umgeni Water... it makes it very difficult then for us to deal with an issue not knowing what was ah said to these people, and we find and we find that uh a problem. Because I went to a factory just last week and I was told that somebody from ah department of environment was there... aaahh... and then I asked this person ah what did he say? He said "no. it's fine, there's no problem". And yet I saw a problem. So it makes it very difficult now... ah... with us to now say to people "you need to do things" ... uh... and I... and I feel that uh... these officials should... should at least contact us and say that they're going to this factory, and uh... and then we can say to them, you know "no problem, can we go with?" and we could then go with one voice to try and sort out the problems uh... together.

AP So are you saying there's a need to integrate...

JP Integrate, yes.

AP ...pollution control?

HR I... I am not sure whether its... its integration, but... ah... it certainly is integration... but my understanding is that all these ah.. service related issues um... where you're providing a service to the community, should be with local authorities. That I understood to be government policy. When it comes to provincial ah... authorities, and... and for that matter national government authorities, they would be the policy makers. And they would be the people to install policy into the service areas. But as far as physically carrying out inspections is concerned, I am fully under the understanding that that is the local authorities' function. And we are actually seeing that being

changed in a number of instances. There's been another example just recently where they're appointing... after the cholera epidemic... they're appointing Communicable Disease officers, in provincial level. So they're expanding these officers... they've got about five people um... and they now want to carry out investigations of communicable diseases in the community. Now those investigations should be carried out by local authority, who are conversant with the local conditions, who know the local leaders... uh.. and all those issues... they're close to the ground, and local authorities ah... work with the ward councilors etc. Now to have provincial people appointed to.. to actually go and carry out ah... physical inspections and tracing of infectious diseases, is not my understanding of how it should be done. And now we have another example with what we just discussed earlier...with... with industries, where you've got provincial guys that have been appointed. We're actually carrying out the work. The actual appointment I don't have a problem with um... if it was from a policy point of view that they actually came and met with us and held workshops, and explained to us that this is what... how they see it... things happening with us as well. So they transfer policy to us. But the actual execution of the inspections should be with local authority, throughout South Africa.

AP Inspections that...well what do you mean by inspections?

HR Uh... physical inspections of the industry, taking of samples, uh...discussions with those industries uh... and so on. Those...those I feel are local authority functions, very clearly

JP And even taking action as well in terms of... in terms of legislation...

HR Ja.

JP ...because there was a good example where a whole lot of officials got involved... DWAF, environment affairs I think it was one, Umgeni Water... about six officials. Eventually nothing happened, and we finished up taking this person to court, and if he... if he had a lawyer that defended him...ah I don't think we would have been successful in court.

HR You know we've had a long history of fragmentation, I mean we really had thousands of them... I can remember ten, fifteen years ago when a restaurant owner would say to me 'you know there's twelve inspectors that are able to come to these premises'. There's the guy from the citrus board, there's the guy from the potato board, there's the environmental health officer, and there's this person and that, and the licensing officer. You know, that's the sort of fragmentation, it was horrific. And now you find yourself going back into that fragmentation. And yet integration is important, but I think there has to be a clear understanding of the functions of each sector, because we... we you know, we really have no objection of working with... with anybody. Provincial staff or... we're team orientated people. So we're not looking at it from that point of view. It's just uh... very confusing for industrialists... Jimmy indicated that example... and for us to do anything. And... and you know if you look at our capacity, we have sometimes five, six times the capacity of the provincial people that are actually coming to... to try and ah... to sort of come into this sphere. Um, for example we've got have seventeen environmental health officers here. It's quite a large component, so its not a lack of capacity. And ah... you know for them to physically come and do inspections doesn't... doesn't really warrant it, you know. If they came and advised us, fed into policy, we would be more than happy to follow their guidance.

JP You know the concern I have is that they go to these places, we don't know what's discussed, and they don't follow this thing through, and ah... you find that they make a whole lot of ah... demands, and even threatening demands as well, that if you don't do it we're going to do this and do that. Then you find that nothing happens, and that's... that's a concern that I have. Because they... they're not accountable to the people. We're accountable. Because they go in there, they make all these demands, and you find they don't deliver. They create this bad... this bad feeling as well with the people. And you find that we have to now go and... and sort out the mess that was left behind.

AP Is that the industrialists?

JP Ah... yes.

AP So um... seventeen health officers, so you guys actually test the water quality yourself for the Bayne's Spruit, or do you leave that to Umgeni?

JP Uh... no we... we uh... if like the last time we had a spillage, we took the samples and gave it to Umgeni Water um... so we do take samples from time to time.

AP So are you trained to take samples in accordance with...

JP In accordance with, yes.

AP ... court procedures and that time of thing.

JP Yes, and um... what happens is they do... they do the monitoring, but if there's a specific problem then we take the samples.

AP So you don't actually engage in monitoring, you just react...

JP No.

AP ...to... to problems that you've been alerted to.

JP Yes because... because the monitoring is done by Umgeni Water ah...

AP Because... ja... when... when we spoke to Umgeni we were under the impression that they're cutting back on some of their monitoring activities, although you obviously showed me that document... (TAPE SIDE A END)

HR So they actually rest... they want to... they've offered now to restore their sampling, but at half the... half of their sampling points. Now, you know, their sampling points are spread throughout all the city, at reservoirs, uh user points, uh... schools etc, Wylie Park, Northdale, clinics and so on, Woodhouse road. So they're cutting back, and... and they're saying that they'll continue with their monitoring. Now this doesn't include rivers, but it gives you an example of what you've said, that... that their services are cutting back. So, yes um... I would say, you know, we've had a number of letters and a number of discussions from them where they're saying that they're cutting back, but they're also wanting us to make use of their services, and to pay for them. So we must now budget and pay for their services, so...

AP Do you know why they are cutting back?

HR I think it's for financial reasons.

AP So obviously we also understand that the Catchment Management Agencies are in the process of being set up. And from what I understand, um, they... I think the Department of Water Affairs believes that's... that responsibility of monitoring will fall under the Catchment Management Agencies. That's anything up to 18 months away. So obviously there could be a problem in the interim. Do you know if Umgeni are still monitoring those points on the Bayne's Spruit?

JP Yes, ah... today I met ah... eh Garth Mulder when we had that other spillage we went there, and um... yes they are monitoring it because um he told me that there was a problem there the other day, and now we... we mentioned that as soon as he picks up the next one...

AP ... See, are they monitoring the sewer line or they monitoring the river?

JP No no, the rivers.

AP The Bayne's Spruit as well?

JP The rivers. No, this is... this is the discharge into... into the river. So that's my understanding when I met with... when we met this morning

when I met with... when we met this morning.

HR ('ja' 3 \* in the background)

JP He said to me he'd give me a phonecall as soon as he picks up a... a problem, because the do take samples at different points, in the Bayne's Spruit. The Bayne's Spruit and the Dorpspruit along here. Ah all these... the Duzi s well they do)

HR ("*ja's*" and *murmurs assent in the background*)

AP Um, they obviously have some dealings with the industries from the charges perspective and the sewer... the waste water works. Have you guys also dealt with the industries themselves? Those vegetable oil industries. The owners or directors of the companies?

JP In... in terms of what uh...

AP Well, just in terms of the concerns you might have had, for example the river, the Bayne's Spruit as we understand it is quite seriously ecologically degraded from, amongst other things, industrial pollution.

JP We do inspections of these um... of these factories because they are food factories, and in terms of ah... our regulations R918, which is um... which deals specifically with premises, they have to be registered in terms of these regulations. And also um for them um to export um oil they need a certificate from us, which... which... which the country uh receiving the product requires.

AP What certificate is that?

JP It's... it's called a health clearance certificate. So we were hoping to use that certificate to get them to comply with their discharges as well, but we cannot go there now and say we are not giving you this certificate because you are discharging illegally into the Bayne's Spruit because we need to be sure its them, then only we can use that. But I don't think there's a problem in us holding back that health certificate because they need to comply holistically with all legislation for use to issue that certificate. But I'm hoping that if we do catch them, we can do... we can prosecute them. And also if they apply for a certificate, we can withhold that certificate until such time they comply.

HR Because that would have a major economic impact on them. They will note... faced with not being able to export, which under these conditions would generate quite a lot of dollars or whatever currency they exported to. And ja, we've been thinking quite seriously of using it as leverage, but at the appropriate time. I think if you've got a ... if you've got a current prosecution, I think you'd be quite justified in saying 'ay, you know', because that certificate clearly states that the health authorities are satisfied in all respects to that premises. So um a number of these industries are going to face that sort of retribution if I can call it that. Should they be found responsible and prosecuted, they can have that as an additional problem that is going to crop up. Another thing that could result, and um one doesn't see that often is consumer type of consumer pressure, and consumer boycotts. And its not our area at all, but um you could find that resulting if you could generate enough public pressure that they would take up the issue with the company, lets say it is Blossom margarine for example, um that's... you'd get some sort of consumer reaction locally, and even nationally, with the Environmental Justice Network and other organisations who do have the power to create pressure if they consolidate their people. And I think companies need to be aware of that... that once they're found guilty, that's another thing that can happen to them. And if it's in enough newspapers around the country you're going to find sort of consumer impacts coming on, and they need to think about that.

AP Now obviously part of the problem with these companies seems to be that they are not treating the waste properly, or that perhaps their effluent treatment processes can't deal with what they are doing, or perhaps not all the time. Do you have any dealings with that side of things? Do you know what... what treatment processes they use, or... or what technologies or that kind of thing.

HR (Pauses... coughs) I know that... that in those cases it's a series of traps that are used, it's not a highly scientific... it's a series of collection traps that they use. I would venture to say that its more

in the area of management of that system or trap. And then... and then if you look on the broad issues, you will find a number of... you know a whole lot of issues within the factory that are not... that is just one of the aspects. You'll probably find that there are other aspects that are not managed correctly.

- AP Has the Health Department raised any of these problems with the factories? Perhaps saying that we're not talking about prosecution right now, but, you know, there seems to be evidence of you guys polluting the Bayne's Spruit, and if so, how have they reacted to that.
- JP You see... I was... I went out there about 10 days ago with Garth Mulder... there again there was a spillage.
- AP Into the river.
- JP Into the river. We went to a few factories and these guys says come look, we don't have a problem here.
- AP Is this the recent spillage that they think came from Capital?
- JP No, there was one after that. We went through the... we couldn't find anything on the surface, you know, we opened up a few manholes, we couldn't find anything. But there was a strong suspicion it was from the factory. We don't know whether they've got... they've done other drainage work there so that... we don't... they're not using the normal drainage system that we know. And then, you see what happens is they've got treatment plants on their premises, and what happens is all this effluent goes through a treatment plant, and from there it goes into the sewer. I sometimes... I just feel they might be switching it off... and letting it go through.
- HR They might have bypass drains that we don't see... you know, the treatment plant is here, but there's a branch drain which takes it further down and joins again. So you... they can bypass there, they just close the valve at night. Push it that way... and that's the sort of thing...
- AP Midnight evaporation someone...
- HR ... We... we suspect, I mean, we don't have...
- JP And you know what happens at night, because this thing's only picked up in the morning downstream. There's the other possibility that they just get a hose, they link up a hose and the next thing its put into the storm water...
- HR Into a manhole further down, so you can use a flexible hose.
- JP So there's so much of possible ways of them bypassing the normal methods...
- AP Okay, just in summary then, if there's a spillage into the rivers, from your health side, you look to find which company is responsible, and then you take a criminal prosecution of that, and that's through Mr van der Merwe.
- HR Ja.
- AP Is that essentially how you would implement the ppp?
- HR Ja.
- AP Well, that's great.
- HR And you know, part of that process is gathering information, gathering statements from people, statements from the factory etc, so that you have a factual basis, and then submitting it yeas, drawing up the prosecutions.

- AP And you say you have access to these companies, but by the time you get in ... I think you mentioned they close off... you don't really see what happening.
- JP Because of security you know, it's not easy to just go in there and walk into the factory, you've got to sign the register. And by the time all this happens and someone opens a gate for you...
- HR I... without exaggerating I think I've waited something like an hour outside a gate of a factory, at night in that Selford Road area. Parked there at night, hammered on the phone... cell phone, got the fire department out... tried to get hold of the manager and you'd find that there's some guy in charge who won't let you in and, ja, that's the sort of hopeless situation that you have.
- AP Yes it's quite difficult. Ja, when we went down there yesterday, next to Willowton, there's the... what seems to be the southern storm water drain... again there seemed to be films of oil on top of it... nothing was coming out of it at that stage. I think there was one more... which was a long trench which... there's ...two storm water drains, and again where you have puddles of water there was like a surface of...
- JP A scum.
- AP ... a scum of oil, ja. But another thing was where we thought there'd be another one there was a ditch as if it had been... a storm water drain had gone to the river, but it had been in-filled with a kind of grey... dry grey matter, which we thought was ash, as if they had been incinerating something. And, anyway this trench was filled in and it's flattened for a long way, but they've graded up these tin cans, like paint cans. Some of them are filled with a slightly solidified brown substance that... some of it spilling onto the ground, others had a kind of blue powder. I mean they're all broken and rusty. Have you guys ever seen that?
- JP On which side is it... is it on the Willowton side?
- AP It's right by Willowton. It's a pity you don't have a video machine here, I could show you.
- HR Have you taken a film... a video.
- AP We just took some video footage of some of the things we saw yesterday.
- JP Was this... near their boiler area.
- AP (Draws diagram and explains it...)
- JP That is picked up by V oils. V oils recycles that stuff, and its uh...
- AP This has been buried though, you can see the grader that's put the ash over his whole place has actually dug this up, and it's just in a pile with mud and stuff oozing out of it.
- HR We're not aware of that.
- JP No, we're not aware of that, that might have just been uncovered recently.
- AP Possibly, ja. Would that be illegal... kind of dumping?
- JP It would be illegal yes. But now what happens is that most of that stuff is taken by V oils, one Roger de Klerk, and they then extract whatever oil...there is some patented process that they undergo, and its then used in the animal feed industry.
- AP From the sunflower seeds.
- JP Yes... it's called... perlite.

HR It's the kernels though, isn't it?

JP Perlite is actually a filter medium, which arrests all the impurities in the oil, and then its pressed out. But there's still a certain amount of oil that remains in this perlite. And this perlite is then taken by V oils, and they then... it's like a centrifuge process, it spins and then they take out the remaining oil, and then this perlite comes back to its normal sort of powdery...eh...

AP Is that the grey stuff that we saw?

JP Now the stuff that you saw could be part of the perlite, but that might be the dry one. Now the ones that are taken by V Oils have quite a bit of fat and oil in it.

AP No this was fairly dry. It looked almost as if something had been incinerated. There was quite a lot of it.

JP Well that could be even the boiler ash.

AP That's probably the boiler ash.

JP That would be the boiler ash.

HR They've been fiddling with stuff there for ages, always sort of funny stuff going around the back where they're either dumping or accumulating or taking away.

JP We'll investigate that one because um that's something that we didn't uh pick up.

AP That was yesterday the pile of tins and also the ash, it's clearly visible if you go walk behind. It would be interesting to know if you find anything there. I don't know if there's any other issues...um obviously the bylaws are more City Engineers side... the general question... what other steps could be taken to facilitate the successful implementation of the polluter pays principle in your... opinion? What do you think needs to happen to make it easier to get the polluters to pay for the damage they are causing to the environment, that other people perhaps have to pick up. And here we are talking about opportunity costs, for example downstream the local community irrigates from the river, and their irrigation pumps are getting clogged up they say with oil and grease. Children swim in the river sometimes... which is quite dangerous.

HR I think this public awareness and the consumer aspect that I mentioned earlier hasn't been tapped at all. And you know it happens in America and other countries but you know we haven't really seen a major campaign. Durban South with air pollution there's a great awareness there, and I think that that community succeeded in sensitising a lot of people and industry there. But you know this is an example where they could also come into effect if you had a coordinated thing. I just think that also some controls could be brought in in terms of releasing this, that seals could be placed on the valves, and you know proper control aspects so that it was only released under supervision. You know we could actually try and develop some system where everything is contained on the premises, it's only released under supervision after tests have been done so that your discharges are done completely under scrutiny, because this open access to drains, it's an open card, you can play it when you like, at midnight, one 'o clock, flexible hose, another drain, I mean... it's virtually open. And I think that possibly could be tightened up. I think the Engineers could play a role in that.

JP Um, we discussed that with Mike Greatwood when we had this discharge, and they've got – I just forget the name – where they actually block up a pipe.

HR Ja, I've seen that.

AP They plug it.

JP They plug it in yes and a...

HR They pump it up, I actually swells and closes it.

JP And we were looking at that option, if we suspected a particular oil factory. We'd then go into the drain nearest the source and plug it up there. And if we do that it would overflow on the premises and we'd know where the problem was.

HR Ja.

JP Mike Greatwood was going to explore that because he said that he didn't think he had a big enough one... plug to plug up that storm water drain that we saw there um, but they do have these plugs, but he didn't come back to me on that one. But it's something that I think we need to follow up.

HR We talked about that with Edendale hospital as well. To plug up their drains because they were... putting medical waste in.

AP Really?

HR So ja, I think those type of things could also be investigated.

AP Definitely. 'Cos one of the things that occurred to me was um, in those industrial effluent bylaws there's a lot of power that's given to the City Engineer to have, for example, the company install meters, and any devices that they need, any treatment process, at the expense of the company, which is clearly within the bounds of the polluter pays principle. But from your side, if you have to deal with the problem of an illegal discharge into the river, you don't have any powers under those bylaws to monitor for any discharges from the (indistinct)... you're reliant on Umgeni picking up the problem, or a citizen phoning you, I don't know how it works...

JP You know, the ideal situation would be for these bylaws that we've got...the industrial effluent bylaws... to be managed the way it was intended to be managed. We should ask all these industries to make application, because these are now new bylaws, to make application in terms of these bylaws.

AP That makes provision for it.

JP That makes provision for it, and I brought that point up with Mike Greatwood, although it's going to be quite a process, it's going to be time consuming. But we need to deal with those industries that are giving us problems, and if we do it that way, where we've got... where they need to advertise, submit all the information about their raw materials, quantities of ... the inputs and outputs and all that, and their processes and everything, I'm sure we would then be able to manage it better. But we are now at the end of the line, and that is the problem that we have.

AP You as Health?

JP Yes... and I strongly believe this is the way that we should be going is we should write to them, say to them these are the new industrial effluent bylaws that the Council has promulgated, and in terms of these bylaws you need to make application to comply with provisions of these bylaws.

AP The bylaws state that new companies... have to apply, and it also makes provision for re-application of existing companies...

JP Correct, I think there's a two year thing there.

AP Is it 2 years... as far as you know, has it ever been utilised – that clause? Have any of these oil companies been made to reapply for permits?

JP You know we've spoken about it, but we haven't seen anything you know that's come out of it.

AP Is that City Engineers again?



JP City Engineers, yes.

HR Bu I think that there... if I remember I was at a Chamber of Commerce and Industry meeting, and they invited the City Engineers to come and discuss it with them, and there was quite a lot of concerns raised by industry, and I don't know whether they completely overcame the resistance that I heard there.

AP What kind of concerns were those?

HR I think it was with regard to tariffs and that type of thing, but if you speak to Andrew Lehman of the Chamber of Industries, he will recall exactly how far they got with their discussions, because I just happened to be there on the environmental committee of the chamber, and it was going to be part of a process that they were going to educate the industries, and I know... I don't know how far they got with that, whether it was during this 2 year period they were going to make them aware... and how far they go I don't know.

AP From a prosecution point of view, if that's your main way of implementing... this principle, do you have any pressure not to prosecute? Do you have to be sensitive about the employment that these companies give to Pietermaritzburg and those kind of issues, does that figure in at all?

JP No not at all. We have prosecuted a few big businesses as well. No that hasn't come up as a problem at all.

HR No, I can't remember ever being put under that kind of pressure. Sometimes it's mentioned as one of the things and arguments. When you're dealing with businesses and industries, you know "are you trying to encourage industry but you're chasing me away", and sometimes they try to get more concessions but I can honestly say in this section we've never taken it into consideration. We go down a straight path of environment, preserving the environment, doing what we have to do, and if the facts are there and they can be verified, then a prosecution is what we would do. If there's difficulties and there's problems of responsibility, we would rather wait for another opportunity than, as I said earlier, go into a case and lose a case and then sit with a red face... we'd rather secure and make it 100% and get it done, so that that industry will have a different attitude from there. Because then we've achieved something. But to be slamming around in court with a half-baked case doesn't really make sense for us... I think sometimes the public perceives us as being a little bit soft, and ... in terms of air pollution I've given the assurance that we... it's certainly not the case... we are quite willing to prosecute and to use prosecution but we need to be 100% sure, and we need to be confident that we're going to succeed.

AP If you do succeed under the Water... well with an incident of water pollution or river pollution, do you know what the maximum penalties are at the moment?

HR I don't know um... there... we... there's two options. You could go and ... with the penalty which is provided in the Act and the other one which we use sometimes is to put no admission of guilt so that the accused has to come to court and let the court decide on the penalties in terms of the legislation. But we sometimes, according to the circumstances, we don't put an admission of guilt, we make the accused come to court because there's a tendency to pay a fine and sit back and say 'well that's it, you know, a very clean job'. And you know, getting them to court I think is a punishment in itself, and then for the court to decide actually gives you a very good gauge of what the law now considers, how serious they consider it to be, because sometimes they will really come up with sentences that are very appropriate, they would come up with a fine plus a suspended sentence, for example. That puts us in a very strong position because now they've got a sword over their heads, and... if that occurred again we're there. So there's a lot of options there, and I think we look at it in a number of ways each time, and there's been a number of times where we don't put in an admission of guilt. In health cases, if it's a restaurant or something and we feel he may just pay the R200 and laugh it off, take it out of the till or something, we say no, lets get them in court, no admission of guilt. He appears in court, and then you find the magistrate actually coming up with very appropriate sentences, sometimes even increasing the sentence.

AP Are you happy with the Magistrates' attitude and understanding of the problems... with regard to the situation

the rivers.

JP We don't have a problem, because you find in terms of this Magistrates' Adjudication Act they can now... impose a fine which is far more higher than what the bylaws provide for the first offence, and we found that out as well, that the Magistrate's then give a suspended sentence, a fine plus half of which is suspended for five years if they commit the same offence. That is very good because the accused knows now that if he commits a similar offence within that five year period, then he's going to be in big trouble. We also have a situation where the accused gets his lawyer to try and negotiate with us. We also welcome that, where they clean up their act, and then we say okay fine, you do that and we will try and reach a compromise and settle this thing out of court. So that's also another option that we have, which we've found to be quite useful as well, rather than going to court and not getting it finalised in the quickest possible time.

AP ... One of these companies I understand was recently... they had a small lead sink making operation on the go which was closed down. Were you involved in that at all?

HR Ja, it was in Willowton Road yes, and we served... it was just before Christmas so I served a notice on the Friday, I also said to the individual... when I say it's a small sink uh lead sinkers, it was actually quite a big operation. This guy was supplying... the whole of Natal. He had 8 workers working on it continuously day and night, and it was situated next to the Butterfly Farm, so you had a very nice contrast of an environmental eco-tourism operation, and right next door a sort of group of mini factories, where you had an engineering works and at the back of this engineering works this lead smelting thing.

AP So it wasn't linked to the oil factories?

HR No, it was just an individual that was trying to fly a kite. I mean he was just trying to make some money.

AP We understand that there was no health protection for the workers or anything like that.

HR No, very little. We served the notice on the Friday, and when I served the notice on him, which is a written letter, it was there to cease forthwith because it was a scheduled trade, and when I handed it over to him (*interruption*)... when I go there I offered, when I handed the letter to him on the Friday, I offered to meet with him on the Monday to discuss what sort of requirements he would require to rectify this whole situation. When I got there on the Monday he was still continuing with the process, so I prosecuted him... (END TAPE 2).

AP The data that you get from Umgeni, is th... they give you the water quality data is that correct? What do you know about the water quality of the Bayne's Spruit?

HR It's consistently bad.

AP Do you know how bad it is?

HR Yes, exactly. I know how many faecal units per millimetre. Each time... I mean ... it comes pretty regularly. It's probably one of the worst streams... I can let you have access to that data if you want.

AP That would be great.

HR You want it now?

AP Well it doesn't have to be right now, perhaps we could arrange that. We have some water quality information from Umgeni, but one of the things they hadn't supplied us with, I don't know if they didn't monitor for it, was soap, oil and grease. And given that these oil companies seem to have been persistent offenders for some time, we were quite surprised by that. I don't know if you get information on soap, oil and grease content?

JP No, I suggested that to Garth, that we needed to monitor that to check how much of it is getting down. I think because of cost implications, because to try and get all that analysed, it's a lot of

money. This is now additional work that has to be done by them.

AP So the problem here seems... if we seem to agree that there's obviously a problem, there's obviously a domestic waste problem, there's litter everywhere, there's fecal matter presumably from that informal settlement around there, but there also seems to be a problem from these factories – you can smell the chemicals, you can see the sludges and foam and that kind of thing. How do you then deal with that? If you know that the problem is there, is... do you have the capacity as the environmental health department to set up an investigation, a monitoring, um something that could actually span a month if necessary to... document for example any discharges that were made, to build up a case for prosecution?

HR I think what... one needs a strategy for the whole... all those aspects that you've mentioned, and I think you know we've touched on some of those strategies and some of the aspects, and securing a prosecution would be part of that, so you know you've got to develop the strategy around that. The upliftment of the communities, finding housing for people, those are all strategies that need to develop around the actual stream itself, because they're all impacting on the stream. So ja I think you cannot look at it from... the industry is playing a major...having a major impact. The fecal aspects of that, there's dumping as well and there's litter, so you know... under there's excreta and so on...

AP On the banks there's excreta.

HR There's a lot of impacts there, so ja I think you know that's the type of strategy that needs to be adopted. One needs to look at each aspect, um that we need to do by such and such, and that we need to be it by such and such.

AP Would you do that by yourselves as a department or would you do it with other...

HR No I don't see it as an individual type of operation, I think it really needs a team approach. It needs a lot of co-operation, and it might even need some money to assist.

AP And presumably some body or institution to take the initiative...

HR Ja

AP ...to drive that process.

HR It certainly will.

JP We've discussed that with... we had somebody from roads, we had roads, we had Umgeni Water, we had Sewerage, ourselves. Who else was there when we did that? In fact no what we want to do is um we want to continue with that, we were just waiting for that camera to come in, and we gonna start off from one side doing all the industries in that area, and picking up all the problems and then...

AP Sorry, how does that camera work? Is it intended to be a once off journey up the pipeline, or is this for the sewers themselves?

JP This is for the sewers and for storm water as well... it would pick up the discharges, it would photograph...

AP It's one camera, so you'd have to go and physically put it there.

JP Yes.

HR In a manhole, we put it at the bottom of a manhole, and it walks to the next manhole.

JP There's an operator there.

AP Is it remote controlled?

JP It's remote controlled yes, there's an operator that's been trained to use it. Grant Fryer from sewerage section, he's an inspector in the sewerage branch. He's been trained to use this camera, and once they've got that now modified...

AP So the wheels are too small at the moment.

JP The wheels are too small and I think the light's not bright enough so they were going to get that all sorted out, and they were going to contact us once they were ready to use that camera. And we were then going to get all the people together and we then do our inspection and find out what the problems are. And once we've got the evidence, then we can certainly um...

HR It would take us a long way or long... take us close to a prosecution I would say because we now sit with very conclusive evidence.

AP Would you wait for a spillage or a discharge to happen, or is this just random?

JP No, we will not wait for a spillage to happen because if we use a camera now we'd have a better idea of what is happening... in the system. Which drains are coming in, where they're coming in, so if there's a spillage then we know which sections to sort of look at.

AP So if you suspected lets say that company A was illegally discharging on a weekend, you could have the camera go up and sit there for the whole weekend if necessary to watch the hole where it comes out of or?

JP We could possibly do that if we suspect its happening on Fridays and Saturdays, I don't mean that's a problem, but we need to know before hand where to put the camera... it's between this manhole and that manhole, rather than us now starting from the bottom or starting from the top and trying to...

HR No we've got to do a bit of a survey first, get our whole... everything jacked up so that we know exactly, you know, that company's got two manholes or two release points, and measure the distance and so on, so we've mapped it out. Then we're actually in a position to come in there within 10 minutes to see what's occurred.

AP So where you think there's a problem you can send your camera to that point where its already been and see it coming out and set up your causal chain.

HR I think that would be quite effective.

AP How much was that camera?

JP It's a lot of money. I think it was in the region of R100,000 or something.

AP Does the city pick up the bill for that?

JP Well you know if you look at it we would be able to recover that money in time to come, ah it's quite a useful piece of equipment.

AP It would seem to be.

HR It can also check for cracks and leaks and breakages and where a pipe has actually snapped off or something. So you know by it going down there it can actually show well there's a great big root coming in here from a tree, and that saves a lot of money, then you know exactly ja twenty meters down here lets dig here, lets cut this tree down lets get the roots out. So I'm going to save a huge amount of money.

JP Maintenance of the sewers yes.

AP And if a kid gets lost down there you can go and find it.

HR Ja (chuckles)

AP There was one cover just um... this is a bit off the topic, but the manhole for one of the sewers was missing, the cover, I don't know if you... is that your area of concern?

JP Yes we do pick this up and we pass it on, if it is storm water we pass it on roads...

AP This was a...

JP ... if it's a sewer...

AP ...it looked like a sewer (*explains location*).

JP You see what happens is these covers are stolen...

HR ...cast iron... they take it to the scrap yard they get R100 for it.

JP These covers are continuously being stolen....

AP Just one other thing, again when we had a look at the river yesterday, on the Capital side of the river, at various points there seemed to be a leachate coming out, some kind of red, it was staining the rocks a red colour. Have you ever picked that up, do you know what that is?

JP I picked that up and I couldn't really establish what happened. But it's more than likely that drums of the stuff might have been deposited there because there's no way that it could have been due to a pipe that was damaged or coming directly from those factories.

AP Do you know what is is?

JP It was very difficult to get down there, because I don't know if you found there was a whole lot of bull rushes there. It's a bit dangerous, I don't know how deep it is. So I know what you're talking about but we couldn't get down to this spot, but I was quite interested to find out what it was, but it would appear to be oil.

AP We were actually able to walk up to it at various points, it's coming out I'd say at least three or four different places. There's one where there's almost pools in the reeds, I think that... it seems to be pools of something, but to the right of that and also further up...

JP We went there when it was very wet, but is it dry now.

AP Ja, it's pretty dry at the moment.

JP Okay, well then we need to try and follow that up.

AP Maybe you could do that and also look at those paint tins that have been dug up, I don't know... it seems a bit strange.

JP No we didn't go there, we're just waiting for that camera because we went there and then we found that it's useless us carrying on with this exercise. We might as well get the camera.

HR One of the chaps actually walked down a drain and I mean that's dangerous. You get gases and things in those drains and can just go unconscious.

AP We didn't want to go anywhere near inside those drains.

HR It's not a good idea.

AP Is there anything else you...would like to add, or is that about it. I've taken up a lot of your time and I really appreciate it. Thank you very much.

JP No it's a pleasure.

AP It's been incredibly informative.

HR No it's a pleasure... I think that awareness is important too, you know, and people like yourself taking an interest in these matters is also you know, we appreciate that.

AP That's great. And hopefully we can get the information out there...

JP I just hope we could crack this and come up with a success story the next time around.

AP ... It was interesting, the two community guys that we went with, the one chap is possibly in his forties, he was reminiscing as went down behind the Epol factory that when they were children they used to swim there, he said there was like crabs, and the water was clear, now it's cloudy and... we all had gum boots except him so we were piggy-backing him across different parts of the river, which was a bit sad in a way.

JP ...you know you talk to people in the area, they used to go fishing in there, and...

HR There were kingfishers and bird life...

JP ...Bird life, and you don't even see any bird life around those areas now, there's nothing for them there, there's no frogs, there's nothing.

HR Not even a tadpole.

AP I saw some strange invertebrate, well I don't know... some sort of insect in the water and that was the only insect I ever saw.

HR Probably a mutation of some turtle or something.

AP It could well be. Okay, anyway thanks so much...

## Interview

**Interviewee:** Chris Fennemore ('CF'), Senior Scientist Umgeni Water (Darvill Wastewater Works)  
**Interviewer:** Adrian Pole ('AP')

**Date:** Friday 28 September 2001  
**Venue:** Darvill, Pietermaritzburg

CF Okay, how has Umgeni implemented the polluter pays principle?

AP (murmurs in agreement)

CF You first have to remember that Umgeni Water has no jurisdiction in terms of the statutes, and... directly anyway, other than... any more than any member of the public has, okay. In terms of the National Environmental Management Act, any member of the public can... that's has been affected by pollution can go and buzz an industry and call for environmental information, and then hopefully lodge proceedings against them. Okay, it's the first thing. Okay, um we've got... we have assisted the now Msunduzi municipality, previously the Msunduzi-Pietermaritzburg TLC, to get their bylaws - trade effluent bylaws - going, and in those bylaws there's a section which says that industries discharging to sewer would have to pay us a tariff. And that tariff... we've helped the municipality draw up a tariff for that. So any industry discharging to sewer will have to pay for the strength of its effluent. That equation, the trade effluent equation, has been modified by the councilors. It's a political thing. We put in a lot of different parameters in there like PH, heavy metals, soap oil and grease, suspended solids, and COD. Now the COD is the only factor that was left in there in fact. Uh, so we've got a problem with that. But that's a political thing. But we... that's... that's where we've helped to... the municipality with the polluter pays principle. Up until about a year and a half ago, two years ago, we were acting as agents for the Department of Water Affairs and Forestry, and acting as a watchdog and doing monitoring. Unfortunately in terms of the Water Services Act of 1997, that actually states that a water board or a water services provider should stick to its primary function, and that primary function is the supply of bulk water. Okay. Anything else we have to have a customer for. That's section 13, that basically says what functions we can carry out. But if we... if we can find a customer to pay for those services then we can continue to do so. So we went to the Department of Water Affairs and Forestry, who is at the moment the custodian of the water supply... water resources, and they said that they weren't prepared to pay for these services. We're now waiting for the Catchment Management Agency to get going. We are... Umgeni Water's assisting with the facilitation of the establishment of that Catchment Management Agency, with the hope of providing service to that because we've got ten years worth of data of the water courses in this area. Water Quality data. So we've been... as a result we've been withdrawing. And then of course there's problems with the water tariff and things like that, so we've got to be seen to be withdrawing from this sort of thing. People can't be seen to be paying for those services, or cross-subsidizing those services. So um... where an industry is exceeding the limits for dis... the quality requirements for discharge to sewer, then we do give a written notification and we do... um... we've got one prosecution case outstanding against one tannery in Pietermaritzburg, which is lying with the City Administrator right now. There's a problem with that because he's overloaded, he just can't get to these. Um... historically Umgeni Water also have an agreement with the municipality to say 'okay, if the City Administrator is overloaded, then maybe we can appoint an attorney and run with that, and do a prosecution with that. And we did a ... had a case against the then Capital Oil Mills... um... which we lost in fact. But now with the Water Services Act in place I've applied for funding to do these prosecutions, and they're not... not forthcoming. Management is forthcoming with the funds. So we... we can't do that sort of thing, so we're totally reliant on the municipality now to do the prosecutions.

AP Are these prosecutions for excessive um loads coming in to Darvill?

CF Um, not excessive loads but outside the water quality requirements we have... effluent quality.

AP In excess of the standards?

- CF Yeah, and those are specified in the bylaws. Um, what we do do is we... go monitor on a monthly basis all the major wet industries, not every industry because we're not interested in that because they don't have a significant impact on the... on the effluent.
- AP Tell me something, can I just go and get my... *(Tape stopped for AP to go and get sunglasses from motor vehicle... outside interview, uncomfortable glare)*
- CF Yes, so the major wet industries ah... we monitor, and if they exceed the standards we give them written notifications. Um... there's books of written notifications in there but it's meaningless because we can't seem to get a prosecution off the ground.
- AP Who has to do the prosecutions? Is it Mr van der Merwe?
- CF Mr van der Merwe seems to be the guy that's... that's doing it. That's the guy we're liaising with right now.
- AP He seems to be instructed through City Health, is that right?
- CF Ah, yes. We... we... now... now is the case. That wasn't the case about a year ago. This was a recent development here. And we submitted an affidavit through City Health and then I went through to affid... uh went through to Mr van der Merwe. In fact I phoned him this morning and he... he didn't even speak to me, his secretary spoke to me. Well the guy's overloaded, and I think that the Council, it's in their interests to keep him busy I think. Okay.
- AP Okay.
- CF That's... that's how we've... we doing it. There's other things which we brought up. We've brought up another tariff.
- AP Mmmhmmm.
- CF Um... whereby if somebody is exceeding the standards, ah but we can cope with it in the plant here, and it isn't going to impact on the environment, a special case... um... then we can give a relaxation through the municipality... and that goes through Mike Greatwood, the City Engineer is empowered to do that. And then they would pay... the company concerned would pay for the increased treatment costs. There is one example of that in Pietermaritzburg.
- AP Which company is that?
- CF I suppose I can say it. First Graphics. They're a very responsible company.
- (All chuckle)
- AP Tape recorders do make people nervous sometimes. Um... okay. That's great. Um... sort of... the way the polluter pays principle is implemented here is... is obviously the um... through the municipal bylaws, and its implicit in that. Obviously they have to pay the charges, is that correct?
- CF Yes sure, for their waste loads ja.
- AP And you're saying there's obviously also discretion for them to discharge in excess of that.... And that's on this new...
- CF On a special case.
- AP On a special situation. Are any of the vegetable oil industries on that tariff?
- CF No.



- AP How do you determine what the companies are discharging? Do you monitor them?
- CF We have a monthly sample, we go in and take a sample once a month. With the oil industries in fact we're doing it twice a month, because they have quite high loads, some of the highest loaders here. Which is fine because we get money for that. And we analyse those samples for COD, soap oil and grease, um phosphorous, pH, electrical conductivity, uh... suspended solids, and one or two others. That's off the top of my head. We've actually got it on computer. (indistinct)
- AP What kind of levels can you... can Darvill deal with? I understand that if... if the discharges are too high, for example in soap oil and grease, that affects your operations, is... is that correct.
- CF Yeah. It... it messes up the operation. It clogs the clar... well the surface of the clarifiers get clogged up with a lot of greasy gunge, which has got to be removed, so that costs us. We can get a bit of foaming at the activated sludge plant. It can impair the transfer of oxygen into the water body, or the effluent body.
- AP Does that then impact on your discharges into the Msunduzi?
- CF It can do, but we haven't had an example of that for quite some time. Although we did have an oil discharge last week, for which we've taken samples and we're again sending affidavits to the... to the municipality.
- AP Do you... are you able to tell which company made those discharges.
- CF Out of a court of law I could tell you... (chuckles)... we... we've got circumstantial evidence, put it that way, that it was one particular industry. It's very difficult to pin these things down because these guys can be very slippery. We have circumstantial evidence that one of them is poured (hailed/holed?) into storm water drain there, but you've got to actually physically see what's going on there. So the municipality is going to send a camera up.
- AP That's their hundred thousand Rand camera there...
- CF Yeah.
- AP ...which... the wheels are too small.
- CF The wheels are too small, and now the light's not bright enough, and all sorts of things. But these are practical limitations, which will become... which will be overcome in due course, but, that's life.
- AP So is that...um... their effluent's going straight into the... into the storm water drain?
- CF Not all the time, it's an intermittent thing. We're aware that it happens fairly regularly because the Sobantu residents complain, which is great.
- AP On Tuesday, we went with two of the um Environmental Network 96 members um, we took some video tape of the Bayne's Spruit and there was aah...certainly sludge in various areas um... both by Willowton Oil – there's um like trenches coming out, I think of their southern storm water drain, there's films of oil – there's red leachate coming out of the banks on the other side...
- CF Okay, the red leachate I shouldn't worry about... (indistinct)... the red leachate sounds like iron, which is a natural thing. I'm just saying sounds like, I haven't seen that myself. But it's a fairly common thing.
- AP And then on the big storm water drain on the other side, which I believe is the one that goes up to Capital and Sealake...
- CF Yeah.

AP ...there was quite thick scum or emulsified...

CF I don't think Sealake's on that... on that line...

AP Sealake's not on that line?

CF Garth's on leave today, unfortunately so I can't...

Smo  
ker Is that the storm water out haul?

CF There's Edib Oils as well I think. Yeah. No we... we're aware...we got called to one on that, and we've taken samples, sealed those, and that's the one where we suspect they've hauled into the storm water drain. You see, you can't actually show beyond a reasonable doubt that it's actually going through there but... coming from there. We've got samples and all the rest of it, and photographs as well.

AP Of the recent oil spills or...

CF That was the one... oh long ago did we do that? It must have been quite a while back. A couple of months back now.

AP 'Cos this was just this Tuesday.

CF Okay, no... we weren't alerted to that one.

AP Well I don't know if it's a major spillage, we just went to take some videotape and um...

CF Of course, then municipality gets involved in that, and Water Affairs' responsibility because it's a river there.

AP Um, with regards to application of the bylaws, it seems that the City Engineer has wide powers to have the industries pay for various things, such as monitoring equipment, um...any works that need to be done or anything like that. As...as far as you're aware, do you know whether any of those powers have been exercised?

CF Ja, I think they have. I mean, that relaxation... one company's paying for excess phosphorous. Um... and we sealed one sewer. That's the same company which we suspect is polluting the storm water drain.

AP Is that recently or sometime in the past...

CF That was a year ago they sealed the sewe... sealed the sewer. Um, what else? And occasionally then companies are instructed to bund areas and that sort of thing and...(indistinct)... it's mainly on the tariffing side of things.

AP So basically the... the main way the polluter pays principle is being operated or being put into operation is... is via the tariff system.

CF At the moment yeah, because the Water Services Act and... ja.

AP That's obviously through the municipal bylaws, the municipal bylaws... the indus... the trade effluent...

CF Yes, the trade effluent bylaws, ja.

CF If Water Affairs come in... get involved, I mean we... we call them in if there's something obviously going wrong and we're aware of it, we will notify them and do notify them, and they act in terms of the National Water Act, sections 19 and 20 of the National Water Act. So we have quite

- a good working relationship with them from time to time.
- AP Um... those sections... are those that deal with the cleanup costs and things like that , yeah?
- CF Yes, they... the fact that they can give instructions or a directive to clean up, and that sort of thing.
- AP Again they've got to know which company is responsible?
- CF Yeah.
- AP The City Health Department, Hilton Ryder and Jimmy Pather, they emphasize the difficulty of knowing which company is actually to blame.
- CF You've got to be there 24 hours a day. I did actually ask in the old days um for a continuous reading conductivity meter and PH and oxidation reduction potential meter, because you may go for one water quality variable and miss the pollution altogether. It'll be reading beautifully. And the oxidation reduction potential was a bit of an experiment, but we wanted PH and conductivity as well. And that was going to cost in the region of R25,000, but again I was refused that as well, uh... by Umgeni.
- AP By Umgeni.
- CF Yeah.
- AP So... but obviously the City Engineers could get the companies to pay for that themselves?
- CF For the continuous reading equipment. What, in the river? No.
- AP/ (Talk over each other)  
CF
- CF No, no no.
- AP Sorry, I thought was meaning in the sewers.
- CF No, in the river.
- AP Um, with the river do you... we got some water quality data from Umgeni but... um it was given to Nevil Quinn... um... that's from 1998 um... just about I think up to date. There seem to be no readings for soap oil and grease on that.
- CF Would that have been within the river itself?
- AP Ja. In respect of the readings there were various variables, I mean hundreds... well not hundreds, but quite a few of them, but there seem to be no readings for soap oil and grease. Do you know whether Umgeni...
- CF You'll have to ask Steve about that, I don't know. Um, I mean there would be COD and that. I'm sure.
- AP There is COD, ja.
- CF Again we're cutting back on that as well. That's being cut back very shortly. I'm just trying to think. But there certainly would have been COD and there would have been PH, so we would have... would have picked up something.
- AP Those would have been there, yes.
- CF Again, you know, it's probably on a couple of weeks basis... every couple of weeks or so, so anything can happen. I mean we take it every second blame for its change, that's why we asked

anything can happen. I mean we take it... every second blame for its change, that's why we asked for this early warning system, the idea would be to have telemetry through to a cell phone, you get a number of bleeps then you know to go there.

AP That R25,000 was too much?

CF I don't believe it would have... it was too much. I believe it would have saved us a lot of money in the long run, or the community a lot of money in the long run. I don't believe that's too much money, but there again management don't believe that it... that it was the case.

AP So you still think that would be a um... one way to solve the problem of... of knowing when discharges are made into the river.

CF It's one of many strategies. I mean you don't just go one route, it's a whole network of things you've got to do to try and get this right.

AP Do you think the um...the... the embodiment of the polluter pays principle in national legislation and.. and in the bylaws has had any discernable effect on... on river quality... on the water quality of the Bayne's Spruit?

CF Of the Bayne's Spruit? That's very difficult to say, because with... with... when it comes to pollution prevention, you only see what you haven't prevented. That's the trouble. And if you have a look at somebody like Birmingham Oil Mills, they've put in a pre-treatment plant and all the rest of it, and we've had no problems with that organisation at all, possibly because they haven't been producing very much. But nevertheless they... they were very responsible so... would could say it could have been worse, but you never know what you've stopped.

AP Mmhmm.

CF Plus the fact that we have picked up things in the past, and have submitted affidavits, which makes their lives a little bit uncomfortable. They get upset, and we have meetings with them, and all things like that. So, you know, we are being a bit of a thorn in the side. So yeah, I would say it's had some effect... but what effect you cannot say. We can't write a report saying 'these are our achievements' because you don't know what you're preventing.

AP What other things do you think could be done to implement the principle better um... or in a more effective way?

CF Purely and simply... some money...um... dealing with... to invest in a little bit of extra equipment, and in particular – most crucially – environmental advice, legal advice. I... I tried to try and get Ian Sampson, whose been very successful with the Durban Metropolitan Council... he's prosecuted Plascon for R60,000 and that sort of thin. I wanted a float of about R60,000 actually, which wouldn't necessarily get consumed because if we won the case we would get the stuff back again... so to have funds made available for legal costs. I think if we, if... particularly at Umgeni, if we had that, we would go a lot further down the line, because as soon as you take that pin out, all the other nice things you do like waste minimisation, environmental awards, um... education, presentations, seminars etc. all of those things there become a waste of time. That pin is taken away and the whole thing collapses because people don't feel the need to do it. Except when it comes to things like ISO 14001, that is having an effect. A small effect again. Um...People... we have noted that people are getting... taking note... um... which is useful.

AP Does that include the vegetable oil concerns... industries?

CF No, it doesn't.

AP 'Cos I understand that they export quite a lot of their product, and that they need to get a certificate from the Department of Health or... the Health Department... so they see that perhaps as one way to try an um...

TAPE SWITCHED OFF FOR INFORMAL DISCUSSION.

AP Um... so Capital went into liquidation round about last year, is that correct?

CF No, it went into liquidation prior to that, it re-opened in January last year.

AP Last year? And that was as Spring Gold investments?

CF Yeah.

AP So that was obviously after the industrial effluent bylaws were promulgated?

CF Mmh.

AP Okay. Do you know whether they applied for permission from the City Engineer in terms of the... the uh bylaws

CF They did apply, and the City Engineer consulted with us, and that's when we spoke to Capital. We said that by all means they could connect to sewer, provided that they finished their effluent treatment plant.

AP And did they do that?

CF No.

AP So was permission given to them by the City Engineer.

CF No.

AP But they're still operating at the moment.

CF Operating, and officially they're not discharging any effluent.

AP Officially they're not discharging any effluent?

CF Yeah.

AP So...

(TAPE SWITCHED OFF... RESUMES...)

CF ....is a horrendous...it can be quite smelly too.

AP From the rains flushing it down the stormwater drain?

CF Yeah.

AP Um... so if Capital didn't finish their... their effluent treatment plants, do you know whether they fini... completed it since then?

CF No, they haven't completed it.

AP So... they don't have the capacity to treat the effluent on their own plant, so they're either trucking it away, or disposing of it in some other way.

CF They say they're sending it to...to Spring...um Sealake.

AP To Sealake?

CF That was mentioned once for... for pretreatment there.

AP But there is no way to... to verify whether that is happening?

CF No. 'Cos it's not a hazardous waste so you don't have this cradle to grave story...

AP Mhh.

Smo  
ker (Comments about if they were using waste services, you can request documentation)

AP Mmhh...sure... Okay... it's quite a messy business then.

CF Shit's our bread and butter.

(CHUCKLES ALL ROUND)

AP So, obviously the polluter pays principle has various aspects. Part of it is... is um... for example cleanup costs, getting the polluter to pay for direct costs, other aspects include administration costs, um, and then there's obviously the charges system that's being developed nationally. Have Umgeni been involved much with... with the development of the Charges system... the waste discharge charge system?

CF Um, with Water Affairs? No we haven't had much input. We've commented obviously, but we haven't been involved in the nuts and bolts. What... what we have tried to do, I don't know how successful because that study is still going on, to see what the environmental economic impact of Darvill Waste Water Works is on the Msunduzi River. And there's a student... I think it's an honours student at the university doing some work on that. And we've also put in a Water Research Commission proposal for the Hammersdale area, on the Sterkspruit, to see what the economic impact of that would be. But that's as far as we've gone on that.

AP That's your discharges into the Msunduzi... from Darvill?

CF Yes. We want to know what our economic impact is, environmentally.

AP Do you know whether the WDCS, when its implemented, will that supercede the municipal bylaws?

CF No, it will compliment it. What will happen is that the um... the discharge directly to the river um... will be paid for by us, from the Waste Water Works, or whoever owns the waste water works at that stage, and then that is a cost incurred by us, and then that will be imparted back to the industrialists who discharge to sewer in the Trade Effluent tariff, eventually when it comes in.

AP And um that... that you sample once or twice a month um... the... the industries going into Darvill...

CF Where we have a problem we will deploy an automatic sampler in the sewer. It's a lengthy... it can be a very straightforward process, it can be a lengthy process. You've got to find somewhere where the thing's not going to get stolen, somebody's not going to tamper with it, sometimes you need a lockable manhole cover to put on there, so you don't always get the ideal situation.

AP Did the...um... do you find the... the tariff is working? Are companies being charged for what they're sending in here, or discharging into Darvill? I mean, do they pay if they're in excess?

CF Um... yes they do. Um, I'm quite convinced that we don't get everything. You've got to think about the costs involved with that. But where we have had problems with an industry like an oil industry, we have put an automatic sewer... a sampler down the sewer, and tried charging them accordingly. So... ja.

- AP Is it effective?
- CF It's fairly effective, yeah.
- AP Um... with the monitoring of the river, that was obviously one of the roles that Umgeni was... was doing... you've mentioned it before...
- CF Yeah.
- AP Do you... is that um a separate function from Darvill, or... I mean obviously you're part of Umgeni, but who ... who actually conducts those... that water quality testing of the river.
- CF Okay. The way it used to work, before the pollution section was disintegrated because of the Water Services Act...
- AP When was that?
- CF Um, that was over a year ago now, about July, August last year... and pulled it apart... and we're the remnants of it... one or two other people scattered around as well. So the way it used to work was the pollution section would say there is a need for sampling, and identify the water quality variables and frequencies to be sampled and analysed. That would then go across to our water quality section of the monitoring programme, and there was a fleet of about 11 people who would go around taking samples. Um, they wouldn't just do rivers, they do our own quality assurance testing on the drinking water as well, and they would control that.
- AP So that's no longer happening?
- CF Well, it's been reduced, and it's going to be reduced further because we... we did go to Water Affairs and Forestry and said 'Look, this is how much all this is costing, in terms of the Water Services Act we're not supposed to do this unless we have a customer prepared to pay' and they said 'no'.
- AP Um, so is the Bayne's Spruit still being tested?
- CF At the moment it is still being tested.
- AP Above and below the oil industries?
- CF Yeah. Not as frequently as it was.
- AP How often is the testing happening?
- CF For E-coli it's one a week, but that's a bacteriological thing. And in fact some of these oil effluents. If it comes out of a sewer, the E-coli will go up. If the pH is low, then it's likely to kill the bacteria anyway. So you might get a low count and think everything's fine, but you don't know whether it's fine because it's the acid killing it.
- AP Um. Which of your tests would reveal the SOG that's... that's coming out of those factories... that they're discharging?
- CF Well, COD would help... this would be in the river, hey?
- AP Yes.
- CF And you would find that if you get it at the right time, 'cos they would tend to discharge at night and we sample during the day... um... and they would tend to discharge at the weekend... and if you're an industrialist who wants to do that, you would discharge at night...

AP Discharge on a Friday afternoon, the City Health department suggested

CF Yeah, yeah... it happens. And these people aren't stupid, they would want to do that.

AP So it's very... is it likely that if the industrialists wanted to evade detection, that they could do so, and that perhaps the... the testing that's happening isn't really picking up the true nature...

CF That's why I asked for a continuous reading meter on the Bayne's Spruit itself, but it was rejected

AP So that would certainly be um... you would recommend that that still be done as a way of monitoring the river?

CF The reason being is because within half an hour someone could discharge a hell of a lot of effluent, and it goes down as a slug, and you... (indistinct)... you've lost it. And then its like looking for a needle in the haystack down the river, although...

AP Is that why you just find small pockets of... of effluent?

CF I don't know, possibly. It depends... from their discharge regime.

AP Mmhh... not easy huh?

CF No, but it's fun.

AP If you... you said there's... there's going to be further cutbacks on your monitoring role.

CF Yeah.

AP Would that include the Bayne's Spruit?

CF Yes.

AP So does that mean that there will be no monitoring of the Bayne's Spruit whatsoever?

CF Uhm... Steve Terry, you' have to chat to him directly just to see exactly how much they're cutting back.

AP Okay...uhm, who do you think would then...that's a Yellow-billed Kite.

CF Yes.

AP Uhm... if they're going to cut back, do you know who.. um you know, whose responsibility it is um to then start testing.

CF It is the Department of Water Affairs and Forestry's responsibility as the custodian of the water resources. They may hold the municipality responsible to a large degree for the monitoring of the rivers going through their property, so it would sort of be a joint thing between water affairs and the municipality. When the Catchment Management Agency comes into play, it will be their responsibility, and then Water Affairs would have a sort of a supervisory game...gamekeeper type function.

AP Have you been involved with the... the uh... development of the Catchment Management Agencies?

CF At the start yes, but now I'm not involved.

AP Really? Is Umgeni involved?



CF Yes, they're very much involved. Chris Dickens is involved in that.

AP Do you know how long um... the CMA for example for the Pietermaritzburg region... how far that is away from being implemented?

CF There is foreign aid, DANCED is aiding one... ah three catchment management agencies...(INDISTINCT)... three in South Africa, and we're one... the southern management area. Another one's the Crocodile in the West, and another is the Olifants in the Cape, not the Olifants in Mpumalanga. I would have thought that would have been a better one, but anyway. Uhm... so yeah... how long... far away is it, I don't know. I've just recently been appointed chairman of the Pietermaritzburg Chamber of Commerce and Industry's Environment Committee, so I'm going to get involved again through that, so they can't get rid of me that easy.

AP Do you know if these oil industries are... are members of the Chamber of Industry?

CF Do you want to turn that off?

AP No (chuckles).

CF Then I'm not going to tell you.

AP Okay.

(TAPE IS SWITCHED OFF)

CF On the 9<sup>th</sup> October we're bringing the Sobantu people together... hopefully, it's not set up yet, but we have got a date earmarked. Get them to state their case, what their problems are and... Umgeni Water has got a certain amount of data which we'll present and see if it correlates with what they do, but of course, we don't catch everything.

AP Is this to present to the Chamber of Industry...

CF Yeah.

AP ...Commerce and Industry

CF We're going to try get Chamber members and people who are not in the Chamber, people from the municipality and the Department of Water Affairs and Forestry to discuss the thing. And we're going to look for a way forward, and I would say the way forward would be, if we can't get these instruments in place, if we can't get them funded, is to get the Sobantu community as a watchdog organisation to... to alert the authorities accordingly. And in that way we can start picking up the problems earlier. In the meantime, we've got things like a waste minimisation club which was started in Pietermaritzburg with the university, and now the university is running with that fully, and going for it. We'll try and get those people on board as well... so that they can save money and help and clean up the environment while they're at it. Uhm... but at some stage some of the industries are obviously going to have to be charged, if they don't want to toe the line. But that wouldn't be us, that would be either the municipality or Water Affairs.

AP Obviously the PPP... um as a ... an important element of it is... is its economic uhm... the economic incentive its supposed to provide to industries to change their behavior. And clearly if they... if they're able to get away with it, uhm they're not going to change their behavior. So do you then see enforcement as an important aspect of changing their behavior.

CF That is the biggest... the weakest link in the chain, the enforcement side of it. Because I believe even Water Affairs do not have enough environmental lawyers... there's a lot of committed people there, uhm... but they don't have enough environmental lawyers to actually pursue and prosecute these cases, and follow them right through. The people that they've got at the moment, uhm the prosecutions is just a sideline on their part, uhm they're all very good guys but, you know, they're all overworked and have other priorities as well. And on our side we can't get anybody, and if you

look at the municipality, poor old Johan van der Merwe is overloaded as well. I mean, so if we can inject capital for prosecutions, and maybe a little bit of 24 hour surveillance, we'd so... we'd sort the problem out from that side, and then all the other things will start falling into place. Uhm we're attempting to do things on the other side, like encouraging industries to minimise their waste, and try and educate them and make them aware of their obligations, uhm even trying to get environmental awards in place for the good guys. But, all of that will fall away unless you have this enforcement.

AP So you really need a mix of... of different instruments then?

CF Oh, most definitely. You can't... you can't just have the cane, it doesn't work. All you're going to do if you push, people will push... push against you. You've got to pull, but at the same time you've got to maintain your credibility as well.

AP Mmh... that sounds important. Um... I'm not sure what else there really is. Uhm... so... so obviously as... as the way forward you've talked about 24 monitoring, perhaps Sobantu getting involved, uhm effective prosecutions... do you think the criminal justice system is... is effective given the delays in getting to court and that kind of thing, or do you think there might be problems on that side as well?

CF I think there's problems on that side as well. And also a lot of um... the prosecutors need educating as well, because it's a very complex process. You're dealing with chemistry, uhm... they're not trained in chemistry and they don't understand the issues.

AP So you need specialised prosecutors who...

CF You need specialised prosecutors, or if not a team of people to... to keep the thing together.

AP Right, is there anything else you'd like to add.

CF No, I'm just delighted you're doing this project.

AP Thank you.

CF It should take a lot of frustration out of the system, I would think.

AP I'd hope to (?). Do you think there's any areas we haven't covered... before we... sign off? Is there anything that you would have liked to have um mentioned but perhaps haven't discussed. I think we've gone through most of the questions that we had here.

CF As far as the PPP is concerned. Ah, not really... just that resource economics is going to be the way... way forward now, particularly with waste discharge charges coming up. And that's what... where most of the arguments seem to be coming out in the future. You've got to be able to feed data into that, and I don't think that there's enough monitoring nationally to actually provide that information, so... there's got to be a lot more monitoring done in the future. All have been okay here, but we're sort of at a cross-roads right now... either we're going to go down the hill and disappear, or hopefully the catchment management agencies come into place soon, and we get a customer then things may take off again.

AP So to... to actually prosecute... that would be... you'd do private prosecutions, is that right?

CF We've...we've got an agr... oh yeah... we've got an agreement with the municipality to do a prosecution... to appoint an attorney to do a prosecution. That attorney was appointed some time ago, Mr Norman Brauteseth, and he did the Capital Oil Prosecution, which we lost.

AP Do you know why you lost that?

CF There was something very simple and we've plugged that one too, and I don't think we should have lost on that. This was before my time. But it was a case that... that the defence said that we

could not prove that the bottle was clean. Now what narks me is that we had somebody available there sitting in the court, with the bottle of the sample and the bottle which we take samples in beforehand just to show how badly contaminated it was. So it was really a technicality. It was just so badly contaminated.

AP That's crazy...

(Steve Terry enters and leaves)

AP Do you feel that the institutional arrangements are adequate? There's obviously quite a division between various bodies, municipality, yourselves, DWAF etc.

CF I don't think the Catchment Management Agency's the right way to go. I think Catchment Management per se is a good way to go, but I don't think to get another layer of government involved is going to do anything. All it's going to do is, we're going to be collecting water use charges, we'll be giving it to DWAF, and DWAF will be giving it to the Catchment Management Agency... well eventually the Catchment Management Agency will collect it from us. But I just see several million Rands going into Mercedes and housing subsidies and things like that, while we could probably sort out the pollution problems for that on it's own. So I'm not, I'm not a bureaucrat, I'm not in favour of that at all. I agree with Catchment Management 100%, I don't agree with Catchment Management Agencies.

AP Just to jump back a bit. If you wanted to prosecute now, the only thing stopping you is funds?

CF That's all.

AP You actually have the authority to do that?

CF Yup.

AP That agreement with municipality.

CF Yup. In terms of the by-laws, but you must remember those fines are of... R500. We try and push admission of guilt to a thousand Rand, but if it gets to court the best we can do is R500, so we bluff them as well.

AP So if there was an illegal discharge into the river that you picked up, that's not your choice to decide to prosecute or not?

CF Look, if we could pick up the industry physically discharging, actively discharging, then we could charge them R500.

AP Under the...

CF Under the by-laws. But it's far better to go under the National Water Act, where the sky is the limit. You look at the damage, what's happened downstream, how much it would cost to clean up the mess etc. etc. What the damage is to the soil, what is required for rehabilitation of the soil and so forth. And that's probably hundreds of thousand of Rands, and that's a far better deterrent than what we do. They just carry on.

AP So your fine is under the by-laws for discharging into the river?

CF Ja. But if we had the funds, I would even do it in my personal capacity seeing that Umgeni Water doesn't do it. If we had the funds we would go ahead and do it in terms of the National Water Act as somebody who is aggrieved. If we can get the Sobantu people... in fact at the Chamber we had someone from Green I think it was there who said that it was having problems.

AP Somebody from?

CF Green, I think it was.

AP What's Green?

CF Greater Edendale Environmental Education Network. They had somebody there, and Rob Fincham was there as well, and I said okay, if you've got a problem give me a ring, we'll come and take samples, and Rob promised that he would provide legal backing, and I think we heard nothing.

AP Legal backing?

CF Oh, Professor Clive Kidd & co. I tried to get something going...

AP Mike Kidd?

CF Mike Kidd, I beg your pardon. I tried to get something going a while back where maybe for the good of the community Mike Kidd, Johan van der Merwe and I would get together, and also Rob, and try and get some sort of free service for one or two prosecutions. 'Cos that's all we need, one or two a year... just to maintain credibility, and then everybody else would start falling in line.

AP That sounds interesting.

CF That's something you could push. We've got one outstanding against Leather from Heart at the moment which is lying on Johan van der Merwe's desk. We could jump up and down about that, perhaps.

AP A prosecution?

CF Yes. But that's in terms of the by-laws, a thousand Rand. They'll just pay an admission of guilt.

AP So it doesn't really serve as much of an incentive to the...

CF National Water Act is the way to go, really. But nevertheless, the by-laws are in place, they've been put there, we have to push it further. When we tried to help with the by-laws, we said can't you ask for a better fine. And I think there is a case where the prosecuting attorney can say this is a special case, so much damage was done, can't we look at raising the fine, but you've got to apply to the State Attorney for that.

AP But of course, even under the National Water Act, to assess damage to the environment is not that easy is it?

CF No. But you can look at some direct costs. If it really is gross environmental contamination, and it's had a lasting damage to that, you can prove to some degree what's going on there.

AP But obviously persistent contamination, even on a smaller scale, could be just as damaging, if not worse than one huge event, or not?

CF Well, how long is a piece of string depends on all the parameters. It's a site-specific thing, you just can't generalize.

AP The Bayne's Spruit, from your water quality testing... you guys feel that it is a severely polluted river, would that be an accurate statement?

CF From time to time.

AP Do you know what the aquatic life is in there, is there any?

CF Chris Dickens would be the guy to answer that. We do a biotic index from time to time. It's not a happy site. He will tell you in detail whether it's good, bad, interpret the biotic index. I just like to

know if it's good, bad or indifferent.

AP Is he also at Umgeni?

CF Yes.

AP Maybe I'll try and speak to him...

CF And also he's trying to get this Catchment Management Agency off the ground, so have a good chat to him.

AP Okay, is there anything else that you... that we've missed out.

CF No...

## Interview

**Interviewee:** Mike Greatwood ('MG'), Chief Water & Sewage Engineer / Deputy Chief City Engineer  
**Interviewer:** Adrian Pole ('AP')  
**Date:** Tuesday 02 October 2001  
**Venue:** Municipal Building, PMB

MG ....important is the fact that in May 1992 the Darvill Sewage Works was taken over by Umgeni Water, and with it went all the expertise with regard to the chemistry, and industrial effluent and all that sort of thing. What I'm responsible for is maintenance of the sewer network within the city, um all the water born sewer network that links to the Darvill sewage works, and um... and not so much what's in the sewerage, but rather what effect it has on the assets of the infrastructure. Now with the various oil industries we've had problems in the past, um... where they have dumped effluent into the sewers that has... has been way outside the limits set by the industrial effluent bylaws. The pH might be right down to one in fact, in other words its highly acidic... and if I could just show you, this is one of the pipes that we took out at one stage from Willowton Oil... no from Sealake Industries. It just ate the bottom of the pipe away.

AP That's asbestos.

MG It's asbestos cylinder piping, ja. It just ate the bottom of the pipe away. This was... this was for the... this was evidence for the High Court, which they finally settled out of court, they agreed to pay the costs for the replacement of that sewer. But I mean that was the sort of thing that they were doing, and as far as I was concerned that was my only problem that I had was the fact that they were dumping a highly acidic effluent at two, three in the morning when there was no other flow in the sewer, so it just ate the bottom of the sewer away. And um...

AP Which was that, Willowtown

MG That was... that was Sealake Industries. Um, you know you've got the three of them there, there's Sealake, they used to... Capital Oil Mills which was closed down and I think reopened under another name, and then Willowton Oil and Cake. And um... you know Sealake, particularly bad. Unfortunately Sealake made the mistake of literally having that sewer at the head of the line, so there was no question that anyone above them could have caused the problem. But in that instance, that was... that piece of pipe was taken out directly below their connection. So there was absolutely... in fact their connection looked just like that themselves so... so they didn't really have much of a leg to stand on and um... but Capital Oil Mills, the sewer pipe was similar in nature to that, and they... they also agreed to pay for their sewer to be replaced. So it didn't um... it didn't solve the problem, aah it... well it solved my asset replacement problem, but it didn't solve the problem of management of the industrial effluent bylaws. And that's what started that... those bylaws being written up by Jeremy Riddle... mainly he created that... you know Prof. Ridl?

AP Mmhmm... I do.

MG Okay... now he created those bylaws based on what we had before, and we put in various other aspects. But one of the problems has been that, from an enforcement point of view, I don't have staff to do the enforcement. Umgeni Water will tell me if there is a problem, and then, if I'm not mistaken, if they wanted to prosecute in terms of the bylaws they would have to come through us, or get our permission to prosecute on their... on our behalf, because they're our bylaws, and they're merely our agents, or implementing agents, I think they refer to themselves as, or they're the operators, okay they're the operators of the works, but they're also in charge of the monitoring. And I think that's where some of the problems come is the fact that, you know if we were the operator of the sewage works, and we had staff that worked directly under me, then the process might be a little bit easier. As far as the pollution... the polluter pays principle is concerned, and how enforceable that is, again it comes down to the law and the way in which samples have to be taken, and then the slow process by which the matter goes through the courts.

I think that as a lawyer yourself, you obviously know that these guys have all sorts of delay tactics which can play out a case for years and then the person who took the sample right in the beginning has almost forgotten about it and then... and then there's this question of doubt. And ja, we've had... I think we've had problems in the past where... where what has come about is that a sample is taken but it's not witnessed. Um... but that's how the sample... you know if you take a sample in the storm water drain, you're taking it at a time when you don't want the people who you're taking it for to actually know that you're doing it, for fear that by the time they've got you through... you've got through the gate to tell them they've stopped whatever they're doing. And that has been... that I think has been the case, I mean there was a case with... with... I think Capital Oil Mills, where there's a huge storm water drain that runs right through their property, um... within a servitude. Umgeni water camped outside their walls for a couple of nights, and literally within the first night they received a reading from down there that something was going on. They went down there, took a sample, got up and managed to get through the gate without the security guard knowing what was going on, and caught them pumping effluent directly into the storm water drain.

AP How long ago was this?

MG Wah... um, no, but Garth Mulder would be able to tell you. That still hasn't come to court yet. As far as I know, you know um... there they caught them blatantly doing it... um... maybe it hasn't come to court yet because Capital Oil Mills is no more. But... but the fact is that... that was another case where... where sometimes if you... if you... if they were doing something illegal they would delay you at the gate with their security to give themselves enough time... um 'cos they wouldn't let you through, they would call the office, the office would then find out what was going on, and by the time you got out there all flexible hoses and pumps would have disappeared, you know, and that was the problem, especially with Willowton Oil and Cake was the amount of flexible hosing you would see in various parts of the place. Um, which would indicate that they've got a ...they need to get rid of... clear a tank... they can't work out what to do with it... they couldn't be bothered to push it through their pre-treatment plant, and the nearest manhole is opened and its pumped in. And... and...

AP Is that the storm water drain.

MG That's often the storm water drain. Um... there was even a... there was even an instance where the storm water drain was partially bricked up, and that allowed the storm water drain within the complex to be used as a conduit to get effluent... to use it for effluent instead, so it would, it was partially bricked up, and then a hole broken through the pipe which connected into the sewer. You know, and they denied all knowledge of it until we showed them the photographs, and then they said 'well, it wasn't done by us'. So these are the sort of problems that we've encountered there. I don't know... I don't know really what the solution to the problem is... except... except possibly mass expose of these sort of things, where... where the local newspaper is... makes concerted effort that any such incident such as this is widely publicised. Whether in fact it directly implies who it is or not, uhm... but maybe through a photograph that shows Willowton Oil and Cake Mills in the background, uhm... which some people would just imply that's obviously who it came from, you know. We had a case, about 6 months ago where there was a tremendous amount of effluent that had ended up in the river, and it was only through a log that had fallen across the stream that was preventing the stuff, 'cos it was floating on the surface, from actually further polluting the river. But there was, but it was difficult to say what it actually was. There was polystyrene floating in it, and even Umgeni Water weren't able to positively determine where it had come from. And that was actually upstream of Willowton Oil and Cake Mills so... but that's not unusual for some of these trucks, we know, to go and take the effluent out in a tanker truck and go and dump into a sewer somewhere else, and how you going to prove it was them, you know? There was a particular manhole a number of years ago where you could see effluent of high acidity, had been dumping effluent into it because of the brickworks, the brickwork and all the mortar between the brickwork had all been damaged. So obviously someone had been pumping stuff in there, but how are you going to find that.

AP Last week Tuesday we went along the Bayne's Spruit and took some video footage, and the, no the most southern, but the second most southern drainage of Willowton, there's two pipes come

out, I mean there's a big trench...

MG Yes.

AP ...What you were talking about reminds me that the mortar from between the bricks has all crumbled, and the bricks seem to be crumbling out there.

MG Yes, that's what happens, you see, the acidity of it destroys the strength of the cement particles and so the stuff just becomes very crumbly.

AP So that suggests it's more than just storm water's coming out of those drains.

MG It's more than just storm water. It's definitely... in fact it can be acidic or highly alkaline, in other words it can be on either side, that causes that, even in... there is a main sewer line that all of them connect into that is made of concrete. The concrete line in fact takes a huge residential area above it. But we could see quite clearly at the time, although the damage wasn't too great, that... where that line came in, finally came into the main concrete line. From there on you could see on the bottom of that the concrete was already pitted, and all the aggregate, or the stones, were then exposed. And that would indicate that while it was soon diluted, where it was most concentrated was when it came in, and it probably came in at the early hours of the morning when very little domestic effluent was coming down. So when it came into that, it immediately attacked the bottom of the concrete, you know. But it wasn't enough to really recommend that we replace the concrete man at that point anyway.

AP If you're able to show, for example like the Sealake incident, is the court case then about getting compensation for the damage that's caused, or is it a criminal action.

MG Yes, we... in that instance we sued them for the cost of the replacement of it, because we felt that... because at the time for them to have got a conviction would have been just a couple of thousand Rand admission of guilt, whereas that cost them R180,000 in those days, it cost to replace the sewer, which was considerably more than we would have ever have got through just a fine in terms of the by-laws, and it was an out of court settlement, and one of.... One thing that we had to agree on at that stage was that there would be no press release in this regard. And I thought, you know it was very difficult, but I thought it better than... they gave us a... I think they gave us a post-dated cheque to make sure that it didn't, they knew we still had to do the work, and so the post-dated cheque was sort of held by the City Treasurer for long enough... where it wasn't going to... they weren't going to be adversely affected were we to suddenly renege on that, you know. So we were very tempted to just let the Witness know that there had been a settlement.

AP When was that, what year was that, if I may ask?

MG I can find out for you though. I have a feeling it was 1996, but I can find out exactly for you... When those industrial effluent by-laws were made, one of the problems with the polluter pays principle as it stands there is that it laid out the terms by which a new industry coming into Pietermaritzburg would have to apply to be a trade effluent user, or if it were an existing industry and that person wanted an additional line or wanted to change their process or whatever, they would have to apply. But it didn't apply to anyone that was presently operating, and weren't changing their process in any way. So that, it didn't, and obviously I think you wouldn't have the right to just suddenly decide that no, we weren't prepared to accept Sealake's effluent anymore because of the so-called problems we might have had with them before. They had permission to discharge, and they were going to continue. And in many instances when we've had a bad problem with them, they have come back to us and said, "You now, we fired the guy he was... the guy who was operating the pre-treatment works was always drunk, and that's why things have gone the way they have etc, we've fired him, it won't happen again, we're bringing someone in now, and they're gonna fix up the pre-treatment plant. And you get all that way along, and people like Talbot & Talbot, you know the environmental guys, they'll tell you that they were called in, they would do a complete report, they'd be paid for the report and that's as far as it would go. You know, the cost would be R200,000 to fix up your pre-treatment plant and then they would... Umgeni would try to push them, and they would say well you know we are working on it, but just getting the funds together and it would delay and delay and delay and delay it until they had



absolutely no option but to then do something. But then again we weren't guaranteed, although obviously Umgeni are... try to be the policeman in this matter. It's just, to me it's just so difficult if you have people that ultimately are not complying with the spirit in which the by-laws were written. You know, you probably find that 96% of the industries in 'Maritzburg comply, and if they didn't comply, and if we went to them and said 'look guys, you're effluent's a bit too acidic, please just sort it out in your pre-treatment tanks, they would do so. But it seems the oil industries just see things in a different way, they either now supposedly they're supposed to be as moral as they come, but I'm not so sure that they are. I think that when it comes to, you know, when it comes to profitability. And yet there are those that say that if you are a clean industry you are a profitable one because you're not wasting product. I mean in many instances, like with Willowton one of the problems is with spills which they just wash... down into storm water drains.

AP Which is free for them, it's obviously a free service that the environment is providing.

MG Ja... ja, they don't see the point in trying to recover that, what they have spilt, they just see it as a loss in the process, and then... so instead of trying to pre-treat or just separate out and put back into the process somewhere else, which they might well be able to do if they had some sort of oil trap arrangement there might be some way of recovering the product which they decided to get rid of. On the other hand, with some of the by-products of the soap, when they make the soaps, I think that's when the acid oil comes from, and it's used and used and becomes so acidic that they can't use it anymore. That's what happens with the acid oil, eventually they can't use it anymore, and then they... dispose of it. And instead of really just adding lime or whatever to bring the acidity down, they just pump it into the sewers.

AP Into the sewers or the storm water?

MG No, into the sewers. You see there's two aspects to pollution here: (a) they contravene the by-laws by what they put into the sewer, the effluent, and then the other is when they put stuff into the storm water drain which then contributes to the pollution of the Bayne's Spruit itself.

AP You say you rely on Umgeni to monitor that, is that right? Are you aware that they're... cutting back on their monitoring role?

MG Yes. That is of particular concern to me. What has happened is that up until recently Umgeni have had... felt it their social responsibility to look after the rivers in the catchment, because obviously it affects them, whatever is polluted in the rivers themselves, that pollution can head on down and eventually end up in Inanda Dam, which could have an effect. For example, if things such as phosphates were to get into the river, those phosphates would end up in Inanda dam, cause extensive algae growth etc. and then it becomes a very expensive process for them to treat the water there, to supply to Durban. Obviously what went in was of concern to them. Now they were doing this extensive monitoring, at I think at least 16 points within the city, although only one within the Bayne's Spruit itself. Now they've cut back to a couple, three or four. Umgeni Water are playing quite a political game with Councils at the moment, that's really half the problem. They're peeved off with the fact that we're refusing to pay their water charges that they have set, and so we're just going into arrears with them, and Durban are doing the same. And almost as a backlash to that, they are saying 'we've got to cut costs, and therefore we can't afford to provide the service unless you pay us'. Now we can't pay them. From a contractual point of view, well Talbot & Talbot, could they not provide the service cheaper, and do we want the service, does it matter to us. And I've had a fight with, in a sense with the Department of Water Affairs and said DWAF must step in here, if they're not prepared then DWAF must step in and fund it because it doesn't matter... what if the municipality doesn't see it as a priority, what are they going to do about it? What is DWAF going to do about it to ensure that there is no enforcement of that sort of thing. And any way, what used to happen is that many times, pollution in the rivers was as a result of a sewer overflowing. A blockage which might occur, knocks the lid off the sewage, pours down the storm water catch pit and it ends up in the stream. Now if they detect a high e-coli count at some point in the river, by Tuesday in know about it. And I can either say to them, yes we found a sewer overflowing on Sunday afternoon, we've cleared it, that must have been the cause of that pollution in particular. So it provides some way by which I can go and send my guys out to have a look in general to find whether there's any specific point where sewage is entering the stream. Now I don't have that anymore. I will still continue to do my work to try and... but it

doesn't help them in any way when it comes to overall catchment management of the thing.

AP And your work is the management of the sewer system.

MG My work is management of the sewer system, now if no-one reports to me, and it has happened before that we've had sewer blockages in sections where the blockage has probably been continuing for months. In fact we've had some where we've almost created a wetland, and we've got birds nesting there because of this high nutrient-rich wetland that we've created through a sewer that is running through open grassland and things like that, and now people don't necessarily walk there everyday so no-one notices it, and you create this beautiful area. I mean we had one in Copesville, in fact that was where a sewer connection was never made. This thing just poured out into this area, and we had this lovely lush wetland. And because the wetland was operating so efficiently, there was literally no smell, because as the effluent came in I was nicely absorbed and digested.

AP Was it an existing wetland?

MG No... well we don't really no. I think that it could have been a wetland at some stage, it was actually in the area of Copesville, in the upper reaches there. And there was an open undeveloped bit of ground below the original development of Copesville and there it was almost in the stream itself, but all the bird life that congregated there was incredible, and it was only because the little 5m stretch between where the developer ended off his last sewer and our sewer which started the head of the line there. We were supposed to come in and do this, but the developer never made the applications for use to connect, and for some reason it just got lost, so this beautiful vlel came up.

AP Just going back to the permissions, you were saying that the existing companies... presumably Willowton and Sealake had been operating before, so were they operating under a permission?

MG Yes, they were operating under a permission so they didn't require a new permission.

AP So all the nice information you ask for here, um...

MG ...hasn't had to be supplied. And that's the problem. Whether we should have done that, I don't know, or whether that would have been... you see in that because in that permission we state whether we believe they should have a separate trade effluent connection or not, which we were trying to enforce with Capital Oil Mills. Because Capital Oil Mill used to have their road up there and their factory was here, and through the factory, right through the middle, there was this servitude, and what happened was that... there is a sewer line over here, and there's a sewer manhole over here, and then the sewer line comes through the factory and heads on down. Now what Capital did, was that, oh... right next to the sewer was this huge storm water drain. So that's the storm water, and this is the sewer, and what happened was that within their servitude they had three connections... that serve different parts of the factory. Now literally from here was where the damage started occurring. So we knew that, and there was no damage on any of the lines that we could find here, so we said... for the damage to have occurred here must have been an ingress of whatever the effluent was from that line there. And what we wanted them to do was relay, we were going to seal off these three connections, and we wanted them to relay a separate sewer line out their property and to tie in over here, that we could then monitor without having to gain access, because whenever we wanted to gain access, whatever naughties they were doing they would just delay us at the gates long enough that we couldn't get in, not we but Umgeni Water couldn't get in. In fact, the one time we had to go in there with our security, and we literally had to hold their security guards at gunpoint to open the gates for us. But it was quite a difficult situation. And then that never took place, because we couldn't enforce it, because in terms of the original bylaws there was nothing that said that they shall have a separate sewer connection.

AP Could you under the new by-laws have them connect a new sewer connection.

MG Yes. We could, if Sealake now, what... we made a big mistake at the time. There was a time with Capital when Capital stopped operating, and we felt at the time that it would have been a good idea, although legally we might... it might have been thrown out, it would have been a good idea

to have gone in there at the time and sealed these three lines with a quick drying concrete.

AP Is this Capital.

MG Yes, with Capital. That's what we probably should have done, would have been to seal their three connections, which would have forced them though to, when they re-opened under a different name maybe a year later, they would have been force to have applied for three new connections.

AP Have they applied for permission as the new entity?

MG No. What has happened is that according to Umgeni, I've asked them this countless times, when they started up again, they requested permission to discharge. We gave them permission to discharge on condition they complied with certain steps, and everything was in conjunction with Umgeni Water, they could not discharge until such time as Umgeni were happy with the effluent. The effluent had to be stored in tanks on site and everything. And it was for a specific time period. Now as far as I know, in checking up with Garth Mulder and his crew, these guys still were not discharging. What they... there was some stuff that they were using, some company, I think it was Waste Tech that was taking some of the effluent away, but that there effluent was nominal. That's debatable as to whether it's nominal or not, we don't know. They also have an extended factory here which provides I think it's a soap one, and they have their own line which runs down here which was constructed by themselves.

AP Capital?

MG Although they call themselves something else... Again it also I think comes down to an ability to monitor, and whether in fact free access is –it's a case in point, they might say to you... we were just checking on credentials, we can't let anyone walk in, meanwhile time... they've stopped doing whatever they were doing. Also, if you wanted to, I reckon you could do it at a time of the night where the only person, unless there was someone outside here, the only time that this would be noticed would be when there would be a sudden concentration of oil at the sewage works.

AP So it's possible that Capital, because of these three open sewer lines, they could still be pumping into the sewer...

MG They could still be, yes.

AP As well as... into the storm water drain.

MG And they could be complying with the effluent, because they're entitled to discharge effluent within limits, within the limits set in the by-laws.

AP And provided they have permission.

MG And provided they have permission, which at this stage they don't have, but they're denying that they're actually discharging. The only thing they say they're discharging is domestic effluent from their office block and from wherever else.

AP Did Capital apply for permission, and if so did they submit any details of their effluent treatment works, their holding tanks and that kind of thing?

MG That would have been supplied to Umgeni Water, and Umgeni Water would have let us know if they were satisfied. In fact that's what they did. They let us know that they were satisfied that work could start, in other words that the production could start on the works within the factory, and that the effluent... produced would be tested before it would be allowed into the sewer. We then gave them permission for a temporary period to discharge, but that they were to apply through the normal channels when they were ready to resume production fully, you know. But now apparently, according to Garth... now have you had a meeting with Garth Mulder of Umgeni?

- AP I haven't met with Garth. I met Chris Fennemore on Friday. I saw Garth earlier in the year, just informally, so I'll be interviewing him...
- MG And with Chris, did Chris mention anything about this?
- AP He did. He mentioned that they wanted to start operating, if I remember correctly, before they had installed the proper works that they were meant to, and as far as he knows that never happened. He also mentioned that they had said something about sending some of their effluent to Sealake for pre-treatment, which also makes it quite hard to trace, as you can imagine...
- MG That might be what's happening. Now if you had a meeting with Garth, Garth will be able to tell you that, you see, because he keeps an eye on what's going on, and it might well be that that's the way that they're doing it. Maybe their by-products are very small, and so they're just doing it that way. We don't know, but I mean it's hard to trust someone when you know that the moment you turn their back they might well be doing something.
- AP Just in terms of these by-laws, they obviously state that you have to reapply every two years, I think it's section 7(5), so any permission is personal, terminates after two years. Now again the old by-laws, if Sealake and Willowton are still operating under an old permission, presumably this doesn't apply?
- MG Presumably I would assume so, ja. But you see, if it did apply... if it did apply, then I would have to get everyone to reapply. But it's quite a lengthy process to reapply. I mean in all of these cases there have to be various advertisements and then objections looked at and then permission granted. And I think one of the biggest problems is a matter of staff capability. I mean, for example I used to be the Chief Sewerage Engineer, I was then promoted to Divisional Engineer, Water and Sewage. It's been two and a half years now that I've been that, and I have no Chief Sewerage Engineer. 'Cos they don't have money to find someone. And anyway I don't think they'll find someone. But even if they did, that person hasn't got a Chief Technician... hasn't got an assistant branch head. I mean I'm still trying to do that work plus my own, you know. That's where the difficulties lie, with capacity to actually provide that service. And I mean that's quite an administrative function which needs to be carried out.
- AP That's the function of actually giving permission?
- MG That's right. The function of actually drafting letters to everybody within... who are trade effluent users, and that's fairly easy because there is a database of that. But to actually keep a note on who has replied and who hasn't, and sending out responses saying you haven't yet sent in your forms that we sent you x number of weeks ago. That sort of ability is not there, and no matter what we don't have the staff to do it. And we then just rely on the fact that Umgeni keep an eye on most of them.
- AP I was just interested by the way you guys interpret the old permits as well. I mean, I have read this, and I stand under correction. It says here in section 2 subsection 2 'no persons shall discharge or permit to be discharged into any sewer any industrial effluent whether or no it complies with the by-laws etc. without first having obtained the written permission of the City Engineer in terms of by-law 7. Now no mention is made of old permission, so it's possible that the intention of this, and I wouldn't know without speaking to the person, you said Professor Riddle...
- MG Mmhh.
- AP ... who drafted these, whether these by-laws actually require all companies to make application under them. If that was the case, how would that change the way you approach the vegetable oil industries.
- MG Well, then I think we could... ask everyone again to apply in terms of the by-laws.
- AP Would you be able to target specific companies, for example within an industry?

MG No, we'd probably have to target everyone, but again in many instances it's fairly easy. Many of them are fairly small, there are not many big industries that produce large amounts of trade effluent. Many of the trade effluent users, for example, are people who repair radiators for example, and their acid etc. that they use to clean the cores or whatever, the plating industries, at one stage the tanneries were big but both of them have closed down, Hulett Aliminium, but they now have a pretreatment works that doesn't always work but again that's fairly quick with that. You would end up with a core of ten industries that probably need to be really looked at. And in terms... if that were the case... if as a result of your interpretation and your report here says that in your opinion we could in terms of these by-laws do what you think, then maybe that's what we've got to do. Johan van der Merwe, our legal advisor was saying to us, he wrote something the other day saying that we had to report on the enforceability of the current by-laws, and maybe we'd have to do it, even if it took us employing someone to do it for us. Any consultant could do it for us, when you would just say we want you to check and give permission for all the trade industries to discharge. So we'd leave it up to their discretion whether they believed they could do it, or that there was sufficient pretreatment in place before there were discharges to take place. If that were required in terms of the by-laws, maybe that's what we'd have to do. But we wouldn't have the capacity to do it ourselves, not right now anyway. I think that, ja, that's a valid point hey, if that's what you think we need to do.

AP Well it's just an observation at the moment.

MG But it would be interesting to hear whether... if Prof Ridl believed that were still the case, that that was what was intended. You haven't thought of trying to speak to our legal advisor as well, Johan an der Merwe.

AP I've considered it, ja.

MG It would be interesting to hear what he thinks because he was involved, him... I sat in on their meetings and made certain comments, I think it was me, Chris Fennemore, Johan and Jeremy Ridl, sort of came up with these. Jeremy wrote most of it, and he took a lot of what it was, but he added a lot in to give us more authority to do certain things.

AP It might be useful to interview both Prof Ridl and Mr van der Merwe, that sounds great. Your legal advisor's name has come up a number of times, so obviously he's central to the enforcement side.

MG Ja, Johan is pretty much clued up with what is happening, he was involved with that court case, and so he's well aware of the problems that we face. But he's a very insulated part of Council in a sense, he doesn't face the... he either has the staff or he doesn't, and if he hasn't got it he just employs an outside attorney to do the work for them. Whereas we just don't have that sort of flexibility. But ja, I can see that in some instances like this, if we were to tackle everyone at once, it could be handled in a fairly short space of time. Everyone could be written a letter to say that in terms of this you've got to supply us with information. Whether in fact we force them to go through the whole procedure in terms of the by-laws, that's something that again I'm not sure on, whether if everyone was required to put an application in the paper, but if everyone was required for example to make application and to supply us with drawings showing their treatment works, and possibly to explain their process and their expected effluent and its properties, that might well be a start anyway. It would enable us to say this guy's small fry, he's only producing 30 kilolitres a month anyway, and he dumps it twice a month, you know that's nominal. Because there are other aspects to it as well... at the moment we only look in terms of industrial effluent at a couple of factors, vegetable oils and greases, pH and... things like... COD, chemical oxygen demand, and we take the average for the last six month's reading as the... to pay effluent charges for the following. Now, that's in terms of the trade effluent tariff. There's no mention of phosphates, for example, which are a problem, but there are a couple of firms here that produce phosphates. What happens at the moment is that those, the worst producers, the one in particular which is First Gaphics I think it is, they have a side agreement with Umgeni Water that they will dump, but they will pay for the cost of the treatment of it, for the extraction of it... and that's what happens. We've had one spill from them, that was a blockage caused on the line that spilt, and then the whole Duzi went green, and ... but they paid for the clean up for that, even though I don't think

the blockage was necessarily their fault, it couldn't be proved either way.

AP At the moment you rely on Umgeni to do the monitoring, is that correct?

MG Yes.

AP And they must collect the charges and that kind of thing?

MG They... it's quite strange. What Umgeni does for the tariffing, every six months in August and in February, they look at, they go around to each firm and they drop off a questionnaire... with the company, they determine of the water consumed what percentage goes to sewer and what does not. It's up to the company to motivate what does not, more than anything. He's got to say that x amount goes up in steam, so much is consumed on the premises, etc. The rest then is assumed to go to the sewer. Then that determines... (END SIDE A)... that determines for them the estimated volume in kilolitres for a six-month period. And then what happens is that on a monthly basis, certain of the industries, not all of them because some of them produce so little that it's not worth charging them for in terms of the trade effluent... the admin costs of charging them are more than the costs... so certain of the industries are then tested on a monthly basis for their COD values, and the COD values then are averaged from the previous six months, ja for six months before, and that determines an average which is used for the following six months. Now the formula is... so many cents per kilolitre... I don't think it's in there (*refers to the by-laws*). There is a certain... let's say it R1.47, so it's 147 cents, plus a factor which I think is about .256 cents times COD minus 350. The COD minus 350, 350 is about the COD of domestic effluent, so if you've got an COD of a thousand, and you've got 650 there times .256, and that comes out in a certain cents per kilolitres, multiplied by their expected number of kilolitres in a month, and then that is a standard charge that is put on their electricity bill, the trade effluent for the month. And then every 6 months I think it is, we also check to see whether the estimated... the assumption is what it was before. But I mean, in many instances factories don't consume... their consumption doesn't change very much. They've got a process, and they probably use the same, almost the same amount of water to shower in every day etc.

AP Do you think that the vegetable oil industries, that their effluent is being accurately estimated? Part of the problem is, I understand, if the tests are taken once a month, they could be discharging at night, that they might know when the tests are being done and that there's many ways that they could avoid...

MG Yes. You see... and what used to happen was that with the old trade effluent formulae, they worked on, not on chemical oxygen demand, but on another thing called oxygen absorbed, which was similar, but I think less accurate. The other thing is that what they did with the OA, is in the formula they took the highest OA over a six-month period, so if you came along, Umgeni came along and just caught them on a bad day, caught them off-guard, and their OA was sky-high for that period, that was what they were penalized with for the next six months. In this instance, that's not the case. But again, I don't know whether there's a way around that, because if there's an agreement that you'll test them on the first day of every month, they'll know it's coming and clean their act up for that time and then move on.

AP ...'cos obviously the by-laws again provide that one of the things that can be done is the industries concerned can be made to pay for any monitoring equipment, pre treatment and metering installations. So presumably if these by-laws were utilised, the factories, at least the one's that you were concerned about, could be forced to pay for metering equipment, perhaps even continuous metering equipment that would give you a very accurate...

MG That's right, ja. But you see in many instances, in order to continuously meter flows, in a water pipe for example it's not too difficult, you can have what is known as a mag-flow meter, which measures magnetic differences through the water flowing through the pipe, so it's clamped on the outside of the pipe. That's very easily done. On sewerage, a mag-flow meter is possibly also could be done, but a mag-flow meter is a very expensive meter, and a normal mechanical meter would probably get blocked.

AP How much is a mag-meter?

MG It depends, but you're probably looking at R15,000 to R20,000 for a meter the size... 150mm diameter. It's a fairly expensive thing. What this sort of thing here... they are looking at possibly a mag-flow meter being installed by them if in the opinion of ourselves we believed that they were being untruthful in the way in which they were estimating how much water was going to sewer. Now for example, we had a case with, was it one of the textile industries, who maintained that literally none of their flow goes to sewer. That a lot of it used in... a lot of it is reused, and then a lot of it is also... eventually escapes as steam. And what we did was we went and put in our own meters and we did some tests, and sure enough we found that about 80% of their water consumed didn't go to sewer. So we did then do adjustments accordingly. But it would only be if we had real reason to believe that they were cheating, and it's difficult for them to cheat, because we're saying to them don't prove what goes down, prove to us what doesn't go down. So they'll have to say to us 'we have 50 people on site, and if 50 people drank one litre of your water a day, that's 50 litres of your water which didn't go to sewer'. Now, what else didn't go to sewer? And if they said 'well we have a whole lot of steam, steam plant etc.'. You'd say fine, you must know what goes into your boilers, and what's emitted as steam, so you must be able to measure that, it should be part of your process anyway that you should be measuring what goes into your boiler room on a daily basis. So they'd have to give Garth those readings that would indicate how much went there and how much then went off in steam. And so all of that then comes down, and it is checkable, and then you know you might 'well fine, well okay, 60% is a good average'.

AP But that's obviously dealing with volume of water. Is that what the mag-meter tests?

MG The mag-meter would test for volume. And then there is another one for continuous sampling of the thing. Now that Umgeni Water does do. They don't expect the company... they haven't at this stage wanted the company to actually buy it. They've put it in their, in one of our manholes, or they've forced the company to actually make a manhole for that. Now I think Willowton is a case where there is monitoring manhole which is lockable etc etc, and that they sometimes then put a continuous sampler, which then every fifteen minutes takes a sample and stores it. And I think that's what you mean by... we mean by that is that it does allow us to do continuous sampling I in our opinion the COD for example, if the COD was way too low for what we think it should be

AP What would the cost of continuous metering be, for example?

MG Not sure. Garth would probably be able to tell you that.

AP Do you think that would be too much...?

MG I don't think it would be too much, no.

AP If companies were asking for permission, and let's say they were like these vegetable oil companies, perhaps they have quite serious amounts of effluent, so you wouldn't do it for all companies, what would be your attitude towards that, making them pay for that metering equipment?

MG Ja, it's the metering, but it's also the testing thereafter, and I'm not quite sure what testing costs, or you know if for instance after a 24 hour period you had had them every fifteen minutes, you've now got close to 75 samples, now how long does it take to test each sample? And do it properly and accurately enough that any one of those samples could become prosecution samples. That's the sort of thing I'm not sure of, how much the lab time would cost. That's something Chris Fennemore might be able to find out, or might have an idea of, even if you just phoned him on that and said 'continuous monitoring, any idea how much it costs in terms of...?', because to put it into a manhole doesn't take much time, 'cos it's a matter of setting it up, it's got its own battery and off it goes. And you just lock the manhole and come collect it later. On the other hand, it's probably the lab costs which are most expensive, and he might have an idea of how many samples could be tested in any one day, and how long the process might take and what the costs might be. So that might then help you with what it would cost if there were particular industries that we wanted to test on a continuous basis.



- AP And under the by-laws you could then claim that money from the industry/
- MG Yes. Yes, but I'm not sure... what if all the tests were clear? I mean, you know... you see the other thing as well is that you actually don't want to tell them that you're doing it, 'cos you're doing it to try and catch them. So you if you don't... tell them, and then you come back to them at a later stage and say 'by the way, we've had a sampler in your terminal manhole for the last 48 hours, and you know we've picked up three possible prosecution samples, and we're going to charge you for the costs of those'. Um.
- AP Would it just be prosecution samples or again to charge them in terms of your tariff?
- MG Probably both. Probably both, if they were way out. You see we also... in terms of the by-laws we're entitled to nail them for any indiscretion in terms of any of the factors, like if their PH was out or whatever. What often happens is that they are given a warning. It depends on how far they're out. If they... for pH I think they have to be between 5.6 and 9, I think it's that, let's say it's 5 and 9, and neutral is 7, so they've got 2 on either side. If they were 4.9 or 9.1, you know you're going to say to them 'Ay, you guys are pushing it now, you've got to try bring this back now, we're going to come back at random in the next week and we're going to test you, and you had better be below there.' Come back, and they are below, so fine they've sorted the problem out. Now you might not get back there for another month. And they know you're not coming back for another month because you've got... Garth's got a whole lot of guys to do. But in many instances Garth, and it'd be interesting to hear from his perspective being right at the coal-face, how co-operative are these people? I would say that 90% of these people are co-operative, and even the Willowtons appear to be as co-operative as possible until you walk out their door.
- AP But just... by-law 10 again refers to all the things the City Engineer may do after consulting with the operator, being Umgeni, and that includes installing at the company's own expense tanks, appliances, equipment, constructing drainage systems, inspection, sampling or metering chambers etc etc. Has any of that ever been used to date?
- MG No.
- AP Not yet?
- MG No.
- AP Is that a practical... you've been discussing obviously the difficulties...
- MG Practical... ja I think it's practically the difficulties, I think that as I say if in terms of the by-laws we were able to back to Willowton now and say you are going to have to apply in total for now to discharge, okay. We're not going to stop you for the next... until... you know we're not going to necessarily stop your process right now. You're going to have to apply, and you're going to have to tell us exactly what's going on, and we will then go strictly through the procedure. Then we fell that then in terms of that we'd be able to say to them 'look, we're not happy with your sample manhole being inside your property with a twelve foot wall and an electrified top and everything like that, so we can't get in to take the sample without your knowledge'. Which is essentially what you want to do. You want to be able to catch them at it otherwise you're never going to... 'cos these guys walk around, all the top boys walk around with radios all the time. So they know what's going on, of course they do. If you come in the gate or you go to see Mr Moosa and he says 'ja-no, I'll just get someone to meet me', and he'll talk, probably talk in Arabic or something, and say 'listen, by the way, you know, stop doing what ever you're doing down there, make sure that pumps not in sight there by the time we get down there'. We're not going to know.
- AP That makes it very difficult.
- MG Very difficult indeed, especially if I think you as an industrialist you are trying to out do the system all the time. You're flagrantly violating the by-laws.
- AP The polluter pays principle, I think from what I've been reading, also relies to some extent on the reasonable industrialist if you can put it that way, someone who is going to be operated



reasonable industrialist, if you can put it that way, someone who is going to co-operate.

MG Yes.

AP So in this situation if you've got companies within the vegetable oil industry that aren't being that reasonable industrialist, that makes it very difficult. It makes it very difficult, doesn't it?

MG It does. I think it makes it very difficult, and you know they will as I say on outward appearance they're quite happy to co-operate and this that and the other, and yet we seem to know different. And yet we can't say that openly. We also can't accuse anyone without all kinds of evidence being apparent, and I think that's what they rely on, is that nothing is apparent there. You can look and see their pre-treatment work and it looks as if it's working fine, but if the effluent is not getting there, or it's being diverted round in order to save the costs of chemicals. There are just not enough policemen to do that.

AP Who would you... in an ideal situation, obviously we're looking at... Catchment Management Agencies being set up, Umgeni at the moment is cutting back on monitoring, what would be the ideal situation from your point of view to try and prevent some of the illegal activities. So if for example the companies are trying to avoid payment of tariffs, or because they know it exceeds the limits, so they're pumping into the storm water drains and into the river. What arrangements, institutional or otherwise, would you need to...address that.

MG I think we need... you see I'm not quite sure what the new CMA powers will be, or whether it will just be another bureaucracy, but to give them their due, I've always believed that the Department of Water Affairs is a fairly efficient, if not probably the most efficient government department around. The guys are really dedicated, there has been... the core of them have stayed there for years, and know their stuff and... so if the CMA becomes, falls part, or somehow forms part of DWAF, and there are some fairly good people in there, I think that the powers that they might have would certainly make things a lot easier when it comes to getting prosecutions. 'Cos I think we only need one or two successful prosecutions to pull everyone right again. But at the moment Sealake and Willowton and them have got away with things in the past. I mean theoretically that never reached the papers, no one ever knew about that. And it didn't make any difference. They just quietly paid a cheque, and we did the work and that was it. No one ever complained. The ideal thing would be that we need to have constant monitoring, but then that also brings with it problems, because constant monitoring by someone can mean all sorts of things, you know it doesn't take much to pay kick backs to people to look the other way, or not to...to take the sample given to them rather than the sample they take personally. I think that's what would happen. If the guys would say 'what's it going to cost us to bribe this guy', because once you've bribed him once you've had him, you've got him, and that's the problem. The guy makes one slip and that's it, he's hooked in. And I just think that we need to make an example, not so much on the industrial effluent by-laws, I mean to make an example of a spillage into a river. Like what's happened in the last few days with...

AP PG Bison.

MG PG Bison, ja. I mean that sort of thing is unacceptable. They were warned about it, they didn't do anything, it happened again, now they must get nailed. And we have a similar situation with Edendale hospital. Edendale hospital is the most disgusting place out. We've had major things, major problems there with them. Not... that's not industrial effluent, but that's medical waste being dumped in the sewers. And when I say medical waste it's everything. You feed a sheet down that's full of blood, and instead of sending it the washer to be washed or incinerated, you feed it down in the sluice room until it disappears, and the nurse says now she doesn't have to take it anywhere else, and wonders why it blocks the sewer. And then when it blocks the sewer everything pours out the sewer into the river. And we've had things, horrific things, you know when I'm... you're standing in mounds of disposable gloves just all over the place, needles, syringes supposed to go into the sharps containers. Things like that. That sort of pollution needs to be really hammered, you know, and the people there dealt with, you know. And the problem is like with an organisation like Edendale hospital for example, how do you... we've had chats before with our legal teams, saying 'how do we get these guys?'. 'Cos they say we've got to prove negligence on the part of the hospital superintendant. Now she says, how can she control

500 staff members whom she has... she could say 'we've taken all reasonable precautions, we've given them training, we've told them not to do this, we've told them not to do that. It wasn't the nurse it was actually one of the mental patients who did the thing in the first place.' You know, and screens aren't cleaned. For Edendale for example, they've got a huge area where they've got metal screens that prevent large stuff from getting into the sewers. We went there the day after this one spill, and we went there with the works manager, and we got down there, there wasn't a soul in site. We said, 'so where's the guys cleaning the screens?'. Hell, he doesn't know, gets on the radio and they find out oh he's off sick today. So is no one else doing it? Was he off sick yesterday, because the spillage occurred because of something he let through the day before? And while we're standing there we say look there's the syringe. Look there it goes, the syringe and needles gone through the screens, you know, boom. So what if my guys are working downstream, and they get a needle stick injury, whose to blame? These are the sort of things that occur, but how do we tighten it that it doesn't happen? A sewer is one thing, because a sewer basically people don't have contact with that sewage, that's one thing. It's when... the sewer is blocked through negligence on the part of someone whose dumped into , and then the stuff pours out and ends up in the river, that's another one.

AP Presumably Edendale hospital would then be responsible for the clean-up costs.

MG Yes. Yes, and gain... this happened about a month ago, this is the third time within a year. The first time was high in the cholera epidemic and I got my friend from the SABC out, Stewart Thomson, and he was there like a shot, and you know the... Ronald Green Thomson, the head of health, promised all sorts of things and it's now 7 months later and not much more has happened. The screens have been repaired and are much better, but if there's no-one cleaning them they're no bloody good at all. And that's the sort of ongoing problems that you have with something like that. But at least it got, something got done the last time. Whether you've solved the problem completely, I don't know.

AP Well, I think we've covered pretty much everything I wanted to deal with. Is there anything else you would like to raise with regard to problems with implementing the...

MG I would like to see something positive come out of what you're doing. I really would like to see... because I believe that you with the legal background, and doing what you're doing, your interpretation of the by-laws after having consulted with everyone, plus what you believe our powers should be or what we should be doing, or a way around this, I think will greatly help. Because I think that you need to... I haven't certainly had the time to sit down and study these things and know exactly what I could do, nor have I had the time to even meet with Johan to talk about something like that. And even if I did, I would come back to my office and say well, what am I going to do about it? Whose going to write all the letters, and whose going to go through all the things? I just don't have... I don't have the staff to do that. But if... something... for something positive to come out from this would be that this report, or that your project... it's a thesis or is it just?

AP Ja.

MG If your thesis would... is it only going to be 'Maritzburg, or are you going to be looking at Durban as well?

AP No, it's specifically on the vegetable oil industry and the polluter pays principle, using that as a case study...

MG I think it's useful because I think that something like this might well come out and allow us to take it further and say 'We're entitled to do this, let's do it', and let's see what political interference we get, because as you know these people all stick together and go to mosque on the same day and time. And these things happen. I mean I know Councilors, when these things are discussed, some of them have to recuse themselves. But be that as it may, if the guys are breaking the law or they're breaking our by-laws, and they we have good reason to believe that they are, we should... and we're entitled to act in terms of that then maybe we should, or at least maybe we should try.

AP     That sounds great. Well, hopefully we can be making recommendations and make the report available, consider what steps could be taken at some point in the future.

MG     But please, I would be very grateful when it's all finished... you're doing this for Nevil Quinn aren't you? I'm sure Nevil will...

AP     Give you a copy.

MG     Ja.

AP     If you're keen that would be great.

## Interview

**Interviewee:** Johan van der Merwe (JVDM), Pietermaritzburg Legal Advisor  
**Interviewer:** Adrian Pole ('AP')

**Date:** 05 October 2001  
**Venue:** Pietermaritzburg City Hall

JVDM We have an enforcement set up in this Council which I always refer to as being a very, strictly vertical system in terms of different departments who have different line functions and different bylaws are individually responsible for enforcing their respective bylaws. So we don't have in 'Maritzburg, like in some bigger councils, a local police force or a local law enforcement department that would co-ordinate all prosecutions, whether it stems from contraventions of industrial effluent bylaws or for that matter dog licensing. We don't have that set up. I think that's been a major problem within the council for a number of years. At this point in time I think if we're totally honest about it I think there are... I would say three divisions which actively enforce their bylaws by means of criminal proceedings. One would be the Building Survey Division, which prosecutes for building plans, people who don't have building plans and other parts of buildings. The Health Department, they are still active. And of course the traffic people. But we have major problems as far as other departments are concerned. We have for instance, just to give you some other examples, we have major problems with theft of water and electricity, and at this point in time although moves have been made by those departments to re-institute and recommence using summonses to address this problem, for years and years and years no summonses were issued. And as far as industrial effluent bylaws are concerned, the line department responsible for those bylaws, those particular bylaws, is the City Engineer. And I think about three or four years ago we realised that to resolve the whole issue of illegal trade effluent, or trade effluent that doesn't comply with our standards, we needed to do two things. The one aspect is obviously we had a re-look at the bylaws, and in conjunction with Umgeni water and one of their legal representatives, ourselves and the City Engineers, we rewrote the bylaws. And it is my personal view that we have a very good set of industrial bylaws. But the whole issue of enforcing those bylaws, they're not being pressed. Um.. you will find that there's uncertainty I think within the Council, and also between the Council and Umgeni Water as to what the respective roles are. So much so that even before that... I'm talking under correction now, four five years ago as well... Umgeni Water offered to the Council to take over criminal prosecutions for contraventions of the industrial effluent bylaws. Now in terms of the law we had to do this in a certain way, because Umgeni Water at that point in time could not... um while it still can't in terms... as far as the industrial effluent bylaws are concerned... can't prosecute in their own name contraventions of those bylaws. They have to do... summonses must go out in the name of this council. Now in terms of the Criminal Procedure Act, I think section 8 or 7, I can't remember... one of the two, the... read with the Municipal Systems Act and Local Authorities Ordinance, the Director of Prosecutions may withdraw his right to prosecute certain charges in favour of the Council...um and it is on that basis that we institute other prosecutions, the ones I've already mentioned to you. So we don't have a situation where we strictly need to go to the police and make statements and then forward a docket to the state prosecutor, we have a system where we have the right to privately institute prosecutions. The Peace Officers who work for the Council do the investigations, they bring their dockets here, and we issue the summons and we appear in court, so we do the whole thing, which I think has a number of advantages. But as far as that is concerned we then signed an agreement with Umgeni Water that they would undertake prosecutions to the extent that they'll appoint an attorney to issue summonses, and they did have a guy, and I think they endeavored to prosecute two or three companies but they were not successful and I believe, I get the impression that Umgeni Water now feels that it's too expensive and doesn't work, and have actually come back to us and aid to us 'Can't we do the prosecutions?'. They still do the investigations, but can't we do the summons. And we are actually looking at one or two prosecutions right now. The uncertainty I think, Adrian, is... I mean as far as the law is concerned the bylaws are very clear. The City Engineer and this Council is legally responsible for the enforcement of the industrial effluent bylaws. Not Umgeni Water. So as far as the law is concerned that is very clear. But when the Council... when Darvill Works... were taken over by Umgeni Water... about ten years ago, all the expertise that the Council had went over to Umgeni Water. We had at that point in time our

own inspectors who had right of access to factories, and they could enter factories and they did institute prosecutions. But those people were all taken over by Umgeni Water, and whoever negotiated the agreement at that point in time I think perhaps did not put enough emphasis and did not investigate enough the consequence or consequences for law enforcement. Now when you refer to the polluter pays principle, maybe I'm addressing the issue a bit narrow in the sense that I only refer to the industrial effluent bylaws, but that is I think a major area of our concern, those particular bylaws. I mean the other bylaws that... the new NEMA Act and stuff like that... as far as NEMA is concerned I don't think our Council has... we don't have authority yet to privately prosecute contraventions of that Act. We can prosecute the Environment Conservation Act and also the Ordinance, but we haven't asked for authority for NEMA yet.

AP The National Water Act...

JVDM The National Water Act is something that is being... as you know administered and prosecuted by Water Affairs. Inevitably the State Prosecutors. Um... to I think if you're looking at obstacles as to the implementation of polluter pays principle, I think there's a question of lack of resources within the Department of the City Engineer, to actually, you know, I actually go beyond saying to enforce the bylaws, I don't even know, and I think Mike Greatwood would be able to answer this question, I don't even know to what extent they're actually administering those bylaws.

AP When I spoke to him last week and, or was it earlier this week, and there was some confusion around whether firms that had permits under the old bylaws had to reapply for permits under the new bylaws.

JVDM No, but the deal with that issue. The bylaws specifically say that people who had permits in terms of the old bylaws will retain those permits. In think there is a sunset clause, a two or three year clause, that tells him to reapply, but that doesn't deal with new industries. In terms of the bylaws it is quite clear that there's a whole public process that's got to be followed when people want to, you know, well- deposit their effluent into our sewers. So I don't know. I think that is a major problem. I mean if, you know, never mind enforcing the principle of polluter pays, but if we're not set up to administer the day to day operation of the bylaws, we are way behind. So I really believe it is not a question of lack or inadequateness of legislation, I think like with so many other institutions and so many other areas, it's a question of capacity to administer those. I'm not really the guy to tell you 'well, I have enough people to administer the bylaws or not'. I think that's for departments to say. And I have been in contact with... some of the role players, Umgeni Water and City Engineers, and I've... obviously there's a huge concern um if we don't enforce those bylaws. So I don't know what steps are being taken now to actually rectify the situation.

AP Are you talking here about where companies discharge effluent that exceeds the standards that are prescribed in the bylaws?

JVDM I'm not only referring to the enforcement, I'm referring to the day to day administration of the bylaws.

AP Permit applications...

JVDM Yes.

AP ...re-applications every 2 years, that kind of thing?

JVDM Yes. Yes. I mean legally we are at a huge risk if a competitor company, or for that matter any member of the public, believes that we are not doing enough to enforce our own bylaws. I mean, the High Court... I mean, you know you're an attorney... people take us to court with a *mandamus* there's no chance for us. But there are so many issues of priority with transformation of local government that – you know that's just one area, and I can promise you, and I'm not making excuses, there are so many others. Ah, there's been so many changes in legislation that's brought so many different duties on officials and Council that I think, it's just – you know I think to be honest with you people don't really know where to start. Um, ja that's what I can say as far

as implementation is concerned.

- AP      Okay. If, presumably if... our companies such as the vegetable oil industries, we went last Tuesday I think it was, a couple of us from the university and members of the Sobantu community who obviously have been complaining about the effects of pollution on their community gardens and that kind of thing, and there was clearly evidence of pollution coming out of the storm water drains. Now obviously that's illegal under the water law, I mean discharges into that particular river, they must be into the sewer. Whose responsibility is it to deal with those problems? Is it Council, or is it DWAF, how would you see that?
- JVDM    Um, at this point in time I think I can tell you straight out now, even in terms of the national building regulations as you will know, there's a regulation, there's a provision in the regulation that's saying no person may allow sewage to enter storm water. Obviously the activity that you refer to can be brought within a number of provisions, including NEMA, including the industrial effluent bylaws is also a problem there, and as I said the national building regulations, but primarily I think the whole issue of industrial effluent must be dealt with as the source of the problem, and that in my view is indeed the industrial effluent bylaws, and that could make this Council responsible. I think you'll see it in certain circumstances, depending on the evidence you have, and depending on the penalties you may have in a bylaw. It would be better to charge - if he can prove that it's entered public water, that you - he should use the Water Act. I think basically there's a duty on this Council to enforce the industrial effluent bylaws. That's what I would see as.
- AP      As far as you know... have the powers that are in the bylaws ever been used, such as having companies pay for monitoring equipment...
- JVDM    No. I'm not aware... of an instance where uh the powers granted to the Council have been used by the Council. And you obviously have studied the bylaws, and there are quite, I think, considerable powers vested in the City Engineer, and I don't think it's been used.
- AP      With regards to... the prosecutions you've been dealing with, do you find that that's an efficient way of dealing with these kinds of problems... you mentioned two prosecutions you're doing at the moment.
- JVDM    Yes... it is for an exceedance of the limits imposed by the industrial effluent bylaws.
- AP      And you have to go through a full criminal procedure for that?
- JVDM    Absolutely. You've got to... follow the same rules that apply to any other prosecution, the same onus of proof, the same standards of evidence, everything. Um, but that's just one alternative. The other alternative is indeed the alternative that you've already referred to, and that's for the Council to exercise its discretionary powers in terms of the... industrial effluent bylaws. That's another alternative. Now, because Umgeni Water had been dealing with prosecutions for some time now, and I think Umgeni Water will admit they have not been very successful, it's hard for me to say (interruption). Adrian, I think it's going to be hard for me to say how useful or successful we find the new bylaws as far as criminal prosecutions are concerned. As I've said, Umgeni Water have been doing them for a while.
- AP      Under the bylaws as well?
- JVDM    Under the bylaws and I mean, the general rules are going to be the same. Criminal proceedings as you know could take a hell of a long time, and everything depends on the evidence. If you don't have sufficient evidence you're not going to be successful.
- AP      What would your opinion be for example if a suggestion was made that instead of having criminal prosecutions some kind of administrative penalties was brought in, so that it wasn't a criminal charge against the company, but they would pay penalties for any discharges that were in exceedance of the standards.

- JVDM How are we going to do that?
- AP It would have to be written into the Bylaws, I'm sure. I know that some other countries around the world have brought in administrative penalties.
- JVDM You see Adrian, I think the common thing, or the common factor to both, either a prosecution or an administrative fee, in fact let me just tell you as a matter of interest, ah Umgeni Water has suggested some time ago, it must be two years ah, and you can speak to Chris Fennemore about this. Some time ago that we impose a tariff for any clean ups that we undertake. Now there's nothing wrong with that, and I actually don't know what happened with that because at the time we had a meeting, Chris was there, Mike Greatwood was there, I was there, and some other people were there, and we actually agreed that Umgeni Water would submit to the Council a motivation for the determination of tariffs for a clean up, and I had no problems provided that from a legal point of view you must not try and take over the functions of the court by using tariffs. In other words, if we can show that... if we had to be challenged on what the charge for a clean up, we had to be able to show that these were reasonable costs, and we are not building into the tariff a question of a penalty, you know what I'm saying. So yes, I think it can work, and you know that's very simple to do, as long as you have the people that would be able to justify that particular amount. So what I'm saying is for both a prosecution and for an administrative fee, you are going to meet people on the ground that are actually going to go out and say yes, there was a spillage, it cost so much to clean up and that sort of thing.
- AP Is this for spillages into the river or the environment, or actually going into Darvill?
- JVDM Ah... into Darvill, the cost of treatment, also damages to the Council sewers.
- AP Just going back to any spillage that might happen with regard to the rivers, you were saying that's under the National Water Act, that's DWAF's responsibility.
- JVDM Ja we don't ... we don't really do those prosecutions, in fact we don't have authority to prosecute them.
- AP Do they have the authority to prosecute them?
- JVDM Yes. When I say 'they', the State has got authority to prosecute them, and they will submit their dockets normally to the State Prosecutor after having made a charge at the police.
- AP With your tariffs... with the exceedances of the standards, do you find it difficult being able to show causation, um that... that company was responsible for a certain amount of effluent and that kind of thing?
- JVDM I... wouldn't know Adrian. I don't deal with those sort of day to day every day. Maybe... as I've said to you my role is more that of the last person in the chain in the event that the department concerned decides to institute a criminal charge. So I'm like a state prosecutor, I don't deal with the day to day management or operation of and administration of Bylaws at all. In fact I don't know what's going in the field.
- AP But from an evidentiary point of view you would obviously be presenting evidence on what the amount of effluent they discharged and that kind of thing.
- JVDM Yes I suppose you're right, because in terms of the Bylaws we could... also reclaim that from a dumper so to speak. But as I've said, you know, Umgeni has been doing that and it's only now that we've been asked to take it over again. So we haven't had opportunity to look at the practical implications of implementing that.
- AP 'Cos obviously you said that you were busy with two prosecutions at the moment...
- JVDM Yes.

AP ...So is that still in it's formative stages.

JVDM Oh yes... no, I've just received the dockets from Umgeni Water and we actually looking at the gaps and stuff that might be present in the evidence.

AP Do you... you obviously do a lot of other work for Council as well?

JVDM Yes

AP Not just... is this just a small part of...

JVDM Yes... it's a part of my work.

AP Do you feel you have the capacity to take on that kind of prosecution?

JVDM A lot depends on... the evidence I get. You know, if I have to look at files, some of the departments or the departments that prosecute regularly, like for instance the Health Department and the Building guys, they know exactly how we think and what we need and you know they go to court... they know that if we go to court there is a very good chance that we will be successful. But the problem is where I get a file and the basic things haven't been done, and I certainly don't have the capacity to send files back and forth. The only problem is I have no choice. You know, if we don't have the evidence there is no way we will issue summons, it's as simple as that.

AP So obviously you deal with people like Hilton Ryder?

JVDM Yes, I deal with Hilton quite a lot.

AP So you do their prosecutions as well.

JVDM Yes.

AP Have you done any prosecutions relating to Health violations...

JVDM Oh yes, lots.

AP ...with regards to the Bayne's Spruit at all?

JVDM No, in fact I'm waiting for Hilton to come and see me regarding the incident of this report in the paper, to see whether we could bring it within the ambit of something that we prosecute, alternatively ...they'll have to go to Water Affairs.

AP Is this... sorry which incident?

JVDM There was an incident reported just the other day by PG Bison I think.

AP No, that's the Town Bush Stream... it's a different tributary.

JVDM Ja.

AP So you've haven't done prosecutions regarding the vegetable oil industries as such on the Bayne's Spruit.

JVDM No. No, and because... for the simple reason that Hilton Ryder and his people normally don't do that sort of thing. No we haven't.

AP That's very informative. It's cleared quite a few issues up for me, especially regarding the role that you guys play.



JVDM Ja no, we like... many people believe for some reason...I remember the previous mayor used to ask us a lot of times "why aren't the Bylaws enforced?". It's very hard...you almost feel like selling your colleagues. The fact is very simple, if you don't get the evidence from the guys who are supposed to collect the evidence, and people don't approach you with cases, you don't have cases.

AP Absolutely... I understand that.

JVDM You know if it's... that's why I started off by saying there's a huge gap in the Council as far as law enforcement is concerned, I mean the problems relating to littering, dumping and the industrial effluent bylaws for that matter, I think it's just an indication on a smaller scale as to the bigger problem with law enforcement in the council, where you don't have a coordinated approach where you have one department that could deal with all prosecutions.

AP Is that like a municipal police... Metro police?

JVDM ...Yes... those guys have authority to prosecute each and everything that exists in the bylaws, so there's a lot of uncertainty as you will have picked up. Is it Hilton's problem, is it Mike Greatwood's problem, I mean it's everybody's problem... in terms of the bylaws. And as the Bylaws stand now, the industrial effluent Bylaws... it's definitely the City Engineer.

End and thanks.

## Interview

**Interviewee:** Charles Joubert, DWAF Assistant Director Water Quality Management

**Interviewer:** Adrian Pole ('AP')

**Date:** 11 October 2001

**Venue:** 7<sup>th</sup> Floor, Southern Life Building, Durban

CJ Ja okay...I think... we actually play a secondary role in one sense, but it doesn't always amount to that. In fact, it usually amounts to the fact that we play the major role. Why I say this is that the Pietermaritzburg Borough/TLC, whatever you'd like to call it, is responsible for ensuring pollution control within their boundaries. But unfortunately they don't do it properly.

AP What is that under do you know? Is it under any Act, or what is the enabling legislation for that?

CJ Well it... it basically... Look, they've got their own bylaws, which they should uphold. And as a department, it's very difficult for us to take legal action against a borough. You can do it, and you don't... you don't really want to do it. But we direct them in pollution control in their area. If it comes to direct pollution of a water source, then obviously we must be involved, because we administer the National Water Act. And... we can take legal action under that Act in terms of sections 19, 20 and various other sections of the Act.... So that the first line of defence is them. We come in as the second line.

AP Would you envisage that they also prosecute under the National Water Act?

CJ Well they can do under certain circumstances. But, generally speaking, it's under their bylaws. But unfortunately bylaws throughout the country are very lax, they've got no teeth. So that's a major problem. We have various water pollution control officers who deal with various parts of Natal. And the Bayne's Spruit comes under me, and Yakeen Atwaru who's the guy that looks after that area. Now, one of the major impacts in terms of pollution there is the oil factories along that river, we've had a war with them for the last seven years. We've taken legal action against Willowton Oil and Cake... it came to nothing. And this is the problem with the legal side of the Water Act... particularly the old Water Act, which is now defunct, and we have the New Water Act. Hopefully we'll be able to do better with the New Water Act. We took action against Willowton Oil and Cake in about 93/94 I think it was. No, it was earlier, about '92, and it came to fruition in about '94, 2 years later, and there wasn't enough evidence to nail them. So we spent about 2 years messing around, and at the end of the day these guys weren't fined, they weren't put into jail, nothing. So it's a problem. Um... but our role is... obviously the primary role in terms of getting people moving in the area, and if they don't do it, then we have to do it. And what we've really done- and when I say we I'm talking about Yakeen Atwaru...and myself... - we've had detailed inspections of the major oil factories along that river, and we've come up with a number of major defects in their housekeeping... a lack of bunding of storage areas where you get a lot of spillages, and all that sort of thing, and it goes into the storm water drains. The problem lies in that a lot of the storm water drains fuse as they enter the river, so it's very hard to tell which factory is actually causing the problem. Um, so we now have got all those guys - Sealake Industries, Willowton Oil, Capital Oil and so forth - to implement a number of control mechanisms within their factory premises to prevent storm water pollution. You see the idea is to divert clean from dirty storm water on your property. Where you have a mixing area or an off-loading area and you get spillages, that's dirty storm water. So you bund that area. Um, where it falls on roads into the property or on areas away from the factory, that's clean storm water that must be diverted away from mixing with effluent or mixing with dirty storm water. In the same breath, dirty storm water must go to effluent because it's as good as effluent, because it's contaminated. So, obviously our role is a major one, but we... we're very thin on the ground. We can't be expected to be patrolling the river on a 24 hour basis. There are other major priorities in Natal, not only in that area. So you have got to rely on the local authority, and let me tell you Adrian, they are not doing their job: full stop. They are doing nothing. If you really want it from me, from the horses mouth. And it's a source of huge frustration for us because we get pulled into a situation that's a bloody mess... and we have to try and sort it out, when they should have done

their job and sorted it out themselves. And I don't... I can't really put my finger on it. Um, there's a lack of urgency amongst most of the municipality as well as a lack of any um... legislation that's got teeth in it. But they can take legal action in terms of the Environmental Conservation Act or the National Water Act. I think section 151 of the National Water Act allows the public, or a TLC to take legal action... it is 151 ? Let me just check...

AP That's offences...

CJ Offences and remedies. I'm not absolutely certain, I'm not going to waste time here. But I seem to remember our lawyer at Head Office saying 151 could be used. We are actually going to be taking legal action if possible against Bison Board... you may have heard of that pollution incident. And um, it was then that we learnt that ... the local authority, in the form of Hilton Ryder who is the Health – Chief Health guy there, could take legal action against Bison in terms of that pollution incident because it's a double pollution incidence within a week of the same product, and the reason is they didn't bund the area that he told them to bund. So it's an offence. You know, it's crazy. Ja, so that's the situation as far as we are concerned, that we are the major role players, but that we use the local authority as our sort of Agent, as it were, to do the job. We only come in if need be.

AP Do you provide any training support or anything like that to the local authorities, for example around the National Water Act?

CJ No we don't, no we don't. But we give them advice obviously at meetings, and we assist them. And you can be sure that when you assist them in the field, you are the major role player. They often haven't done very much and they don't know what to do, which...um... is a fall down within the whole system there. They should have training courses and all that sort of thing, I think. But I don't really know what it is. I think it's just a lack of urgency within all the boroughs, not necessarily just Maritzburg in this case.

AP So you obviously rely on them to do the enforcement?

CJ Well...well... the inspections. The inspections and the meetings with the offender whose polluting, or who is potentially going to pollute. And often we come in alongside them in these circumstances, before there's been a problem. It's often the case, when we go in and call them, or when they go and call us in. So we work as a team in once sense. But it's not always the case, and they might leave it until the bitter end when... the wheels have really fallen off and oil is spewing into the river, you know. Ja.

AP I'm interested in the activities that you mentioned just now. You said that you'd been involved with... the companies, doing inspections and making suggestions. Was that quite recently?

CJ Yeah... ja, it was. Over the 3 or 4 months, and it all came about because the Msunduzi Catchment Management Forum, where it was stated that there was major downstream complaints from the local blacks who were farming there, of oil getting into the fields and that sort of thing.

AP The Sobantu community.

CJ Ja, that's right. Yakeen recently attended a meeting with the Chamber of Commerce in Maritzburg, did you go to that meeting?

AP Ja.

CJ And that is the reason why we got involved. It was also said that we should also sample all the rivers and that sort of thing. This is a grey area to be quite honest with you because there again we rely on the local authority, it's their area, they must sample the rivers, full stop. We haven't got the manpower, or whatever, to do that. I mean, if we were expected to do that, we'd never do our job properly. The local authority must do that. We come in when obviously there's a prosecution necessary, or a major problem, to assist. So that's the situation there, ja. Um, prior to that it was one-off inspections periodically, say once every three or four months to see how things are going, to advise, to nail them on the head if things are going wrong and that sort of thing. But

- there again we rely on the local authorities... they must keep tabs on these guys, we haven't got the manpower to do it.
- AP These inspections that you did, were reports drafted from those inspections.
- CJ Ja, letters, file notes, you name, they're all there.
- AP Are those available to me? Would I be able to see those?
- CJ Okay, what would you do with those now? You're welcome to have them, what would you do with them?
- AP My thesis. We're busy dealing with the companies.
- CJ Ja, no no, you could use that.
- AP So it would just be useful information for...
- CJ All you'd need to do is... just to acknowledge DWAF... (interruption)... write to us just to make it formal... and request it... and we'll obviously photocopy it and send copies to you.
- AP What are they exactly, just so that I know what to ask for?
- CJ Just ask for any correspondence or file notes on the oil factories in Pietermatizburg...
- AP All reports.
- CJ All reports, ja.
- AP Um, with regard to monitoring again, Umgeni Water was doing a lot of the monitoring.
- CJ Well, we relied on them as our agents in fact.
- AP But you're probably aware that they've been cutting back?
- CJ Exactly.
- AP And at that meeting at Chamber House they announced that they won't be monitoring the Bayne's Spruit anymore because of that. Have any interim arrangements been made...
- CJ No, it's something that's concerned me greatly, um... and I've got it on my lists to discuss with Gravell, who's my boss, and to come up with a solution to the whole thing. It could well mean that one of our full-time samplers will sample on a regular basis.
- AP ... would DWAF foresee or envisage that the Catchment Management Agencies do monitoring, or would they again be relying on the local council to do that?
- CJ Um, look... it would probably be easier for a Catchment Management Agency to do it because they'd have more men at their disposal to do it. But I would think that they would rely to a large degree as a first line on the local authority, and then assist them where necessary. But it's a difficult one, maybe Ash can give you an answer to that. Ja... *(discuss appointment with Ash and Msunduzi CMF meeting)*
- AP That's very interesting. That covers most of it from, from what I've been looking for, that's extremely helpful.
- CJ Ja no, um... I like to think that... I'd like the public to sit down in these offices for a week and just see what we go through here. The government unfortunately takes huge blame for all sorts of things, but um, when you see what you're up against, and the number of men you have at your

disposal to try and put out fires, it's not always that easy. And I like to think that particularly water quality management within this department does a sterling job... We've got a number of good fellows here, they're all degreed, and if they're not degreed they're very high rated diplomas, totally committed to their job, so ja... we've got a good team here, and we do a good job.

AP That's great. You mentioned... just as a last thing... you mentioned you were thinking about appointing a full time inspector to look at the water quality, is that right?

CJ Ja, we've got full time samplers who do mainly sewage works discharges, but they come in where they are needed. And there is a guy who deals with the Cato Ridge-Camperdown area, another one who goes up into the Bergs and into the Midlands of Natal. One or other of those guys could possibly get involved, probably the guy whose closest to the coast could get involved in the Maritzburg area.

AP So that again would just be going and sampling now and again?

CJ Ja, no he would do an upstream-downstream, and he would do a midstream, opposite the likely points, those being the storm water discharge points into the river. But you've also got a number of hugely grey areas upstream of that thing. You've got that Indian settlement in the catchment, high up in the catchment there, where you've got a number of very small businesses, car wash businesses, where there's a lot of discharge into the river, and a lot of oil in it to. So it's not only those oil industries, although I'd say they probably play 85-90% of what is going in in terms of oil. There's also a contribution from upstream as well.

AP Absolutely, not to mention litter and domestic waste...

CJ Oh hell

AP ...sewage as well.

CJ There's a lot of squatters in the subsidiary catchment which comes down past the quarry and into the Bayne's Spruit as well (*Telephone rings and tape stopped*)...

AP ...two more areas, unless there's anything else you want to raise. One is Umgeni Water, again for monitoring, they say they have the capacity...

CJ Ja.

AP ...but clearly through their changed role, I think they were saying the Water Services Act, they can't do it without having a customer. Has any thought been given to paying or contracting Umgeni to do that?

CJ Well obviously this is their new line now, to monitor for money, and obviously they'd like to do it in that area, so this is one thing I'm going to discuss with Gravell, possibly we pay them to monitor.

AP Is there anything in principle that... wouldn't allow that to happen, or is that feasible?

CJ It is feasible, ja. It would depend on who would be responsible for paying them. Would it be the TLC...PMB TLC... I would think that would be the case, ja. But if they refuse then we would have to look at either sampling ourselves or paying Umgeni Water to do it. 'Cos it's a river that's impacted on to a huge degree, and we need to sort it out.

AP So you'd obviously be open as DWAF to...

CJ Ja, we'd obviously have to negotiate and discuss it with Umgeni Water, and also the TLC.

AP The other issue is just going back to the inspections of those companies. I'm interested to hear your opinions on whether you think the discharges coming into the river, we've see it... we've

looked at the water quality data and clearly it's severely degraded, there's often... when we went ourselves we could see emulsion...

CJ Terrible.

AP ... on top of the river. Do you think it's just a housekeeping problem, that... the lack of bunding, accidents and spillages... or do you think that they might be deliberately discharging?

CJ It's both, but I think it's primarily a lack of housekeeping, a lack of bunding. And it's also a major attitude problem amongst the owners of those factories. They're all owned by Muslims, now they're notorious for not giving two hoots about the environment. Wherever we have dealings with these guys they couldn't give a damn... it's this that counts, the money that they make, and that is the problem there. If you can change their mindset, you would end up with a situation where they will become concerned about the environment and they will stop what they are doing. But they couldn't give a damn, let me tell you... that is the problem. And it's actually quite alarming, because they're actually quite aggressive to the degree that they threaten if you get too involved in the situation. I know with regard to Willowton, Lynn Gravlett-Blonden, my boss, was actually threatened with his life at home. So we're looking at a situation here where this is how these guys operate.

AP Did they...

CJ Ja, someone phoned him at home and said 'Ah! You've been involved with Willowton' – didn't give his name – said 'if you don't stop that we're going to shoot you'. So I mean we are looking at a situation like that. And it's actually typical of... that sort of person under those circumstances. That's how they operate. So um, ja look it's a number of things. I think when they have an off-spec situation they think 'Hell it's going to cost me how much money to get rid of this to Waste-Tech or Waste-Services? Hell no, I tell you what, you open the valve at 12'o clock tonight' and away it goes. I'm surmising now, but I reckon that's what's happening. But I also believe there's a total lack on site of housekeeping. You go in there, you can see it. And they won't spend money on upkeep for maintenance of pipes and fittings and drums and tanks, they're leaking, pipes burst and they leak, that's the situation.

AP One of the concerns that we have at the moment through the research that we've been doing, um it appears that Capital which went into liquidation... it seems to have phoenixed in a sense...

CJ Ja.

AP ...they were given temporary permission to discharge into the sewer, but they don't have permission at the moment because that expired and they never put in their effluent treatment. So they're operating without adequate effluent treatment. Now we understand from Umgeni that they claim to be sending or trucking their effluent off to Sealake for treatment, but clearly there is some concern about that, especially when you look where their stormwater drain is and the effluent in that area.

CJ Ja. Ja. Ja. No lok, we were aware of that, because when we inspected Sealake about a month ago they admitted that they were taking stuff from Capital.

AP Do they have the capacity to deal with their own and Capital's...

CJ I don't know, it's difficult for me to assess. A guy might say he has the effluent treatment system that can handle it, but unless you get a guy who really knows that effluent treatment system in their, he's the only guy that can tell you. Obviously if it's a drum with a pipe coming in and an overflow you'd say no. But if he's got a reasonably good set-up, and Sealake have, you can't tell, it's difficult.

AP That's interesting. Is there anything else you'd like to add regarding difficulties with implementing the polluter pays principle?

CJ Um, ja...

AP I think we've covered most of it.

CJ As I mentioned earlier I think the biggest problem is a lack of awareness of the environment, a lack of education of these... industries, factories. And then more importantly, particularly amongst this type of person, a lack of...um... I think... no not a lack of... the inability to put any funds aside for maintenance, upgrading, upkeep... they're only interested in making money. You find with other factories, and it might sound racist but it's true, where you've got a white owner, or even a black owner, they will maintain, they will take pride in how their factory looks, these guys don't, it looks like a dog's breakfast, I tell you. I don't know if you've been into them?

AP I've been outside there, but I'm trying to get into them at the moment.

CJ You must go and have a look around... it's horrifying. Capital for instance is an absolute disaster, you know you go into that effluent treatment system and there's grease all over the floor, there's walls broken, there's pipes sort of bent... there's no pride in... they're just interested in making money, that's all they're interested in. To hell with everything else. And if you get a bit too tough, they threaten you.

AP That's amazing.

CP So Adrian that's it. I might sound a bit emotional but it really gets to you. There's not a hell of a lot you can do, you know you take legal action and nothing comes of it.

AP Your frustrations have also been reflected in other role players, like Chris Fennemore for example.

CP Ah shit yes.

AP ...Just one thing that's come to mind is the Waste Discharge Charge System that DWAF is developing. Have you had any role to play in that?

CJ No, nothing at all... Unfortunately Lynne is not here... I tell you who could help you is Pat Reddy...

*(Goes to see if Pat Reddy was in, but he was not).*

CJ I don't know how important this is going to be in your thesis or anything like that, um... it's a political issue, and agenda issue if you'd like to call it that. We traditionally have had a major problem with Umgeni Water, and what it is is that over the years... since about the late eighties... they have, although it's not as bad now as it was because of their present situation, their disbanding, their breaking up, they've been accused of all sorts of things. They basically have tried to muscle in and take over from DWAF in terms of pollution control and every other aspect of providing water sanitation, all that sort of thing. And it's usually quite typical of Water Boards... is that politically they want to be seen as the major water force in the area... so, and having said this... I don't know how Chris Fennemore came across to you, I don't know whether he ran us down or whether he was supportive...

AP No, he certainly didn't run anyone down...

CJ Ja, okay.

AP ... he was more concerned about the companies and the lack of enforcement and that kind of thing.

CJ Ja. I just thought I'd put... give you that tobacco to put in your pipe to smoke, because its important you know that sort of background. So that if... you don't become biased towards them

if something is said or whatever.

AP Sure.

CJ We... it certainly hasn't been the other way round where we have tried to put them down. I would like to think that that sort of situation is rectifying itself, although there's still an undercurrent of, you know, from Umgeni Water... 'Hey Water Affairs are you doing your job properly.

AP They seem to be a bit... there's obviously a certain concern that they've expressed about not being able to monitor water anymore and that kind of thing, and a frustration, I think, more than anything. I think that the root of that from what I can gauge is that they concerned that no-one else is doing it, so they look to DWAF...

CJ No look, I regard it as a priority in my life at the moment to get that sorted out. That is essential, because that river has got to be monitored, particularly the Bayne's Spruit. I'm not saying the others don't have to be, but you need to prioritise. I think Chris should be given the go ahead to monitor, that's my personal view.

AP And to be paid by the Council?

CJ Ja, ja exactly. Because they do a very good job, they know what they're doing, they know what parameters to look for, they know where to sample, they have vast experience in this regard.

AP Council... when I saw Hilton Ryder, and Mike Greatwood for that matter, both of them referred to the difficulties of funding and budgets, and having no money for that kind of thing. So if they don't have the money for that, would DWAF be prepared...

CJ Ja no, we'd have to be because it's our river basically... we'd have to obviously sample to ensure the safekeeping of the river... the river quality as it were.

AP Well, that's very encouraging to hear... thank you...



river, who are working over there, their feets were also affected, those boys. So we noticed that no, there's something wrong with this river, and others are... has never using this river.

AP When was this? How long ago?

KM I noticed this, it was 19... it started 1995, but we didn't notice on that up until now where most of our people here on our side didn't use this river as a healthy river. But the people who are using it used to have some problems, especially if there was a lot of rain. So one day when the people from Taxis were affected by floods, everyone was injected so to safeguard them. So we noticed that no, even if a person is crossing the river it is very dangerous. Because the bridge that he is... has built now. It was built I think it was 199... 1997 this bridge there. So it's helpful for those people who are crossing that river, except if there's a lot of rain, so it's become a problem and that. So we used to swim there when we were young, but no since we see that no there... no ore fish here, crabs and other animals there, we noticed that no, this river is not okay. So we didn't know where to go, to whom are we supposed to report. Because even councilors, they used to change councilors at all time. You have... we have to inform that councilor, organize him, explain to him our problems, but after some time they would change the councilor, so it's not a good idea on my side to change councilors at all time, except if they an give them 10 years maybe, because he will want other people to hand over some reports and other things to him, and it will take time to start his own, on his own as a councilor. So it's where we noticed about this river, and other people... we have got only one swimming pool here, and the people who can use this swimming pool are people who have got money, and the population here in Sobantu eh... about thirty six thousand people here in Sobantu. Even if others have moved, but there are a lot of children there, so they can't use this swimming pool as a community... very few people who can use it. So others used... it was safe if there are people who are swimming there, because we used to see people who are attacked there, we can even see that no there's someone who is dead there. We used to see people there, but as we have no more attending that river it was, the ways of monitoring the river I there are young kids who are swimming there, it's easy to see that there's something wrong or there's something that is dead there or a person, it was easy for them. But now it's very dangerous, because last time there was a... when we saw that man who was dead there, that very same day there was a boy who has been lost 5... a week, so he was found by these young kids who were crossing at the bridge there. So they noticed that no, we know this person. They were asking him from his friends where did he go, where he's gone. So he was seen by these young kids.

AP Did he drown or was he murdered?

KM He was murdered here because his other parts were not... like his tongue.

AP Taken away? Like a muti murder or something.

KM I think people are using this thing... muti.

AP That other body that we found that day we first went up...

KM It was on that day... it was on that day.

AP There were some candles like stuck in the river there, did you see them?

KM Ja, I did see them. So on the day that David saw that man, in the afternoon as we were coming back here these kids who are playing next to the river saw that boy. So it is not okay, we need to clean it, organising the youth and teaching each other about the need of this river, to see it, monitoring it as a community. We don't have to ask others to do. It's for us so we have to do it. So that they can feel happy about the river, because others, we don't know, maybe in some other areas they are using this river, drinking this water whether they have taps or not. But there are very young kids who didn't know about this thing, they can use it, they can drink it.

AP Ja that's right. Kwazi, could we just go on a bit to the recent steps that the Environment Desk has taken, starting with your... that campaign, your memorandum and the march. Can you just explain your process, what you've been up to?

KM Ja, since we given each other task to attend, 'cos eh... meetings around... in town. So we used to send Glenn to attend those meetings, so after our discussions here Glenn decided to um... to tell us that if we can just ask some other organisations, networking with other organizations to assist us in this. Really what can we do, who can we ask. I decided to tell him no, if he can meet with Dee De Bruin, she is understanding and she knows people who can be right for us to assist us in that. So we started to organise it and we also tell her that even Nevil Quinn can also assist us on that, because we have never write a memorandum. So it's where she approach us that no, she's organized other organisations, so others like Green were too far away from us because they were busy with their things on the other side so... but we try to keep in touch with other organizations, we're talking with them. But on what we are going to do. So we... that's where we started to... Nevil decided you to assist us. Although there were two things in one week, because we are launching the project, but we say there was a need of reporting this to the PCCI. As we... Glenn... told us that this Willowton industries don't... didn't join the PCCI, but we... our discussions and decision we said no, if we can approach this PCCI that no, it can be easy for them to attend them and talk to them that no, they should attend these meetings so we can solve our problems, not fighting each other but solving these problems. If those firms that have got problems, they should ask them if it's easy, because the PCCI has got a good committee. So Dee De Bruin... *(Glenn arrives in office... tape stopped)* So when Glenn come with that, explain to us that no, although Willowton industries are very problematic because they don't attend the meeting in town. They interested in money. But we have to write that memorandum asking De Bruin to get someone, a chairperson who is to receive that memorandum. So Andrew Lehman did agree that no, he will do so. So we also discuss about the role that we should use, so last year we... also get another... that man that was asking us of the way of getting the road. But we did get a person that was explaining to us the right way to using that road, because our aim was that we want people to understand that there's a need of cleaning our area, even the river. So we told Dee Be Bruin that we organize people here in Sobantu, and she will also organize others, especially schools because they deeply involved... involving schools on environmental awareness. So she decided with us, because we just now talking with her most of the time using the computer, so it's where we got the right and organizing the other departments, fire department was also assisting us. So it was... we see that it was very success, because it is being discussed even now. So we say that we... just do the evaluation with her, and just short... it didn't take a lot of time because we see that no even the councilor is involved here. They do understand that there is a need of stopping these people that are polluting the river.

GS What was the question?

AP Well there's no question at this stage. Um... and ja... that was the march at which, Glenn, you handed over the memorandum to the Chamber of Commerce representative, didn't you?

GS Yes, yes I did.

AP And that then led to that meeting at the chamber of commerce, didn't it?

GS Ja that meeting of Chamber of Commerce. Um, basically what we need is the cleaner river for many use as a community of Sobantu. Now there are people who are using the river as the main source of irrigation, and there are also children who play in that river for recreation purposes, they swim and they do fishing. But what we have seen is that those activities have now terminated due to the pollution of river which is done by the oil industry that is situated in the Willowton area. Basically what we want to do is to stop them to pollute the river, and use the correct measures to deal with their effluent treatment... not to dump their heavy stuff on the river. And we brought this to the Chamber of Commerce and Industry because they are the umbrella body for the business in 'Maritzburg. We saw that it would be harsh to them if we start by marching straight to the factory. And then we decided to form a little bit march... which was done last month on September 14<sup>th</sup> on Friday. This... was done by different stakeholders of Sobantu, the main organisation which organize that was the Sobantu environment desk in conjunction with the KPCA, where we tried to... in the memorandum we tried to address the main issues which are affecting the Sobantu as the community. And from that march we had a meeting with PCCI environmental committee where they invited the person who are doing the pollution, and on that meeting there are many facts which were represented... to them and... with the Umgeni and Environment Centre in University they try to assist us with the presentation where they had a number of facts and pictures which

show clear what effect, what impact pollution has done to the river.

- AP As the Sobantu community, what would you like to see happening in the future? What would your ideal situation be for the Bayne's Spruit?
- GS The ideal situation is that we want the clean water, we need to see fish and frogs on that river, we need to use that river for recreational purpose for the future generation.
- AP What about swimming?
- GS We also need to swim.
- KM Just to go around next to the river it's... I used to see that it's healthy, ja. So people didn't use this river now, so it is not good to us.
- AP And what kind of action are you committed to um to see this river getting clean. What kind of help would you need, for example?
- GS We need a commitment from industry to treat their effluent proper and we also need a help from municipality to try to put pressure on these guys to follow the correct procedure... measures for the environmental structure inside the factory.
- KM Another thing that I've noticed is that these factories there they don't think of us, that polluting here, this river, is affecting us and they don't assist us with... there's nothing that is coming from them to assist us. Maybe... there's no one who is employed from Sobantu from them.
- AP Those are the vegetable oil industries?
- KM Mmh... ja.
- AP Who do they employ then, do you know?
- GS The current information that we have they only employ people for a temporary basis, not on a permanent cases.
- AP Is that Sobantu people or not Sobantu people?
- GS Not Sobantu people.
- AP So you get... as the Sobantu community you get no benefit from having these companies there, but you have to deal with the pollution problems.
- GS Yes.
- AP You obviously know by this stage that it's illegal to discharge anything into the river under our national water laws, so how as a community do you feel about the authorities not having been able to deal with this?
- GS The problem is that they've got their uh... what can I say... there are no correct... there are no correct body who following our case proper like the municipality, they've got different department. If you complain about a certain situation, they said no, it's not their problem. They refer to other department. So far we don't know who we should... deal with this issue to rectify this whole problem.
- AP Well, the local council is responsible for the state of the river, which would include the Environmental Health Department, which is Hilton Ryder. Have they... has Hilton Ryder or anyone else from his department ever come and spoken to you guys at the environmental desk? Has there ever been any communication, have they ever come to the Sobantu community to talk about the pollution?

GS No, no with the municipality. But we had some help form the university, and we tried to address this issue to Umgeni Water and to KPCA as well. And then... they've tried to tackle this issue but they fail because they said they failed the case because of the lot of briberies that are done by these industries.

AP Who said that?

GS DWAF and Umgeni.

AP So as the Environment Desk you say you have spoken to the municipality, but you don't know who... you haven't known who to speak to there.

GS Yes.

AP And they haven't... who did you actually speak to when you approached the municipality, do you remember?

GS No, no. But we tried to address it to the Department of Environmental Health.

AP But you didn't receive any help?

GS No.

AP So what would you want the municipality and the Department of Water Affairs, as the people who are responsible, to do?

GS Mmmhh... the situation along the stream is not good. I think they should conduct the everyday monitoring, or periodic monitoring and then they... the environmental officer for the municipality must look proper in the industry how they treat their effluent, and before anything... before the factory should be establish or start to operating they must make sure that the factory has a suitable standard to conduct their production.

AP Anything to add Kwazi?

GS But on the other side I think once we organize our community and we explain to them how far have we reached at this stage, I think they should understand. Because most of the time people used to ask whether there is anything that should support them, because our people is unemployed. But I think one, we have to organize them and state to them that understanding is better than other things. Money is the thing that should be followed, but it's very helpful to understand and know what affects your community and involving themselves. And not asking us to do other things for them. So I think we should also networking with other organizations like EJNF (Environmental Justice Networking Forum) to assist us in pushing... that on the other side we'll see that there are some other laws that prevent them from doing things. So we should also networking with them sometimes.

AP Well that's been very, very useful. Thank you very much for that, for the information.

GS Sure.

AP Is there anything else you want to add before I switch the tape off? I think everything has been covered.

GS Mmmhh.

KM Yeah.

## Interview

**Interviewee:** Dennis Mncwabe ('DM'), Chairperson Community Co-op 1

**Interviewer:** Adrian Pole ('AP')

**Date:** 16 October 2001

**Venue:** Co-op 1, Sobantu

DM Ja, see this river is a problem is a year's problem, not just now, but we keep on working, working, but we know that this river is giving us a problem but we cannot mention that this river is killing our plants, but what we can mention is that our irrigation system is affected a bit... a little a bit a bit and then I think in future we'll have a problem where the pipes are blocked totally, where no water is coming out. So that's our main fear, and we also fear that some of the disease that we see here are the causes of the water that we are using from that river, the Bayne's Spruit river.

AP Is that diseases in the plants or diseases in the people here?

DM We feel that because there are disease in the plants, maybe the reason is that we are using that water, so whenever there is a disease the first thing we suspect is that it may be the river, the water from the river is causing that disease. Though we are not sure what kind of elements there are inside the river. But we hope that there is no elements that are going to kill totally our plants, but there are maybe that comes and sticks on the leaves and then that disease takes the opportunity to grow and destroy.

AP You said it was clogging up your irrigation pipes, is that right? How does that happen? How often does...well can you just explain that a bit further.

DM Ja you see, before we started this project we had a talk with the... Irritech, the people who are responsible for putting the irrigation system. And then we mention that there is a problem of the river, we suspect that we can't suspect the river to irrigate, maybe it would be used...build a dam, but that man mentioned it is so expensive to build a dam, and then we are not sure whether that water from that dam is just going to vanish in one irrigation time, so we are not sure how much water how we going to get under this mountain. So he said no, this river... he can provide something that's going to minimize... the water. What he meant is to try and purify the water before it comes to the plants. So that's why he bought 2 filters. So those filters are doing a good job because we can see the rubbish that are blocked by those filters. But there are other... rubbish that comes through bit-by-bit, and then it's going to pile up. We fear that in future it's going to stop the irrigation system, because it's going to keep on piling, piling, piling inside the system, in the pipes. So maybe in 10 years time we'll have a big problem. We'll have to dig those pipes and clean it again so that the water will come out again. Even now we can feel the smell of the water once we start irrigating, we can feel the smell of the water. The first water that comes out of there is black and smelly, that means the water that comes through they are hitting the rubbish. So we feel that the rubbish is piling, piling inside the pipes. So that will affect us totally once the pipes are not able to give us water.

AP Who did you say put the pipes in for you?

DM Irritech.

AP Irritech. Do you know how much it cost to put the irrigation system in?

DM Ja I think... though I haven't got the actual figure, it's round about forty something thousand. That include eh the pump, filters, the pipes, the valves... everything. So I think it's up to forty something thousand.

AP So obviously... it's being clogged up and you... you might have to replace it one day, which could be very expensive?

- DM It is very expensive to hire people to dig the whole system and clean out the pipes. That we can put those pipes back, but to hire people to dig the whole system here is going to be expensive for us. We cannot afford though if that happened we have to lose the thing.
- AP No more community garden?
- DM No more community garden. Maybe on summertime when there is natural rain we can come and do the little bit, but wintertime we have to close because we depend upon the river water.
- AP How many people depend on the community garden to survive?
- DM You see, here we are Co-op number 1 here. So we've got eleven members and those eleven members got their family members. So it's round about, each member it's round about six families that depend upon each member. So we can multiply 6 by 11 and then you see the people that depend upon this garden.
- AP That's a lot of people. Before eating the vegetables, do you guys wash the.... Do you have to wash the vegetables?
- DM Yes, every vegetable here, once we have harvested the vegetable it comes here and then we clean. We use that water there (*points to very small dam at base of hill*).
- AP That's the water from the dam?
- DM That's the water from the dam. It comes under that mountain. So whatever... thing that stuck to the leaves we try and wash it, and also we... we also hope that all what we sell here will have to go to boiling water and then everything will die, whatever there is germs.
- AP So you wouldn't use the river water to wash your vegetables.
- DM No... see because we know that some other people who just... like carrots you see, carrots some other people just eat it raw. It's dangerous. We have to use clean water whenever there are people who just eat something raw there has been no problem.
- AP You were saying something sticks to leaves, what does that look like? Of the plants, what is that?
- DM No, I think that is our perception that we have here, that there are other elements that can come through.
- AP Can you see anything visible on the leaves?
- DM No, we just ... our thinking.
- AP That's extremely helpful. Is there anything else you'd like to add to that? Any other impacts that the river has had on your community garden?
- DM No, I think that's all, unless I can put something financial. You see, financially I think it's giving us all a problem see, because those filters there we've got to wash it every time we irrigate, that's time wasting also. Those filters also one day maybe will stop working and maybe we've got to buy another one.
- AP How often do you have to clean them?
- DM Every time we irrigate we've got to clean them because dirty filters, once we irrigate we've got to clean it same time.
- AP How often do you irrigate?

DM We irrigate once or twice a week. It depends upon the weather.

AP And um can you describe what is on the filters? What... do you think it is that is clogging up the filters?

DM I can't describe those things, because it's something like, I think there is oil and a mixture of so many things, but we can see that there is too much oil, and also a mixture of other things.

AP What color is it? Do you know?

DM Ah, it differs. It differs. Sometimes it is black, sometimes it's uh brown, it depend upon what kind of things they put that day.

AP Do you see changes in the river itself when you walk past it, or does it always look the same?

DM No it changes, it changes the colors, it changes... because there are stones, you see, that shows... the pollution... a factory has put their thing inside and then it washed away. The stone remains a sign that something that went through. So the stone see... I mean clean up that thing at make it stay like that and show the people that there is pollution. See, even now if you can go to the river you'll be looking at the stones, you can see there is something sticky. Once you put your leg there you can even slip. It shows that there is something sticky like oil.

AP Well thank you very much. I really appreciate your time Dennis.

DM Thank you.

AP That's very useful.

## Interview

**Interviewee:** Ash Seetal – DWAF Catchment Management

**Interviewer:** Adrian Pole ('AP')

**Date:** Thursday 17 October 2001

**Venue:** DWAF, 7<sup>th</sup> Floor Southern Life Building, Durban

**Note:** interview was conducted with constant drilling (including hammer drilling) in the background, which affected audio quality at times.

AS ...It was actually a very interesting case, but anyway... that's the one (*hands over case files*). Further interest... oil industries, and the two that I have is Capital and Sealake. Now the Sealake files should be a lot thicker than this because it went on for 5 days. I had a fine prosecutor developing a system, and Gavin Travis was a prosecutor and he'd been promoted to the Regional Court straight after the Magistrates' court. The last was in...

AP Were they convicted as a result of this?

AS They're going on for so bloody long, 1994... 1992, 1993... I don't know if you want to go through these court transcripts...

AP That might be interesting, ja.

AS They're in here.

AP Is this the one where it was thrown out due to the technicalities?

AS Both of them.

AP Both of them? That would be interesting to look at. You've got the full transcripts?

AS Ja, '92... (*indistinct*)...you know Anton Frazer?

AP No.

AS Advocate in 'Maritzburg. Anton was acting on behalf of Sealake at the time... Any body knew these oaks were as guilty a sin.... That's that lot there (*hands over more files*). We tried all sort of things. Catchment Management wasn't a formal policy within the department, formal in the sense of a legal statute and a policy framework that we apply. But I used the same approach the we spoke about at the meeting. So anything you needed is basically what I said at the meeting. As far as catchment management comes in with the polluter pays principle, we've got a tool kit that we use...

AP I need to get that on record. A lot it was covered in that meeting.

AS It's a tool kit as I say... use a heavy hand on the one hand and a silken glove on the other. And I always maintain that you can't just do the one without the other, you need to use both. You need to... civil servants, a state department or an agency or parastatal whatever the case might be. Sealake also has to be concerned.... Peer pressure comes to bear, and from catchment management the fact that you've got a multi-stakeholder forum... that participates within the catchment. They're impacted by any industry or any sector that's polluting. That's where the pressure is. So it's the community pressure actually carries a hell of a lot of weight in a catchment management forum. And yesterday I meeting with my Isipingo... same story: industries and industrial pollution into Isipingo, South Durban Basin... the same story is how do you get... industries to commit to an environmental ethic. And here we have a handful... about 90 that are willing to participate actively and do their share and do more than their share, virtually taking care of the environment. And that's not just water as a natural resource, but the environment in general. Most others couldn't care a tough shit. Again it's community pressure that comes to bear,



and other industries that stand up and say 'look we're getting some mileage out of this as well, you now, people stand up and take notice that this is what we do for the environment, so that what happens.

AP Community pressure and colleagues in the business?

AS Ja... and what I've got in here as well, Adrian, is some of the exceedances of the trade effluent bylaws, and what I haven't got, as I said... it's in the files in my office, and... I thought I'd get a chance to do it yesterday but it's... not just the discharges to the Bayne's Spruit, but it's also the exceedances of the Trade Effluent By-laws. Johan will probably have indicated to you what was happening there, and Umgeni Water were our agents at the time and I'd tasked them with actually collecting samples on my behalf. And what we would do, is because the Act 54 was couched in such a way that the only analytical service that could be provided had to be the SABS, our legal samples had to go through SABS. But as I said as well...

AP That's been changed now?

AS That had been changed at the stage and it was carried over to the new Act as well, as long as... in fact I'm not even sure what the provisions are in the statutory... you can probably check that up. As long as it's scientifically admissible and internationally accredited method, it can stand up in a court of law. Because irrespective of the fact that the SABS used to provide a section 212 certificate, I don't know if you know what those things are, it's just to say that they have complied with the specifications and standards, but they're still up to scrutiny. If Umgeni Water did it, so what was the point? We were told that if we provided a section 212 certificate none of the analysts had to come into court... the defence team insisted that the guys had to come to court. And that's where we lost a bit of... the Capital case anyway. The one we lost, the second one they took us to Constitutional Court, 'cos that's when they changed over from the old law to the new law, and they reckon sections 21 and 23 of the old Act, which were carried over, were unconstitutional because the standards there were not developed in consultation with the South African public. But the contention from our side was that if we repeal sections 21 and 23, it was a free for all, because there were no standards applicable anywhere in South Africa, and any industry or user of water or discharger, could discharge waste of whatever spec... and nobody could touch them. And that would have had a detrimental effect on the natural resource, on the water resources in the country. They spent about well over half a million Rands before these guys decided to withdraw their case. As I said, those are some of the frustrations I had to deal with. Eventually look, as I said I moved out of water quality and uh that's where we stopped in fact.... *(indistinct as AS sifts through files)* James De Villiers eventually was the last guy I worked with... *(reads from file)*... I also provided expert witness in the Capital Oils case, was hauled into the stand and the defence Counsel said they can't understand why I had been called in, 'cos they didn't really need me. I stayed on the witness stand for three hours, it was absolutely crackers. I mean look, he threw the SABS standards, sampling methods... 'let me read to you what p1 sections'... that's what he did. What's your point? He actually told the magistrate I was getting cheeky. Then I told the magistrate this guy's now hassling me. The prosecutor wasn't even standing up and saying, you know, this guys badgering me. I then told the magistrate I reckon I'm sick and tired of this guy asking me one question in ten different ways. What the hell is he trying to achieve. You'll find some of that in here somewhere.

AP That will be interesting to see.

AS State versus Feedmill development. As I said there's a whole lot more stuff that's not in here.... Okay some of the earlier hassles we had going through the police station... Carl Fuller...

AP So this is all the prosecution and enforcement aspects.

AS Adrian, I haven't had a chance to sift through all this.

AP No no no, I'll sift through. That's fantastic.

AS And if you can use it and you could return these... Do you want the Maritzburg Municipality...

AP If I could.

AS Take it away, I think it'll be interesting.

AP That's the Sealake one.

AS Is that Sealake?

AP That's Pietermaritzburg.

AS Do you want this?

AP It might be interesting just to have a look at if I may.

AS Let me see what else I can dig out for you (*leaves and returns.*)

*Interview proper starts.*

AP Basically, a lot of what you've given me today, and I think a lot of the focus of various of the departments has been... the enforcement side of the polluter pays principle.

AS Both Sides.

AP What do you mean by both sides?

AS As we were speaking in the meeting, it's negotiating with the firm to get them on board, and to get a more proactive approach to resolving problems rather than just heavy handily knocking them down. But as I said, in dealing with that, we had to make them aware of the fact that they contravened a statute, and by virtue of that they had to be prosecuted... So irrespective of what was going on there, we also had a more proactive approach: 'what exactly is the problem, how can we deal with this on a long term basis?'. And this is where we... between ourselves and Umgeni Water and the Municipality at that stage, there were three parties... involved. How the hell can we pool our resources and actually help these industries come out of that mess. One of the accusations made, sure, the political dispensation treated them unfairly. But... I wouldn't say forget the previous political dispensation, I reckon I'm from a different school, you're dealing with me now... And there was a bit of an acrimonious relationship they had with Umgeni Water and with the... 'Maritzburg Municipality, we had to smooth that over. There had to be a... respect for one another's rights and things like that, you know. Umgeni Water, for example, couldn't just go and barge into the industry and say 'we're going in there'... phone them before hand and say look we're coming out here. If there's an emergency and there is pollution going down, if there is a problem saying here and following the correct protocols within the industries not to violate their security measures etc. Uh... part of the problems we pointed out to them was that when there was a problem, when there was a pollution incident, part of... the staff delayed inordinately at reception or whatever and not allowed access to the points where they knew the stuff was being discharged, while their guys quickly turn off the pipes and quickly hose things down. So, there was a bit of that that we needed to work through as well. Apart from the more highly technical stuff, effluent pre-treatment, compliance with the specs before going down the sewer etc. You mentioned the case in point of Sealake. 500 meters of sewer line was corroded, and it's corroded because of the acidity of the effluent that was actually discharged at that time. And the municipality had to undertake those repairs... I don't know whether there was a civil claim against Sealake...

AP I understand it was settled out of court – Mike Greatwood.

AS Tim Cornish was also involved at the time. I think Tim Cornish was with sewage engineering... there were a couple of guys that we went through in the period that we were dealing with this. But ja, and then amongst the three industries, sort of bulk them together and they can manage a common problem with the oil industries: what is it that's unique about you that creates these problems. Uhm... there was a bit of acrimony now with the guys, and that's when the whole

question of the storm water layout became a crucial issue as well, you might find some of the storm water plans in there. And they started pointing fingers at one another. Ah no no no, you're picking it downstream, how do you know it's not Willowton, or how do you know it's not Capital or Sealake. Each one of the guys would point fingers.... We tried fingerprinting...

AP Was finger printing successful?

AS Difficult. The source of the oil is largely sunflower seeds. I think they also had... it's one of the sources of. It was actually very difficult. Very expensive and very non-conclusive.

AP How did you get over that causation problem with these prosecutions though? I know there were other technical problems, but actually pinpointing which industries were discharging.

AS Ah... it was... there was several things that actually came to bear. One thing is okay, the experience of the staff. You'd actually know. You'd walk into an industrial site, you know whether the guys doing things properly or not. It was a fair amount of gut feel you'd call it, years of experience that gives you a nose for whose playing games. It's the location of the pre-treatment facility, evidence around these sites. Also, when you go out there you know exactly when somebody's been doing something wrong. Even if the guy's tried to clean up. In an effluent treatment facility there shouldn't even be spillage, or a need to hose down the area if you're doing these properly, so the area should be dry. When lifting manhole covers you can see exactly when something's gone down and which route it's followed as well. The location of the storm water system using illegal systems on site, right, in close proximity to the sewer system. So they'd be diverting the one to the other, as a choice. And the presence of hose pipes... from the effluent treatment systems... the systems invariably didn't work either, or were non-operational... so the effluent had to go somewhere.

AP What would they have been gaining from this? I mean, presumably they were all allowed to discharge to Darvill, is that correct? But they had to discharge to a particular standard.

AS Two things that they'd get. Okay, one is that they didn't have to invest in a pretreatment facility, managing and maintaining that facility. And also they would not have to comply with the Municipal bylaw specifications for the discharges... And secondly, if they had a facility that couldn't cope with the production levels, they were constrained by how much they could produce. By not having a facility that was constrained in that way, they could produce as much oil as they needed to... if... market demand was incredibly high, and was so high that the effluent treatment facility couldn't cope with effluent... they reckon no, they were constrained in terms of they couldn't churn out as much product as they needed to. But if they had an alternative where they could actually dump that stuff... no constraints, you can produce as much as you want to. But at the bottom line is how much money they could make... Adrian it's also... I'd call it a bit of a mindset: we're here to make money, to hell with everything else. And this was in fact the way they ran their premises as well: security dogs kept in cages in an area that was usually waterlogged. I'm talking about metal cages, it actually makes me sick... the way that they would treat their staff, the strikes that they were subjected to, it was a whole range of things. Just poor damn housekeeping and general... approach to their whole operation. And if you talk to their workers discreetly, a lot of very interesting information... as to what these guys were doing at night, what they would do when nobody was looking, what they'd ask their workers to do as well, to keep their mouths shut, and if they didn't they'd get fired... It was a whole range of things. This wasn't just, you know, they were intent purely on not complying with pollution requirements, it was a whole range of things.

AP 'Cos obviously the polluter pays principle, the central idea is to internalize costs into the costs of production, it's a market instrument as you know. And while enforcement is one of the ways of doing that there's various other ways, including economic instruments. Just on... stepping back perhaps from the case study... looking at the Catchment Management Agencies, presumably they're going to be a central mechanism or institution in implementing that. Do you know what form that's going to take? What economic instruments are intended to be used at this stage, that kind of thing?

- AS Okay, just looking at this particular case in point, I'll give you a very concrete example. Willowton discovered that if they pretreated properly, the by-products from the pretreatment could actually be used in the candle and soap manufacturing plants they've got on their premises. And they were actually making money out of waste. What they considered at that stage, was that they were gonna actually, if effluent there was effluent coming down the Sealake and Capital pipeline, they would collect that waste, and they actually did it for a while, and put it through their pretreatment facility and collected the stuff out there... they actually did a cost-benefit analyses and they found they were actually profiting from treating that waste. So there was an internal benefit out of the whole thing. The extent of the benefit is that look, the penalty... the tariffs that they would have to pay for the effluent that they discharged to Darvill was a hell of a lot less, the quality of the effluent was a hell of a lot better. They slashed their general waste generation volume-wise while I was in office, kept clean water clean, dirty water... they also went into a lot of what we used to call, what the engineers call pinch analysis, looking at different streams coming from different plants within the factory that were carrying the highest loads of effluent, and what was treatable and what was not treatable, and what you could actually get out of those as well. And they found that if you could isolate certain streams and just focus on those particular streams, you actually minimize the impacts further down the line. So there were benefits in terms of their production, the whole production cycle, where they could focus their emphasis on which were the high polluting streams and what they could do in terms of interventions an minimising impacts, and better efficiency within their entire plant system. That's what Willowton got out of it. And in fact the most proactive of the three was actually Willowton at that stage.
- AP What worked for them as an incentive at that stage to do that, did they have to invest an effluent plant.
- AS Well they did, but they recovered that money within the year.
- AP Do you know what it cost them?
- AS Not at this stage... Water cc you'll probably find it in the files.... What they would often do is that they'd call in 3 or 4 consultants, they'd get quotes and... whole effluent treatment plan as it were. They would do things the way they felt... instead of giving to one company, they reckoned no... they take a bit of this and a bit of that... and they do it themselves... Umgeni Water also went into the consulting business for them as well... too expensive...
- AP So for the other companies... I mean Capital's... we believe doesn't have permission to discharge into sewer...
- AS They have no permission for effluent discharge?
- AP Ja... according to Umgeni Water and the City as well. When they ...phoenixed they... I understand they received a temporary permit, but then they didn't put in the effluent plant that they were meant to. So they don't have a permit. So... one of the concerns then is how they get rid of their waste...
- AS I had problems with that in the past. With high effluent loads being generated, I'm not sure which company it was... I think it was Sealake, they would often load up their tankers and take it out into the countryside and discharge. They did this on the road to... Albert Falls and they were spotted and photographed. But before we got there to take samples obviously the stuff had dissipated. They quickly packed up and disappeared. They also used unmarked tankers at the time. And I wasn't successful in bringing that case to court because... we didn't really have concrete evidence... So that was part of the problem as well. And this is what worries me is that one of the concerns we had when in 1995 the sewers were blocked off, okay that's when they got a court interdict... the municipality... And what would happen to the effluent? It was one of two things. If they were going to continue with the production, they were going to generate effluent and it would have to go somewhere. The only place apart from the countryside was the river. And the other thing was they had to stop production. And they weren't going to stop production.... Now it worries me that if the sewer lines are blocked, and they don't have access to the sewer lines, then the effluent is going somewhere. And unless they monitor it (*indistinct*).

AP As you know from that video you saw on Monday, discharge was happening on Friday, Saturday – we don't know who from exactly – we went yesterday and there was still discharge coming out of that pipe on Tuesday...

AS You don't have to be a brain surgeon to figure that one out.

AP No, you don't. Um... abstract level... the catchment management agencies, going back to the polluter pays principle in theory... as I understand it the CMA for Pietermaritzburg is being set up, and I think you mentioned by January next year it might be set up...

AS Ja, well they'll have the proposal drafted for submission to the Minister. That's just a form of paper work. And then it goes through the whole vetting process. TAPE END SIDE A

AP ...end of next year?

AS Optimistically. Pessimistically the end of 2003.

AP In... looking at the set up, has any detail been dealt with regarding for example how the polluter pays principle is intended

AS No.

AP ... to be implemented, or is that going to wait until the CMAs are actually running?

AS Not at this stage. It's not a requirement in establishing a CMA to actually go into that level of detail. The whole question of the catchment management strategy is where this will be addressed.

AP In terms of raising funds, how will the CMAs be paid for?

AS Catchment management charges. That's a water use charge...

AP So at the moment... Darvill would be charged for emitting into the Duzi, is that right?

AS Ja.

AP And then they in turn would charge the companies for receiving their effluent. Would that system... continue?

AS Oh, they have to, sure. Um... section 21 talks about water use. You've probably seen section 21. There's about 11 water uses, and you'll see where in the past we spoke about dischargers and abstractors, we talk about water use. And a water user is anybody who either extracts or discharges effluent using the water resource... so it's both the discharger and the extractor... so the water user pays and the polluter pays.

AP And that goes straight to the...

AS Catchment management agency.

AP To the Catchment management agency itself. Has any there been any talk about environmental taxes or... well I know that there's a national wastewater discharge charge system that's being set up. Have you had any dealings with that?

AS Not directly because look I'm... my portfolio is largely and institutional one. I could get involved, but it's actually too much. Just the institutional work as you can imagine is fairly significant and I don't have a big team here. It's just this office that you see here (*indistinct due to hammer drilling*)...

AP So... if the PPP hasn't been gone into in much detail, the actual detailed role that CMA's will play hasn't then been established

play hasn't then been established.

AS Ja.

AP The water strategy, is that the national water strategy that's being developed, or is that local strategies.

AS There's two levels of strategy. As you know, the Minister... is the custodian of the nations water resources, and there's a duty placed on him as a public trustee. So he's meant to look after all the water resources in the country, across all provinces. And the way he goes about that will be captured in the national water resources strategy. That's a blueprint or master plan for the entire country. But in the water law process, the man in the street said 'look we're also tired of the centralistic approach towards water management in this country, we have to be involved. We've got peculiar problems that are unique. Each of our individual catchments... these need to be dealt with very differently'. They reckon okay, now how do we actually capture that in law. And what they did was then a second tier... the two tiers, one is at a national level, the second tier at amore regional or water management area level, would have a catchment management strategy.... these two strategies, the CMS has to be in harmony with the national water resources strategy.

AP So the CMS, will that be developed by the CMA once it's up and running?

AS Correct, that's one of it's first duties. And there's the whole question of the incentive systems etc.... that should be captured.

AP And implementing the polluter pays principle, I presume they must then decide how they're going to do it?

AS That's right. The whole question of water use charges as well is going to vary from catchment to catchment and water management area to water management area. And that's an element that will also be captured in the catchment management strategies.

AP So each CMA will have a lot of flexibility in terms of developing it's own strategies.

AS Absolutely. It's got to customize as I said, it's... the South African colloquialism 'local is lekker', it's the same story: new customized local solutions to local problems. And that's the whole idea. Just within... to go a level below the catchment management strategies, to actually look at catchment management plans for each of the catchments as well. That's something that will also come through the catchment management strategy.

AP With regard to the CMAs, if they're up and running and implementing the PPP, and lets use the vegetable oil example again: a company's free riding, sending effluent into the river. Would the CMA's have responsibility for prosecuting and enforcement, or would that still reside with the local authorities to have primary responsibility for enforcement. Would they be reliant on the local authorities...

AS Look, with this whole question of catchment management will be cooperative governance as well. So its using other spheres of government, be they local, regional or central is the one thing, we're also encouraging – alright I've often said this but it's usually easier said than done – is that any South African citizen can institute proceedings against somebody who is in contravention of the Act of their own volition. But as you know this will be time consuming, you need a fair amount of expertise and understanding of what you're doing. So while it's easy to say that tomorrow Joe Soap can actually go out there and prosecute someone, it doesn't always happen. The CMA will carry, I think, the responsibility of making sure that happens. But the CMA also has the opportunity... to... delegate some of those functions to catchment management committees, to water user associations, or to any other institutions that are in existence within the water management areas.

AP Is it envisaged that the CMA's will also do monitoring at that stage, or delegate again to agents.



- AS The options for how a CMA undertakes its business are quite open. And as I said it's a question of horses for courses, and in the presentation I normally do about how a CMA actually undertakes these functions, there's actually six opportunities: One is it can do all of these functions in house, but it comes with a price tag. Remember the CMA is going to be funded by the water users in the water management area, and unless the water users want to pay a fairly substantial tariff to keep a big organization afloat, that's something they must decide. The CMA belongs to the stakeholders. The other option is it can also some of its functions to the existing DWAF regional offices or DWAF, they're not just going to die a quick death once the CMAs are established, there's going to be a progressive phasing in and phasing out process as the CMAs become more functional and the DWAF functions also start disappearing. It can also... institutions like the water boards, the water services institutions, the local government structures, and provincial and central government departments... and contractors or consultants... so you've got 6 options as to how the CMA may undertake any or all of its functions. Each one has a particular price-tag attached to it, and as I say the board of the CMA can decide that in the interest of all of its stakeholders.
- AP Maybe just in summary then you could just give us an idea of what you think the central problems are going to be in implementing the polluter pays principle... what are the main difficulties that the CMAs will face from your previous experience with these vegetable oil industries?
- AS Primarily, it's to get a system in place that's easy to operate. Currently I think the department, especially from the water quality side, is wrestling with how does one calculate the tariffs in determining the water effluent discharge costs. Now unless you get some system that's easy to implement, that's easy to understand by both the discharger and the implementer, you're going to run into a lot of problems in the calculations. You're going to run into a lot of problems with the sectors as well, in terms of the composition of the various effluents. Unless you get that system sorted out, the implementation of the polluter pays principle is going to be incredibly difficult... I think that's the biggest challenge that faces us with water quality. Once there's been this paradigm shift... once there's been this change in mindset... people have accepted this is a system they can understand, can buy into it...
- AP Would you see the enforcement aspect also being one of the obstacles that needs to be gotten over, those that are trying to avoid paying?
- AS Oh, absolutely. I think at the outset the CMA will have to take a fairly strong stand on the fact that they're here, and they mean business. Guys we can only work with your co... we can work best with your cooperation.... And I think the CMA once it's established will have to take a fairly strong stand, otherwise they'll be looked at as an organisation that is wishy washy...
- AP I think that's mainly everything that I wanted to get through today, so unless there's any other pearls of wisdom you'd like to add?
- AS ...The beauty of this piece of legislation... it provides options, and I think that's the beauty, it allows users and the managers the opportunity to work a hell of a lot more proactively than they did in water in the past. And the whole business of regulating for the sake of providing regulations is out the window. And I think supplemented and supported by NEMA, I reckon we can do a hell of a lot to improve our environment. The fact that it is actually framework legislation is a wonderful thing.
- AP That's great. Well thank you very much for your time, I really appreciate it. That should be useful

## Interview

**Interviewee:** Siva Chetty ('SC'), Sandra ('S') and Mungo ('M')  
**Interviewer:** Adrian Pole ('AP')

**Date:** Thursday 18 October 2001  
**Venue:** Durban Metro, Business Branch, Pollution Control, Prior Road Durban

- SC As I've said, I'm Siva Chetty, acting manager business branch, and the business branch has a division, pollution control, and we've got Sandra and Mungo who are involved in that. I think you can give us some more background on your project, and pose questions, and maybe we can contribute. We've got an hour to spend with you, if that's okay.
- AP No that's fantastic, thank you very much. Basically, the research need comes from the downstream community, which is the Sobantu township, which is just downstream of these industries. They use the river for various things. The main purpose is irrigating their community gardens that they have there. And even downstream, which is possibly a kilometer away, the stream has a very pungent chemical smell, and this seems to be the main effluent coming out of it. Just to the north... (*show photograph*) above the bank if you go up here is one of the vegetable oil companies which has no permission at the moment to discharge into the municipal sewer system because they didn't have the right effluent standards, so they weren't given permission... the research is looking at problems with implementing the polluter pays principle, which as you... is in the National Water Act, it's in... NEMA, it also forms part of Pietermaritzburg's trade effluent bylaws. But clearly as that kind of photograph indicates, it's not really being implemented in any comprehensive way in Pietermaritzburg. The reason we wanted to come talk to you was to try and get a comparative aspect to the research to try and understand how Durban Metro's been implementing the polluter pays principle since 1998, and obviously even before that from the Rio days when it started coming out internationally. And perhaps... to hear what kind of problems you've experienced in trying to implement it. So first of all how it's implemented here, and how you understand the polluter pays principle, and then any other problems that have been experienced...
- SC Maybe we can talk from a river in the north west catchment, and one in the south, which is the 'toti river, is that okay? Mungo?
- M ...From my side I think what's been a great support to us actually achieving this polluter pays principle is the sewerage disposal bylaws, which we've got. You know we completely rewrote them with the assistance of the environmental lawyers, and we put some requirements in there that are quite powerful. And one of them is the concept of recovering the full environmental cost if there is an incident. And I think... pollution division, we've been through quite an experience over the last four years maybe, and we started off with something we called the legal severity index. But it's a structured way of looking at a spill in terms of downstream impact, toxicity, size of the spill, were the precautionary measures in place at the factory, have they had previous spills, was the spill communicated timeously, things like that. And also whether it was a deliberate act, was it negligent, was it just accidental, was it an act of god. And the intention, I'm not sure we've always applied it properly, but the intention was to use this to score points, and make a decision whether to go for the company in terms of national legislation, which would include all the Acts we can throw at the company... or just to deal with them with the By-laws, which is more the friendly sort of legislation, like parking on the yellow line, which would be your R500 fine. The... I think the hindrance for us from our side has been whenever we've tried to go the national route it's sort of lost momentum, you know we've got a whole bunch of cases that have been longer than 3 years, and we've got about 10 major cases still outstanding, we're waiting for progress on that. We've had one that's been successful, it's gone through the courts and quite a large fine was paid, and a press release made. But in the main we are relying on the prosecutions, 'cos those are more immediate, and I think the immediacy of the paying is quite critical, 'cos when you... you might be going for major penalties in terms of national legislation, but if it's only 3 years down the line it becomes very fuzzy. You know, the industry is not connecting the incident with the penalty. So... our local by-laws in terms of cost recovery, at the moment we've got a section in our bylaws that allows us to recover all the costs of the time spent tracing. So if we get 10 people



out tracing an incident and we take 10 hours, then we're going to recover on their hourly cost rates, plus an overhead on each one of those people against the company. Then we recover the laboratory costs, we cover systems were called out, we cover those costs, we've also got... now hose are very effective.

AP How do you recover those costs?

M It's in terms of our bylaws... each company has a consolidated bill for lights or water consumption, and we've got the capacity to just put charges on that bill. We can write a two-line description of what the charge is.

AP So you don't have to initiate civil action or anything to recover those costs.

M No we do it right from here, our accounts section is just there, so it's in-house... ability to put a charge on the bill. And it's in the by-laws, the by-laws have been approved for this area. It's a recovery of a cost for a service given, so it's not a criminal penalty, it's a civil law liability that we're just recovering costs of services rendered we provided.

AP Do people ever dispute that kind of cost, have you had experience of that here.

M Ja, we designed, we justify the cost, we show the breakdown...

SC I think these are direct measurable costs. I think on the environmental cost you have that cost of the environment, which is still a challenge. We have not resolved that. It's something we want to have some guidance on. I think Neville probably raised with you. Have you picked up on that debate.

AP Yes, that's obviously a lot more difficult.

SC Sandra would you like to...?

S Well I think Mungo has summed it up and you've added that our problem is not the direct cost, our problem is the indirect cost, the environmental cost. The straight cost of charging, you know, there's a well working procedure, um just to give you an idea, that spill incident on there we didn't... all that we recovered costs on was laboratory, our own costs, and we spent one (?), and we pumped some effluent into the sewer. So that was about just short of R12,000. That's quite straightforward, it goes out, the guys doesn't pay, his electricity probably get cut. The bigger problem is this now what happens? In the case of that spill it was a fire, a chemical cocktail that went in anything from acids, oxides, reducing agents, cyanides... whatever because it was a warehouse that burnt. Even explosive but those went up in the fire before it got to the river. But anyway, you're sitting with a canal that you've only got certain baseline data on, chemical data, not bio-monitoring data. Now in that case the tide actually, because it was a smallish spill there was good containment on site, eventually from pumping and from the tide it dissipated. Okay, we made calculations that reducing agents would react with oxidizing agents etc. but, we're not actually able to quantify the environmental cost. The river, well it's a canal, which makes it even worse, it rehabilitated itself to a degree, and the harbor and the tide helped with that. But what we want to quantify, and what we want to be able to hit these companies with is something that will stand up in terms of a civil claim that can quantify an environmental costs. I mean the Bayne's Spruit is a perfect example. I was with DWAF twelve, thirteen years ago, and the same Mr Moosa's and whatever, prosecuted that... we prosecuted, we had them in court. In fact we had to call Mr Moosa from Mecca because that's where he was on the day. Now, what are we going to say if that river has a history of pollution. Epic Oil Mills etc. How do we quantify little Mr So-and-so that has just put something in today. We might be able to say that you did, but the river was polluted before, or the river has been channelised and therefore to let... engineering-wise been altered. And that is the problem that we grapple with. And something that would stand up in court.

M I think what you... just to finish off, you know. I agree 100% with what Sandra is saying. You know, if you've killed half the fish... we had an incident in Prospectum... all the fish were killed, all the algae, bacteria in the river were killed as well. In fact the fishes gills were stuffed with the

algae. I mean, how do you quantify what the cost of that incident is. That's like no-now... and historically how do you get back to previously. You know at the moment I guess we're responding to each incident individually. And what we do do, I think the key is you've got to have very quick response. Okay, so if someone complains about anything to do with the river, you've got to be out there within 10 minutes sort of thing, because your opportunity to trace it decreased very quickly if you're not very quick in responding. At the moment I think in northwest we've got about a 60% success rate in tracing, and it's sometimes difficult but... and what we also do which we haven't mentioned so far is we... the minute we establish the source, we're quite professional now and we've been trained by the lawyers in terms of how to collect the evidence, because it's a criminal evidence chain. You've got to link every step of the chain, and we do that with photographs and affidavits, and we prepare a case file whenever we get a spill up here. And... we also serve a notice on the management to employ a spill company to clean up the spill, and that is a major penalty, and I don't know, northwest... one company's had to fork out R280,000. That's major, it's more than most fines would be. And we've had about another eight cases of over a R100,000. So there's significant costs in terms of cleaning up, and we will... we've got technicians who will go and inspect and interact with the spill contractor, and tell him when it's ready to leave. To things like pumping, and using Adzorbit and Drizit material, you know there's a major penalty, and the company's are starting to get the message now.

AP Is that also through your by-laws, that notice that you send?

M No...no...NEMA... we use NEMA...

S We used to use the by-laws to a degree, but we used that Environmental Pollution Ordinance, but it had restrictions, and we were never delegated powers in terms of the Water Act, so when it got a bit serious or it looked a bit dicey in terms of the Environmental Ordinance, we would call in DWAF who would issue the instruction because they had the authority.

AP But now you do it just under NEMA?

S NEMA.

AP Does Durban Metro... do you do your own monitoring of Water Quality?

SC Yes. Our lab... we've got a lab that's linked to our branch, and monitoring is done there.

AP So do you monitor each river in all the catchments under your control?

SC There's various points we basically take care of, what Umgeni doesn't, and the information is shared between our lab and Umgeni. So that... I think Umgeni presents a report of the... rivers from the source right through the mouth, and... we collaborate on that.

AP One of the problems in Pietermaritzburg is Umgeni Water's been stepping back... from it's monitoring activities, saying that 'look, we're an agency, if you want us to do it you've got to contract us as a client'. Has that been a problem down here in Durban?

SC No, not... in terms of river monitoring, because we are... it's done internally here. Maybe that's due to Umgeni's whole financial crisis, you now, cutting down on its expenditure.

M One thing that's quite useful from our side, we've linked the monitoring quite well to the activ... we... our primary function in pollution division is control of sites, industrial sites, okay? It's our core function. But the monitoring, whenever monitoring is done and a high result might be picked up, we have a pollution chasing team. And some of them are like sewer rats, they're contractors and they'll climb down the sewers... they'll do anything to get to the source. They basically than hand it over to us, they draw a nice little diagram where the site is...

AP Are they consultants that do that, or are they...?

M Ja, it's SRK... and ja there's about 4 of them. They're specialists at climbing down sewers.

- AP So they would go to a pipe like this in the photo and run up it to see the source.
- M Ja.
- AP 'Cos another one of the major problems, um... I mean looking at the polluter pays principle from an enforcement side of things is there are at least two oil companies on this particular line...
- S On both sides of the river?
- AP On the same side of the river in fact... Capital and Sealake are above there. And one of the... I've interviewed the Council and various other people in Pietermaritzburg, and causality... um proof of causality was one of the major stumbling blocks that they've got, Which is just trying to find out whose actually doing it. Is that a problem that you experience down here.
- SC Well, it may be more difficult. I think we've gone through that... if we think that there's a problem with source, I don't think it's a major problem, but I think if you can get direct evidence it helps you a bit much in the case. You know, to say a this time you've released this from your property, is that the kind of challenge?
- AP I mean, this here has been flowing at different rates since I took this photograph um... how would you approach this as Durban metro, hypothetically? If someone comes to you and says there's this storm water discharging, it's running continuously, it changes colour, there's scum on top...
- M We also use... our lab's got quite advanced equipment, mass spectrometer, gas chromatograph, so it like fingerprints the chemical substance. So if you take a sample here and then look at the catchment that leads to that, sometimes there's only one company that has that chemical, and you can actually fingerprint it, and it's beyond reasonable doubt, you knew, if you do a survey of the area... so you matching, that's a vegetable oil, match... you take a sample from the company, his fat. And if there's a match you've got them.
- S I think your problem is, even although you've linked them, they still continuing to discharge. We're only allowed to close up a... a storm water drain you can close easier, but there is a problem that you can only get an interdict if human life or limb is at threat. So there is a bit of this, you know generally what Mungo's talking about, the company does comply, and he's scared we're going to close him. But these guys, I mean the history is fifteen years old. They have no interest in actual complying, they just see how much they... they've been to court before, they're not scared of court. In fact some of them have permanent advocates on their staff, because it's not just pollution, that's the way they do business. So um that does become a bit of a problem.
- SC Even in Durban?
- M No... I think in Durban it works because we are raising costs of charges... services incurred.
- SC Why can't Pietermaritzburg do that? Well look I think it's a...
- AP It's a good question.
- SC ...there's a long institutional base that Durban's got. We are I think twenty years in this field, you know, trade effluent system, of calculating the value your trade effluent poses on the environment you know.
- M Well lets face facts, if that was happening here we would clean up. It would have been sorted out.
- SC Exactly. It would have been sorted out.
- AP I was there today interviewing the owner, Aqbar Moosa of Willowton...
- S Aqbar, he's still around?

- AP He's still there. Mr Khan, who was with Umgeni Water, took me around a little bit and we went out the back, and this was still running today again. So it's quite obvious. You think you would deal with that quite quickly?
- SC Look, it's not because of the NEMA and the polluter pays principle. It's what's been happening here for a long time. As Mungo said, the development of the by-laws, and uh... you know we've got something, a legal document that is operative within the Council, and that helps a lot. And we've... it's important to have standards for compliance, you know, and I think you've got that, and other municipalities would have developed that internally. But apart from our team, we adopt an integrated approach. We've got a... we've seen the front end process of educating communities and now industries, and safer practices, you know, and you not only go for the stick approach but the carrot approach... incentives, having things like this you know (*points to award plaque*), praising where that is deserved you know. We've discussed this morning, environmental management is a complex business. You can't just use the law and the constitution, you got to use lots of innovative methods. I think we've been in the front line of that, but our challenge now is to give greater meaning to environmental costs, so you can see we are on the other side of the spectrum, to like polish upon this notion of costs.
- M Future plans we're working on, using GIS... to identify substances. So if you know... if you take a sample at a certain point, and it's got a certain substance in, then we're hoping to plug... do you know what a GIS is?
- AP Geographical Information System?
- M Ja, to tell us which industries have that substance... so we get up a chemical inventory of the companies that are out there.
- SC And to use a spatial tool to focus resources, because we're also constrained in terms of human... and financial resources. So we can use a GIS to say that in this area of the Unicity, there's a major load... pollution load, so we can direct our attention there, you know, so it helps us allocate resources efficiently. It's a good tool for decision making.
- M That's a future plan.
- SC That's a future plan, ja.
- AP It sounds very encouraging the way you're doing things down here.
- SC It's encouraging, it's hard work, but I think there's also... you need... management needs to play an important role, and I think here we've had... Nevil Burgess whose retired and a former director and manager, they've played an instrumental role in guiding the organization, not to become excessive, because then we need to also take care of business interests because they create jobs and wealth to the city, while at the same time act within the law. So provided the right management and leadership and vision is instrumental in achieving environmental change.
- AP Sounds good. Obviously with your by-laws, you're using them, you're implementing them properly...
- SC It's a live thing... it's a live document, you know, it's continuously being looked at to make decisions.
- AP Because one of the comments that's come out, including from Mr van der Merwe – who's the legal representative for Council up in Pietermaritzburg – he says that they're not really implementing their by-laws which seems to be part of the problem. They have a whole range of powers under them, but they're not really using them.
- S I think the only one we're not using is the environmental costs for the reasons that has been explained. Some sections obviously gets used more than others, because those are the frequent... you know, don't pollute the storm water system, pollution prevention. Whereas other sections is

there as the... maybe once a year they are used, and some not even at that. But they are there as a safeguard, um the by-laws is written in a very wide context, which means you don't specify. Which means in legal terms the lawyers always go and find another interpretation for something that is widely written.

AP So you... use your by-laws, you use NEMA you mentioned, the National Water Act presumably you're also using?

S We don't actually use the National Water Act that much anymore because our powers of authority in that is limited. Therefore one tends to stick... you know you don't want all the staff out there to get confused by all the acts and what they've got authority in terms of and what they haven't, so you tend to stick... the by-law legislation tends to be the by-laws, our own by-laws, and the national legislation seems to be NEMA.

SC If I can add, we do indirectly through our treatment works. Our treatment works have to comply with the National Water Act. And if there's a non-compliance we will go back and see what's causing it, and it may be an industry.

AP Do you... issue permits to companies to discharge into the sewer? How does that work.

SC Ah yes.

M It's also in terms of by-laws...

AP And are you able to revoke those permits if there's non-compliance?

S We are, but um...

M Annually renewed.

S It's annually renewed, but the issue is to revoke a permit there is a set procedure and a court procedure to go through. We have tried it, but it's not such an easy procedure, especially when they get their legal teams in and also one's got to bear in mind that daily production can go at a loss, you know. So it's at certain levels, and it's not something that... it's something that we've talked about, but it's not something that we've actually effectively used a lot yet. We've tried the interdict route, we've come up with problems there from the point of view that it has to be, you know, life and limb that is effected. So there are legal implications, but I think it goes back to what Siva was saying, the... if we only had to rely on the law... you know we... certainly the law and the courts, if you want to quantify it as just that, which it isn't, but you know we wouldn't have got very far. It's an overall environmental management approach with a visionary management tackling the problems.

M Ja, we've got a very structured approach of inspecting industry. It's all scheduled by computer, so we visit sites that are smaller than 100 kilolitres twice per year, and all other sites three times per year.

AP So it's like conducting an audit...?

M Ja, and then there's a formal inspection report that each visit generated, and then all the non-compliance issues identified at those inspections are discussed with management or put into notices. So there's a lot of written correspondence generated. A lot of work goes into that.

SC You're welcome to rephrase our approach. I would say... the polluter pays principle could be a stick approach saying that you pay per pollution, whereas we act proactively putting systems in place and procedures, and invoking the prevention principle, try to avoid it in the first place. So if you scrutinize that application properly up front... we just don't issue it, we revisit it, ask for studies, specialist studies before we... right... and there's ongoing monitoring of the effluent so... which is quite important, you know, that you try and avoid an incident occurring in the first place.

- AP Preventative aspects
- SC Preventative.
- AP Regarding Catchment Management Agencies, have you had much dealing with the formation of CMAs?
- SC Not formation, but I think... just information that's coming up on what is catchment management, and invitations to one or two meetings that's going to take place.
- S We sit on some of them. Pollution Division itself sits on some... well certainly the Isipingo one permanently. There's obviously a lot of issues that is you know not specifically water quality related that does come up, litter etc. etc. even sometimes informal housing. A bit of a problem that we do have, we are the only people with for instance laboratory facilities with actual actions in the field that seems to attend, so a lot of the action items for that type, a lot of it seems to land on our you know back, but... it is a good process, and you get to know all the stakeholders etc. There is a concern, for instance in the Isipingo one that, the confrontation between industry that has been present in the past and um... how can I put it... quite politicized Green people have actually chased industry away from these things, so you're chasing... the people that you're trying to get there away, and that was a concern that was raised at the last meeting, so we'll try and see. 'Cos the idea was for everybody to come together but in terms of conflict management you know...
- AP Is that Durban South Basin, those kind of issues.
- S No it's the Isipingo-Umbogintwini...
- AP That would be where Tioxide SA is and all those... big industrial park, Umbogintwini?
- S Yes.
- AP Well, that's fantastic. I think we've covered pretty much everything I wanted to deal with, so unless there's anything you'd like to add...
- SC Well, as I mentioned to you, we'd like to get a copy of your dissertation so that we could look at what proposals you might have.
- AP I think you might find that... a lot of the focus... will be based on Pietermaritzburg and the way its doing things, but certainly this comparative element...
- SC Being a comparative analysis we'd like to see where the gaps are...
- S Maybe just a question to you. When you say that Pietermaritzburg is employing the polluter pays principle, are they using environmental costs, backgrounds of these levels in the rivers, or are they using a tariff that has a penalty tariff that has been introduced in the by-laws. How are they achieving polluter pays?
- AP Well, the by-laws themselves have tariffs...
- S Tariff for storm water or tariff for sewers?
- AP This is just for sewers. The Bayne's Spruit itself is a listed stream so any... discharges to that are illegal first of all.
- S Now in terms of that what would they do in terms of polluter pays principle.
- AP Well, at the moment nothing is happening in terms of anything.
- S So they are only applying the polluter pays in terms of if the COD is higher or something or there is some penalty tariff in terms of something that goes down the sewer, but when it goes the storm

- water route their isn't a... tariff?
- AP Unless it's a major incident like that PG Bison's, where heavy fuel oil you may have seen in the last couple of weeks came down...
- S Then how do they employ the polluter pays principle?
- AP I think it's the same way that you have...
- S ... Cost recovery...
- AP ...Drizit put booms across and that gets charged, but again... I don't think it's the environmental cost.
- S So they haven't sorted that one out?
- AP I doubt it. I think they're a couple of steps behind where you are at the moment.
- S You're aware that a place like Cape Town has got something in their by-laws on a penalty tariff in terms of storm water discharge?
- AP I wasn't aware, that's interesting.
- S That's the route that they have gone.
- SC On what, on loading?
- S Ja, it works on the... they compare it with the current general standard, and literally for instance like COD 75, they've only got a few parameters on, if it is over that then it's on a sliding scale, the more it's over the more you pay per volume... estimated volume per day.
- AP So they could put a gauge on here and actually charge people.
- S They could. The problem that we have, and one of our previous managers, Bill Phaff, is always very adamant and he actually has a point, is are you then condoning in terms of the law, you're saying well as long as you pay, you know now for three weeks... that company's not going to stop, I know them...
- SC Arrogance.
- S Now they can say... but you know we're paying for this. And then... is that cost linked... because Cape Town's cost is not necessarily linked, it's based on a general standard and a sliding scale, but it's not necessarily linked, because that environmental cost, which then theoretically the municipality 's got to go and fix... the two is not necessarily linked. It's just a penalty tariff not based on a cost recovery basis.
- SC That's the weakness of applying the polluter pays principle to end of pipe. They should have applied it in a more advanced way, like going to the company, sitting with them, saying a set process, what measures have we got to stop pollution, you know like here, put in a tank to remove the oils and oxidize the organic matter, you know, so they are... but it would be done with support from government, because you wouldn't expect an industry to have... environmental technology experience, strategically. So one has to invert the thinking about polluter pays. You can't say why isn't it working, you know, there's pollution coming out here, because you end up in all these debates.
- AP This is almost a side issue to the polluter pays principle, I mean the principle in itself is more the economic... you know it's using market instruments like charges systems, environmental taxes, that kind of thing. But here it's...while that's implicit in the by-laws, it's being circumvented by companies just free riding on the fact that there's no monitoring, poor enforcement, the criminal

justice system - as you say – takes three years to get anything going. Um... it's all of those kind of problems coming in, but you can't really implement economic instruments to be an incentive to change behavior if people can keep getting away with illegal discharges either. So you need to tighten up the enforcement side while as well, as you mentioned, working on the carrot aspect.

S In a case like this, there is provision in our by-laws to say the Council can go in and make the necessary changes, and actually... because these guys are just not spending money... and make the necessary changes, and then... even if that means the Council has to operate the treatment plant, or has to take that effluent away in it's bulk, because from that point of view then that once again can be linked to the consolidated billing, which means that your electricity can be cut, which then means that the factory cannot operate. So maybe in a round about way, because to these people, if you... apply to their sense of dignity and law abiding citizen, it just doesn't actually...

AP Not at the moment, although that's being worked on. The community had a protest march a few weeks ago, and we met with the... the PCCI received a memorandum and they called a meeting where Capital came as well as Willowton. So they're trying to start the management side of things.

SC That will help, public pressure, because they are denying the communities downstream a livelihood. They can't use that water, they can't farm with it... they must pay for that.

AP On the 29<sup>th</sup> of November they've arranged for a walk up this river, which will be interesting. Whether that will still be flowing on that day is another story.

M I doubt it.

SC Well no it's an interesting case, but it's sad that such mind sets there... oil merchants is being rich.

S They moved from Durban thankfully, twenty years ago.

M Chased them out twenty years ago.

AP But um ja...

S I'm sure Nevil and Dave had something to do with it, must have been.

AP But fifteen years ago it's been going on for as you say. People like Ash Seetal have tried to deal with it and it's still going on.

S I tried to deal with it, as I said we even had to call Mr Aqbar himself from Mecca. Eventually he didn't come, he just sent his advocates, um and they had to correspond with him the whole time... it was quite a joke...but that doesn't worry them...

AP No, they were quite willing to spend R100,000 or whatever...

S On court cases, yes.

AP ...on legal defences to prevent a R500 fine.

M That's ridiculous.

SC It's ridiculous, they just transfer that cost to the environment.

AP Well, the river is ecologically dead.

S It's also probably unique a little bit to the oil industry because there's quite a bit of a few families which all seem to be related in some way or the other. It's got a bit of the monopoly, and



therefore they can afford to pay these R100,000 of costs, which another company would have looked at very carefully and say 'now where do I spend that more effectively'.

SC But it's also a weakness of the City Council because they could have put systems in place to direct that flow to a sewer treatment works, and they could have recovered that money and that money could have gone into public coffers, which is internalizing the... environmental costs. So the problem also lies with the authority.

AP Just with the Cape Town By-laws, do you have any contact name or number of who I could speak to ... to get a bit more information.

S Ja, I've got the number somewhere. If you give me a card I'll...

AP I don't have a card as a student (*gave my contact details, advised that Durban by-laws is on their website... on waste water, under pollution*) Well, thanks very much...

## Interview

**Interviewee:** AA Moosa (AAM)

**Interviewer:** Adrian Pole ('AP')

**Date:** Thursday, 18 October 2001

**Venue:** Willowton Industries, PMB

AAM ...discussion now umm...where we're going to answer some of the questions you put to me, but uh... follow-ups we can do at another meeting. In principle, Willowton had bad histories up to 1992 to maybe 1994, I would say, when uh yes we conceded we had problems, we addressed those problems and I think we classify ourselves as a clean industry. Although it's um... there's a lot of wet processes, nothing in the dry months goes down storm water systems here. The way we've set it up, we've got holding ponds that hold the discharges from the site, adequate pumping facilities, and the number of pumps that we have would be quite capable of handling a large 20-25 minute rainstorm in 180...and another 100... 280 cubic meter storage tanks. The principle is that nothing goes down the Bayne's Spruit. At any one time anybody can walk in, and maybe you'll see signs of last night's rains, but in the dry seasons, especially winter, you'd see absolutely nothing. In fact in the dry seasons we seal our drains off, so if something does happen, people get lackluster in the dry months not watching... uh for that purpose we close our... and when the first heavy rain comes, possibly if it's an unexpected one it's at the risk of getting flooded. As far as we're concerned, nothing, except if there's a very heavy or unusual rain would go down the Bayne's Spruit in summer... we concede we do discharge, but first line of defence is that the storm waters that do start to come in are picked up for as long as possible until the pumping systems can't cope with because of the large volumes... remember this is a sixteen acre site. Yes, then we do have. But we have a good team here that uh... is very up on housekeeping, and generally we try to keep our yards, and our... all areas that would fall into the storm water drain, that would be kept clean at all times. Washing we do, but all washing goes via soak pits... sorry sump and weir arrangements designed for that purpose, and the effluents derived thereof are either picked up and pumped to our treatment system or not. But to answer your question on storm water, at any one time I think Darvill, DWAF, all others would confirm that the system that we've does work and seems to be effective. Yes, in heavy rain it can go down, but I think in heavy rain the water is reasonably clean. We actually save money in the systems by picking up everything, we go through fat separators. The fats that we trap is recycled back to the soap plant, and the water that we separate is treated and used within the factory. Two major uses is ash quenching... one major user is ash quenching, and the other is in cooling towers, and that will be borne out by the effluent discharges, or the trade effluent 6 monthly questionnaires that we answer, which show that the amount of water we receive and where we use it... our payments to them is quite low compared to what it was 10 years ago, it's still lower than that now. So yes we do use water... soap, ash quenching is a good user, because as fast as you put it in... and especially with the heat of it it evaporates into the atmosphere. And uh.. storm water. Some of it is used in floor washings... especially when they initially start off with the final hosing is done with clean water. Pretreatment, uh... I think I've answered the storm water, but we'll go through it just for a quick walkabout uh... to give you a feel for what is going on. The water that we use, yes a large percentage is used in water...uh is used as I described. The major users for incoming water is boilers... uh... boilers, process cooling tower makeup. We found that if we keep recycling to the same cooling tower you have a problem, so we have a system where the waters are... or we recycle at times... a good use.... Make up water in tower number 1, while tower number 2 could get recycled water, next week it's number 3 and number 4. There's about 7 or 8 cooling towers in our factory here. Uh... pretreatment of that water is done, any surplus yes we do... would discharge, but very little. We avoid discharging if we can.

AP Where is that discharge to?

AAM That's the sewer that we mentioned. We don't have any soak pits... uh... and nothing goes there. Solid waste disposal we have three types. Husk from sunflower seed we use it to burn in our boilers.

AP As a fuel in the boilers?

AAM As a fuel in the boiler... it creates... if and when we do have the husk, like this is a bad season at the moment so it's only on coal, but there is ... (Unclear)... a saving in using ah... the husk from the boilers to generate uh... that is the steam requirements. But generally if we got it we would prefer burning it because it is a large saving on coal. We... uh... filter wastes, we have two types. Winterised, which is a process where we chill the oil down to 10 or 12 degrees C, and with the addition of filter aid we would trap any waxes in the oil. The winterised waste, especially after the flack and the problems on disposals, we found user for it. He buys it off from us, he uh... separates the fats out from there, and uh... sells the fat and disposes the dry waste in the process that he knows best. Bleaching... we also do bleaching of our oils, and that's the other problematic one as I would call it. Uh... the bleached products are not acceptable, like they used to be for many years in the Pietermaritzburg dumpsite. Ah... and in fact the biggest problem they experienced when we changed from bleaching earth to a product called Trysol, which is a chemical substitute, they stopped us completely from discharging because they were having combustion problems.

AP Is that at the landfill site?

AAM At the landfill site, yes. Bleaching earth itself for many years used to go there with no problem, ah... and uh... when we brought in a product called Trysol as a substitute... cheaper, you use less and the losses in the bleaching process, the losses in oil actually were reduced by using Trysol. The Trysol they were not prepared to accept it in the Pietermaritzburg dumps. Uh... we then decided to use that in our oil cake. We dispose... or blend it in with the byproduct... high in protein... sold to people like uh Meadows and other feed manufacturers, and that is currently, lets say, in hand. The problem we have like you will or currently experience is that if the crushing plant stops we have no husk, so no savings on boiler fuel, with no production of seed because they are finished, we have a problem now of disposing of this Trysol or bleaching earth wastes. And that has to go to... at a very high cost... to Hammersdale. This has started recently again because we ran out of seed in the last 2 or 3 weeks, and we've now got a problem and a cost exercise to send there.

AP Do you have to truck it out to there?

AAM Ja, we use ah... people like waste services who truck it... I think it's costing us something like ah... plus minus R2000 for two of their 5/6 cubic meter bins plus some other charges for it. Ah... that can and will be an expensive exercise, and we currently looking at how we can handle that in other ways.

AP How much of that Trysol do you need to dispose of, say on a weekly or a monthly basis?

AAM Ah... Trysol used to be about... about 20 tons a month... plus minus 20 tons a month, which is easy to dispose of there. But from time to time if and when we get dark oils, then we need also to assist it with bleaching earth, and then the volumes can double or even treble for the month, and to dispose of 60 tons... I stand to correction, it's costing us about R250 a ton, (calculates)...in excess of R15,000 to R20,000 a month... I think that's a wrong figure, I'll have to do the calculation again, but uh... we are looking at other ways and means of treating that bleaching earth before it can be acceptable either to... in fact our preference would be to dispose of it in the landfill site. There's nothing wrong with it, it will not discharge oil... once it's dry the oil within it here would not sort of ooze out or seep out whatever. It does have an oil content of about 25% plus minus, but what we've found is that if it's quickly, or as soon as practical covered underground, then this combustion etc. are gone, and that's the major problem at the landfill site. I think we have to talk to them to save costs on disposing this to Hammersdale. We are currently talking to them as a temporary taker, and the process... the way to handle it there would be to cover it as soon as possible, then there's no more risk of fire. We've proven that, we have seen it for ourselves, we done some tests... as long as there's oxygen around this stuff would tend to ignite, and no oxygen, then its dead and buried and gone. That's it, if there's any questions on what I've described we'll take it from there.

- AP Maybe just a few. Um... with the trade effluent discharges, um do you find that it's reasonably easy to... to... what is the word I'm looking for... to be in line with the standards that are generated by the trade effluent bylaws.
- AAM Yes, we have a daily system and there's continuous checking out the products... I'll show a small system that we use where everything is reported. But yes we keep to the oil contents... oils are removed. Any oils going down the drain are taboo here, as far as I'm concerned we've put in enough systems for trap oil... ah... yes when they do caustic washing of yards, which effluent lands up in the storm... in the catch pits, then we have to treat it with a bit of acid to bring the pH to standard. Generally and mostly it's a pH control that we have to ensure that we do. Ah... but yes, we... I would say in 95% of Umgeni's analysis we are in compliance.
- AP That's great. Um... I suppose linked to that... your effluent plant that you put in... what does an effluent plant like that cost, if I may ask?
- AAM We've got two types. One's the dissolved air floatation unit, we've spent something like a hundred and fifty odd thousand Rands 10 to 15 years ago. The simple dissolved... the floatable type of products, generated from cooling towers, boiler blow downs, things like that, that's a very easy method to treat... a little bit of flocculent uh filter and the water is... the problem one's are the acid containing oils, which we have a different process built with the assistance of somebody like Jeff Richards, who gave us the initial assistance, and that one cost us about R150,000 last year. Also, the equipment is sort of intermingled etc. I would say about R250,000 if one had to put a system from... 'cos the problem was your products that can't float easy and settle, we've got a different process to handle that waters. It depends on the volumes of water etc. The easy one is the dissolved air flotation system... ah if you haven't got this sort of thing, this would float out (*points to the effluent in photograph shown to him at start of interview*) ... this product would need to be heated, and fats can be contained. This product is worth about R3,000 a ton. What you see floating.
- AP On this photograph?
- AAM That's uh... fats from a soap or an oil process... I think it is more a soap process, if one investigates deep they find that product is worth R3,000 plus a ton.
- AP So it's actually worth capturing that product?
- AAM Yeah.
- AP This um... the water that you see coming out of here it changes color, um from like a darker brown to...
- AAM A milky.
- AP ... a milky color, and it's got a very pungent chemical smell as well, so...
- AAM Ah... I'm not sure of the smell, but yes, there could be, in soap process you have uh... what we call lies or lee water... uh... that is high in caustic, that has a pungent smell.
- AP Does that erode away concrete?
- AAM Ja. I think that uh... the factories above us had problems years ago when they eroded away the sewer lines, and one of them at least had to contribute to the costs of repairing. But um... yes if that product went down even sewer concrete or cast iron pipes yes, it would erode because the pH contained on the lee waters especially if below 4, 4 or below I would say.
- AP So is that highly acidic?
- AAM So it's acidic... and even into concrete it would pit it, whatever.

AP Thank you for that.

AAM Interestingly enough, to about 2 years ago we used to see a lot of this stuff coming down, and we used to pick it up... and uh our subtle message to the other side was getting there, that 'thanks to you we are making some money out of you', and it very quickly stopped actually. No doubt they stopped when they realised that there is money going down the drain they brought possibly better systems in. And from time to time to time yes we still see it Two weeks ago it was... two or three weeks ago yes I had a report it was there. We stopped picking up unfortunately. Uh... my guys have been told from now on if it is there we're going to pick up, and the same way I'm sure it will stop when they come to know that Willowton is making money out of the opposition. I hope it will stop. To be quite honest for the last 12, 14 days nothing has gone down there. There's a little milky... uh sorry... very slight signs of something having gone down but, every morning my guys check that drain and there hasn't been anything for the last 10, 12 days, especially after this meeting when it was told to me. Really our guys have been sleeping, if they did see it they should have picked I up.

AP We were down there on Friday and Saturday and it was running quite heavily. That's just after that meeting.

AAM I had actually uh... what time was this?

AP It was 2 'o clock in the afternoon on the Friday that we went and had a look.

AAM My guys go and inspect that every morning. I've got a policy that my effluent treatment manager makes a point of going down to see if something happened last night. All very well to say the pumps and things are working, and you see inside it's dry an empty but... as a matter of course he goes every morning.

AP To check your own discharges?

AAM To check my own discharges... to check my drains, and if there's any sign of anything having happened, then he follows it up. If so, why so. But uh... in fact have been there on at least 3 or 4 occasions in the mornings recently after this flacca (???) started. I did see that once, to be honest with you.. (answers telephone and lights cigarette)

AP Just one last question... regarding that gray substance that we see outside the factory, um... is that the bleached earth that you're talking about or is that boiler ash that's...

AAM Now...that could be... it could be. There have been one or two loads that went out and I stopped it, because we were running with Trysol and everyone took it for granted it's going there, and um I think they had to put something there temporarily until Hammersdale accepted them. Don't ask me why, but they have a lengthy procedure about analysing the products, it takes something like four to six weeks to get something through, depending on the urgency. But they have accepted and approved and, yes, if there is anything that would be soon stopped. We used to dump there up 'til about 2 years ago when we were getting the analysis done, and they didn't give us their blessing, but turned a blind a eye – when a say that's DWAF and others- turned a blind eye to these products being dumped outside until it was acceptable in... but whatever is there that is not the norm, that would be picked up and uh...

AP So that gray matter is being trucked away?

AAM Yes it is.

*(Thanks and then short walkabout and invitation to have another meeting )...*

AAM ...Just one thing, OK there have been a lot of advantages to us when pressures have been brought to handle our effluents more professionally... the waste for example the Trysol that we were dumping at high cost we uh have been feeding it back into byproducts, which is worth in excess of R1000 a ton to us today, and it was costing us to send away at R250 or R400 or

whatever a ton. Bleaching earth, at the end of the day, we will treat it here. It contains 25% oil, and if there's oil in a product, and if we can treat it... the main reason for treating it is that it must be acceptable to dumping. But the Trysol and/or bleaching waste which currently now will be a problem for the next 4/5 months, it will cost us money to dump, because of the seed shortage. But once the seed situation comes back on track then we'd be saving money rather than dumping. But a lot of things we do here we like to keep it confidential... uh... confidential in the sense we don't mind people picking on us to see the advantages in doing what we are doing, so we don't mind giving them advice in that respect, but if there's anything passed on to the opposition we'd like to clear it before we do.

AP Your opposition now... companies?

AAM That's right.

AP Ja, obviously the information we've gathered today is intended to be used in the research, so it will form part of my thesis....

AAM That's right, yeah.

AP ... if that's acceptable.

AAM Ja, it is.

AP But certainly your... any secrets, I certainly wouldn't try... be exposing anything that would be useful to the other side, your competitors. Thank you very much for that. Tape ends.

## Interview

**Interviewee:** Ebrahim Seedat (technical manager), Springold t/a Capital Products  
**Interviewer:** Adrian Pole ('AP')

**Date:** 22 October 2001  
**Venue:** Capital Products, Chesterfield Rd PMB

ES ... you have... a... received my...

AP I have received your fax, yes, thank you very much.

ES Now, the easiest way for me to do this is for me to pass on some notes to you rather quickly. Okay?

AP Mhmmhmm.

ES Okay, now those notes are not going to help you in your tape recorder, is it?

AP Not really, but I can use them as an addition.

ES ...*(murmurs to himself)*...

AP I see here that you only doing... only dealing in refined oil requirements, is that right?

ES Yes.

AP What does that mean exactly.

ES I will explain this to you as...as...as we go along. Re-fin-ing... right, oil refining. The oil that we talking about of course is an edible oil – these are notes that you can keep with you alright, I gonna just make, I'm gonna scribble here, give it to you, if you don't understand you phone me on my cell phone, I'm in Johannesburg for the rest of the week. I've got two missed calls now who are these? *(looks at his cell phone)*

AP Is your cell number on here.

ES 082 786 9616, you should have it right?

AP Thank you.

ES Okay, these are edible oils, the types are sunflower, soya bean oil. 'SFO' is sunflower oil, 'SBO' is soya bean oil, 'CSO' is cotton seed oil. That's about the main cooking oil types, right so these are cooking oil types, frying oil types, whatever you can call it cooking/frying, right?

AP Your edible oils.

ES Yeah, edible oil right, or salad oil as you people would call that, right? The process is that you could buy crude oil and you could refine it, or you could buy refined oil and pack it. If you should buy crude oil, then the flow will be: crude oil, the first stage of refining is called de-gum neutralisation n-e-u-t-r-a-l-i-z-a, neutralization, I hope my spelling is right, okay? De-gum neutralization. The next stage thereafter is called bleaching...

AP Is this what Capital does... do you use crude oil, is that right?

ES We will do this in time to come. At the moment it's only confined to refined oil, right?

- AP So you buy in refined oil already?
- ES Yes. We're buying in refined oil. We are trying to do this crude oil business, and we hope that by next year this time we will be doing refining of the crude oil, okay? So this crude oil, this is basically what it's all about: crude oil, de-gum neutralization, bleaching... it's winterizing or...
- AP That's cooling it down is it?
- ES No, de-waxing, right? The name implies the removal of... wax, okay? Finally, de-o-da... d-o... o-d-o-u-r-i-s-a-t-i-o-n... deodarisation, okay? Now let me explain something to you. The first stage here an oil comes in, let's say here, your free fatty acids of this oil is 1.5%, you want your free fatty acid to be down to less than equal to 0.1%. That is one criteria of refining, that you take your free fatty acids which is 1.5% there, and you bring it down to 0.1% there. Criteria of refined oil is that it should be... it should be, the FFA should be there, and it should be bleached to a low color, and that it should be... the smell should be removed. Okay, so basically the important thing that you're looking at are those plus it should be de-waxed. That is the process of refining. Take your FFA out, you take your color out, you take your smell out, and you take your waxes out, okay? This is a stage, neutralization, where you neutralize your free fatty acid, you neutralise with a low caustic solution. Okay, you talking about 15 baume, 15 normal... no 15 baume... what's the relationship between baume and normal, I don't know. But just say b-a-u-m-e right? Plus minus 15 baume, you add plus/minus 15 baume caustic solution, and this is very small quantities to the oil, to bring the FFA down from 1.5% to 0.1%. In this stage, the oil is going through centrifuge, right? So if you can imagine this is a centrifuge here, right? The oil is passing through the centrifuges, and you have got in this section here... I the first section you've got phosphoric acid, H-3-P-O-4 85% or 80% whatever it is, full grade phosphoric acid. The H<sub>3</sub>PO<sub>4</sub> is added in at low concentrations of 0.1 zero percent, the caustic is added in low concentrations sufficient to neutralize the FFA, and the water is added, not more than 2% of overall volume of oil, right? So far am I going too fast?
- AP No, that's fine.
- ES If you don't understand anything you just stop me immediately and I'll try and explain to you, right?
- AP Sure.
- ES So, degum is 85% phosphoric acid, where you see this arrow here you'll be adding your H<sub>3</sub>PO<sub>4</sub>, fatty oil, that comes out here as gums, comes out as gums, resins, aldehydes, ketones you name it, right? Other junk that's in there, what do you call it mis-aliganeous junk, okay, something like that, right? In the next stage, which is here, this is where you'll add your caustic right? And that will come out here as neutral oil, which is undesirable, it will come out plus acid... uh fatty acid... right fatty acid, it will come out as fatty acid, and it'll come out as some aqueous phase, right? Because caustic is made up of water at the end of the day, am I right? Okay? So this is what will come out in this separator here. You'll get some neutral oil loss, you'll get fatty acids coming out, and you'll get some aqueous phase coming out, right? In that stage we're adding water on the top to wash the oil, right? You've subjected it to chemicals here, with the addition of phosphoric and the addition of caustic, you've subjected it to chemicals, you are now adding water to wash it out. Ah... the total volume of water is not more than 2%, okay? It's added ideally this way, you adding it here, it goes through a centrifuge and it comes out. Certain refineries have only two centrifuges. Certain refineries have three centrifuges.
- AP How many do you have at Capital?
- ES Adrian, to be honest with you I haven't looked, but I think it's two. Right, okay? I'm not from here, I am from a previous company, I am from Willowton, I spent eleven-and-a-half years there. Do you remember that guy Ahmed Khan.
- AP Yes.



ES I think you all don't have a particularly good relationship with him do you because of the...

AP No, I don't have... I mean I met with... I've spoken to Mr AA Moosa last week Thursday...

ES Ah ha.

AP ... just about their processes. But um...

ES Their processes are basically the same as ours, right? So effectively this is what happens. You get water added here, and WATER PHASE coming off here, which is basically your water wash. The oil then goes to a dryer, okay? From the dryer you're going to bleach it. In the bleaching stage...

AP What do you use to bleach?

ES Bleaching earth.

AP Bleaching earth.

ES Right we use earth here, or you could use a silica as Willowton uses, they use Trysol. *(Interruption)* So we use earth here, you bleach with earth, you mix it with the oil, it de-colourises more than anything else, so you've got de-colour...c-o-l-o-u-r-i-s-e, de-colourisation, plus you taking out some... muck removal, whatever muck you've got in your oil here that didn't come out in your de-gumming. So that's basically... you're adding earth here 0.5%, maybe lower. You then go on... just so you can see clearly here, right... in the winterizing process... okay... you add the earth to the oil here, increasing, and you filter everything out. So you adding the earth, fixing, filtering, the net result: de-colourisation, de-mucking, okay? Next stage, de-winterise... this is done by the way at 100 degrees, this is done at about 60 degrees okay? This is done at 12 degrees, so this where you cool. This is done at about 240 degrees, under vacuum, okay. This is just to give you an idea of what's happening here.

AP Sure.

ES You adding filter aid, okay? Dichelite in this particular case. You adding filter aid in small percentages, you dropping the temperature of the oil down to about 12 degrees, you agglomerating the wax particles, and then you filtering it. You filtering off the wax. You then land up with a de-waxed oil, you take to the de-odorisation, you raise the temperature to 240 degrees, plus you give it some vacuum, right? Absolute vacuum we do it here. What it does is it... you land up with two processes taking place here. You get smell removal here, you get high temperature bleach effect here. Do you know what that is?

AP Not really.

ES Supposing you remove the colour here from the bleaching stage to hypothetically 2.0 red, on a five-and-a-quarter inch (*indistinct*), lets say it was two red here. In the de-odorisation process here you get a high temperature bleach effect whereby it will take the colour down to one red, even more, okay? Unless it is an oil that is already de-odorised in which case you get a colour fixation problem, so you can't go any lower than what it is already. So this is what happens, you've got smell removal, high temperature bleaching effect, e-c-t, and then you got... you got your... partial FFA removal. In the world there's two types of... three types of refining. There's the old method which is the chemical, 100% chemical method of refining where everything is done on a manual basis. You then have the physical refiner, where it is virtually devoid of chemicals, and you now relying on high temperature and vacuum to suck out your odiferous matter and undesirable. Those are the two extremes you have. Then you have in between... you have a system that marries a little bit of both. You have a little bit of chemical with a bit of physic... that's the system I'm explaining to you here, more physical than anything else, okay? So that basically is the system that we follow.

AP So that... that's what you at Capital are hoping to get into, your soft oil refining, is that right?

ES Yes, that's what we hoping to get... to in time.

AP Thanks for that, that's very useful. That's very helpful. At the moment then, what exactly are the processes that Capital is running at the moment.

ES At the moment it is more a case of uhm... okay, lets put it this way: again you'll have crude oil, you'll refine the oil...

AP Is that what Capital's doing at the moment, refining the crude oil?

ES No, I will explain, right? The next stage will be to pack the oil, and the next one will be to dispatch.

AP By packing you mean bottling it?

ES Absolutely... bottle, can whatever, alright? So that's what you're concerned with. You can do it this way where you get your crude oil and you follow those processes... to refine. Alternatively you can get in refined oil.

AP So you're buying oil that's already refined?

ES We've been buying from a crowd in Joberg. Okay you got Willowton gave us some oil. In the meantime we've been trying to start a oil refinery, okay. You can't start a refinery here on a stop-go process. It's a huge thing, ah it does approximately a hundred tons of oil per day, so you need that amount of oil to run. And it doesn't pay you to start up for one day and shut it down the next day, it's far to costly. So the idea is to build up volumes here...

AP To buy in your refined oil

ES To buy and pack, and market it that way, to build up your business that way, then go on to the refining stage. So yes, we are in the process of trying to get this refinery started, so that's the other side of the story. Any questions on that one?

AP It appears to me that obviously your... you not doing any processing at the moment...

ES Yes I'm doing, on the margarine refinery. It doesn't take edible cooking oil.

AP What does that take in?

ES Okay, let's say here...

AP So is the major function of the factory at the moment... is the margarine?

ES No, not really, oil is the bread and butter line...

AP Packing the oil?

ES Ja, packing the oil, trying to refine, get some oil out that way to. But on the margarine side...

AP How much oil are actually able to refine at the moment? Have you been doing any of that?

ES I have had months where I've done nothing, and I've had months where I've done 300, and I've had months where we have done twice as much.

AP 300 tons?

ES 300 tons.

AP In a month.

ES In a full month, which is pathetic if you ask me, okay.

AP So actually refining yourselves, you getting in your crude oils, you going through that whole process you described to me?

ES Yeah, in a factory like ours, if we can't do a minimum of a 1000 tons of refined oil a month we are wasting time.

AP You do 300 a day you say?

ES Ja, so it has to be on the basis of a 1000 tons a month. However, my constraints are a bit of a problem. Uh... we have started the oil refinery up, we started it up in March.

AP Is that Sunflower oil?

ES No, I'll tell you now.

AP Sorry, I'm getting ahead of myself

ES No not a problem, not a problem at all. Here what we do is we take a blend of palms, okay, uhm... (*indistinct*) and some cooking oil, okay? So Adrian, just push the door behind you closed.

AP Sure.

ES Sorry man. My guys have this beautiful habit of talking like they in a argument all the time, heh heh heh heh heh.

AP It's a lively place, it's okay.

ES So, that's the blend, you get palms, (*indistinct*), cooking oil, right? Or hydrogenation, or hydrogenated h-y-d-r-o-d-e-n-k-t-e-d. Right? Okay, now... do you know what these terms mean now, do you know what palm oil is?

AP That's from palms.

ES I'm going to give you a book to read, you're going to pass this book on to me as soon as you finish, okay. It's going to give you a huge insight as to what is going on.

AP Selected readings on palm oils.

ES Okay, it's going to help you with your thesis. If you don't understand you pick the phone up. It will give you... give me... you an idea of picking my brains, right? Uh... (*pages through book*)... where is the refining... (*pages through book*)... 35, page 35 okay... 31, 33, 35... this chemical refining I spoke to you about, the aim of refining, chemical refining, okay... you saw one you saw all basically. There we are. There's it here (*points at page*) ... this is a good, good, good drawing for you okay. It gives you an idea.

AP It's page 50.

ES Right.

AP Is this... similar to your margarine...

ES No not quite, I... this is of crude palm oils. The oils that I buy is the kind that I buy is refined, bleached, de-odorised. The only thing I have to do is de-odorise. The only thing I do with my blend here is to de-odorise. So it goes into a de-odoriser and that's it, one stage. You can look at this book here... de-odoriser... there's it there okay? Even though I buy it as a de-odorised oil I

re-deodorise it here to take all the smell out, and things like that. He's highly returnable (*hands me the book*).

AP Thank you, and I'll definitely return that.

ES That will give you an idea what's going on here. The next thing here, you make this blend up, we de-odorise it... in margarine refinery, which is separate. Can you guess why?

AP From the oil refinery?

ES Yes.

AP You tell me.

ES Contamination and co-mingling. One is a soft oil, and the other one is a naturally hard oil. So in a soft oil like cooking oil, you are taking all the waxes out, you don't want any white particles to show on the bottom. On the margarine side you want an oil that is semi hard. Because you need to chill it to come in a packable form in that semi-hard butter type of form... so for that reason you don't want the co-mingling to take place, you want to make sure you've got two separate refineries. So that's the reason you've got two separate refineries... okay, so this has started up now. We are now on it for 18 months. Okay, it's only one stage of refining. Okay one stage. People talk of triple refining, the one I showed you in the cooking oil, the procedure is triple refining, okay. This is one stage refining. In this thing here you don't get too much of muck coming out, uh... in terms of effluent here you'll have the de-odoriser, undesirable.

AP What would that be like, waxes?

ES No, FFAs. Free fatty acids, it's like a oily stuff – okay you don't throw it away by the way. Uh... sold to soap makers.

AP You not making soap here yourselves?

ES I don't make soap uh... our associate company far on the other side, they are the ones who make soap.

AP Which is that.

ES I think they call themselves Specialised Oil or something like that.

AP Just on the other side here, is that Edib Oils.

ES No no. Edib Oils is behind us. This is 300 meters away on this side.

AP So there's another company next to you here... Sealake's up here, is that right?

ES Sealake is behind me on this side.

AP And then Edib Oils is?

ES Edib Oils is on this side, between me and the river... and then past the river on the other side is Willowton... on the other side of the top here is... Birmingham Oil.... Okay, what exactly do you need to do in your thesis that is undone at the moment, and for which you are going into a panic?

AP I'm not going into a panic. Basically what... the focus of the thesis is obviously looking at the national water pollution control strategies, that includes the polluter pays principle, and various other management strategies. And part of looking at it is... obviously the Bayne's Spruit as you saw last Tuesday is quite severely polluted. So it suggests something isn't happening correctly. So... part of what we've been doing... I've been speaking to the various stakeholders, even Durban Metro to get a comparative analysis, the legal person Mr van der Merwe at City Council,

Umgeni Water, Department of Water Affairs etc. But quite a lot of the... industrial pollution of the Bayne's Spruit, obviously there's various sources, there's a lot of waste and pollution coming from the informal settlements, there's soaps coming from up stream. But there's an indication that at least some of is coming from vegetable oil manufacturing companies. So part of what we're looking at in conjunction with the Pietermaritzburg Chamber of Commerce is to try and identify what the difficulties are for those oil companies, to see where the difficulties lie and how to take things forward from there. Okay, I'll turn that off at your request. (TAPE SWITCHED OFF FOR 'OFF THE RECORD' DISCUSSION).

ES Ah... the edible oil refinery, especially the refinery that processes crude oil, it has a number of effluent problems...

AP Speaking hypothetically (*Note: ES agreed to repeat some of what he said 'off the record' hypothetically*).

ES Yes, okay. In the de-gumming side you have the gums that come off as a result of the addition of hydrochloride... of phosphoric acid. The second stage is the caustic wash and the fatty acid that comes out of the second stage of reining, when you're adding caustic. And the third effluent stage is basically your water wash. In your water wash you're adding water to the oil to clean it up of chemicals, but in so doing you land up with a neutral oil loss, and undesirable neutral oil loss. Ahh... I don't think it is more than 0.3/0.4 % in most refineries, but if you consider... (*interruption*)...if you consider that an average refinery doing a 1000 tons of oil per month, and if the neutral oil loss in that particular sector is 0.4% you going to land up with basically 4 tons of oil. Now where does this water and oil go to? Of course, ideally this water and oil will land up in the effluent plant, it will have to be skimmed off the top of your tanks in your effluent plant, and when no more oil can be skimmed off the top you will then go on and process your water in terms of your pH and other things that you're looking for, and render that water clean enough to be disposed into the drain.

AP Is that the sewer.

ES That's the... that's the sewer is it?

AP Storm water drain?

ES The storm water, right okay? That's the water that land up in the Bayne's Spruit... So yes the possibility is there that you can clean it up properly and it can go into the system and it will not create any damage to the system. However, the big problem is that in terms of costs. I think there are figures floating around that this could cost an average refiner who doesn't have an effective effluent system some two to three hundred thousand Rands to set up and implement. I believe that for the purposes of your thesis you have to highlight the carrot and the stick approach is not going to work. Why? Because Umgeni had the job of monitoring some time ago, and they monitored to a certain effect and finally I think they realized that this is a task that was beyond them. I think that what needs to be done is the effluent problem has to be addressed and a cheap and equitable solution to be suggested by yourself in your thesis. This should then be circulated amongst other people in the edible oil refineries, of which there are quite a few here: there's Willowton Oil, there's Sealake Industries, Capital Oil, the old Birmingham Oil, okay? So there's at least five of us here that could then take that effluent system that you are proposing and implement that system, providing it is not too costly to install, and not too costly to maintain thereafter.

AP Ja... just one thing, with my research I am not too sure if I would be suggesting what kind of effluent treatment would be needed. I'm not really a scientist on that... side of it. But certainly the research would be making recommendations on what the way forward would be, and I think what you are saying would certainly be taken into account for that.

ES Okay, we don't want this thing to be stuck. I am particularly excited that this thesis is taking place, in fact I'd like a copy of it when you are finished just to make sure, you know, that you are on the right track here. But I think that it is an excellent opportunity for us to go forward from here.

- AP Certainly as a starting block. As I think Nevil Quinn mentioned in the last meeting there's... new students coming next year and more opportunities to take the study further...
- ES Absolutely.
- AP ... and maybe that's one thing to look at is waste disposal in the oil industry as a way forward.
- ES I think that you people could do a good job from the university of Natal on this Environmental section, rather than anybody else. I think that the relationship between edible oil refiners and Umgeni Water is a very poor one at this stage, because of past problems. I think ah... someone representing your... department... I think if you could do this thing, if you all could arrange with the Department of Water Affairs, that you all would like to be the so-called monitoring and report back... it could be done as a thesis of course, on a long term basis of course. I think that this might happen, because you are somebody new, you have refreshing ideas and you don't have the stigma of somebody like say Umgeni Water. I'm not saying they're not doing a good job. Yes they're doing a very good job, but I think that the relationship is not one that we would like to dwell too much on as far as edible oil refinery is concerned...
- AP The main waste disposal... sorry just to interrupt... that you talking about, is that of the oils as well as the water.
- ES Yes, it's a mixture of oil and water.
- AP Yes, maybe I could just show you a photograph. We've... done a little bit of work going up and down the stream just having a look. That's Nevil Quinn... this is some kind of... it changes colour and then comes into the Bayne's Spruit and you can see it's... there's just a small boom that's been put across there to trap the top, but a murky substance comes underneath it there. What do you think that is... this storm water drain we don't know exactly where it goes. IT comes up towards Edib Oils, Capital and Sealake at the top.
- ES It comes from there you say?
- AP Well it's coming out of this...
- ES Where does this storm water come from?
- AP We don't know. It's coming from some factory somewhere. It's actually corroding away the concrete of his pipe, so it's presumably highly acidic as well.... I was wondering with your expertise in this area if you know what that is?
- ES Have you not felt this thing? Is it oily in nature?
- AP It is quite oily, it's like a scum... it smells... it's got a really pungent smell.
- ES Okay, why not identify... what you have to do... if you pick up this muck... I you take that and you subject it to dialetha ether treatment, in other words heat it up slightly, add dialetha ether to it, whatever is the oil phase in their, it will dissolve... you then will land up with the water and the muck, which you don't need and you can dispose of right, you evaporate the ether off and you're going to end up with the oil. Take the oil and run it on a GC tracer or you know gas thermograph or something like that, run parallel tests with sunflower oil, soya oil, and palm oil, and Bob's your uncle you're going to be able to pick it up just like that... The soap guys they use PFAD, which is palm fatty acid derivative, you can check up to see whether that identifies with PFAD, you will find PFAD as part of the selected readings on palm oil that you've got with you. Also the margarine guys use palm oils, the cooking oil guys use soya, sunflower, cotton seed oil, so it will be easy for you to identify once you've identified the oil which crowd is now likely to be responsible. But at the end of the day I don't think that is basically the way you need to go. You are not trying to find out who is responsible, because the very fact that the Bayne's Spruit system is contaminated means that one or more parties is responsible... what we need to find now is an effective way to ensure that contamination doesn't go on.

AP From our perspective we're wanting to identify why this is still happening so that those problems can then be addressed, because clearly... the starting point of the thesis is that the Bayne's Spruit is polluted, it affects the community downstream, we have these wonderful new environmental law nationally, NEMA and the National Water Act, but the river is still polluted...

ES Adrian, it is very easy to find out why it's happening. It's happening because hypothetically... uh... let's... let's...let's presume that it is an oil refiner that is responsible for this muck that seems to be floating in this picture of yours, this oily muck. Why would he be doing this? Of course he'll be doing this to save himself a couple of bob as far as effluent treatment is concerned. I think besides that he will also be saving himself a couple of bob... don't the guys get charged according to the amount of water that goes down the drain also? Something to that effect, and these are all basic scams to maximize profit and save on effluent treatment. That's all I can say. So what I'm saying to you is that it's not who is responsible that we should worry ourselves with, we should worry about why are the people not taking the trouble of cleaning up this water before sending it down the drain. Ah... is it a 'don't care' attitude, is it that they don't want to spend the money, or is that they know that no body is policing the area, or is their some other hidden agenda, are they just trying to kill people off downstream or whatever they're trying to do here... so basically we... need to presume that it is the companies along the Bayne's Spruit that's causing the problem. It now needs to establish why. The reason is simple, they don't want to spend too much of money. The next thing is to twist their arm and get them to spend some money, provide them with some solution, and that solution would be in the form of an effluent system that is not too expensive and that is easy to monitor. We do it on that basis, we carry on with the monitoring because that is important. Even good communities like Sweden, for example, they still need policeman their don't they. So we need policemen here, and I say that an educational campaign is absolutely imperative, I say that the role players need to meet on a monthly basis, I think that if we do things correctly here, we should start seeing the worst days behind us.

AP ...Talking about maximizing profits, I think you've pointed to a very important issue. Is the profit margin in the edible oil industry, and margarine manufacturing and soap, is that partly what's motivating the free riding on the river?

ES I hope you will not quote me too much on this. I don't mind you're taping this here. I'll give you an example. Margins are under pressure. What they call refining margins are under pressure, they call it profitability... per ton is under pressure. Why do I say that? In South Africa the scenario exists whereby you have an oversupply of oil in terms of the demand. We have seen a number of companies fall by the wayside. Most of these companies that have fallen by the wayside are, if you'll excuse me, white companies. They have now been replaced in part by so-called Indian companies. Sadly the culture with Indian companies is more of maximizing profit and less of cleaning up the environment. Thus education is required. The other side of the story which is the... with the Rand-Dollar exchange depreciating the way it is, okay, we sitting basically a month ago at R8-50 to the American Dollar, we are now sitting at R9.30 and R9.37 to the Dollar. What is happening effectively is that the cost of importing a ton of oil is getting more expensive... whether it's refined oil or crude oil it doesn't matter. You can import refined oil, crude oil. We import palm oil, we import florics, okay, soap plants import palm fatty acid derivative. So many... raw materials are being imported and sadly with the way the Rand is going, each month you are having to erode your profits or increase your selling price, if you do that of course you risk falling tonnages, okay? Falling tonnages are completely taboo in the oil industry. What makes you money in the oil industry is huge volumes. If you have oil refiners and margarine processors who do less than a thousand tons a month you'd rather shut your doors and go away because you are going to see your backside at the end of the day. You just not going to make money. To give you a very crude example: cost of oil per ton, refined oil, would be ranging at about what... R5,000 per ton. If we refiners make R300 per ton profit then we're doing very well. Now in terms of our expenses, a company like Capital... my insurance alone is R130,000 a month, my electricity bill is R110,000 per month. Each month whether I open my doors or don't open my doors, or whether my refineries carry on or not, I need R410,000 to pay my wage bill, my salaries, my maintenance, my electricity my.... Whatever right, I need R410,000.

AP Do you pay rates too?

ES Yes I do.

AP Is that quite high?

ES I don't know what it is at the moment, I have not even bothered to find out. You know the normal expenses like your cell phone accounts, your telephone accounts, and water, sewage charges, this is R410,000 a month, and this is without any capital repayments towards my loans and things like this. So I have to go and make R410,000 per month. So if I am selling 1000 tons of oil, I have to make R410 per ton to get R410,000, are you wish me? Now I just mentioned to you that the going rate on oil is more like R300 to R350 per ton. SO which means that as soon as you come to less than 1000 tons per month, you are skating on very very thin ice, you cannot carry on, you'd rather shut down. That is the big problem with oil refineries. There are plants out there that produce seven, eight thousand tons a month. They are the ones that make the money. The small guys that a thousand tons a month, they're here to put food on the table [END TAPE 1].

So, what I'm saying here is this. For a small refiner it's not profitable to keep your doors open. In this oil industry, volume is what is required. Because of the margins being as low as they are, it is difficult for me as a potential refiner, to contemplate spending two, three hundred thousand Rand on an effluent treatment plant, even though you might suggest to me that, hang on, the By-laws stipulate that you must treat your effluent before you... but I will do the bare minimum, in which case I will wait on the fringes, on the boundary of acceptability. I do not think that is the way to go forward. We need to be well within the bounds of environmental conscience. It is for this reason that I'm saying, and repeating this particular one... we need to look at effective effluent treatment. And we need to look at cost-effective effluent treatment, and the maintenance thereof.

AP So it's the costs of buying the treatment plant plus its operational costs?

ES Absolutely... we need to look at those things being within the confines of a small refinery. I think if we can isolate that fact, then we are halfway towards winning this battle of the Bayne's Spruit. Otherwise what is going to happen here is that we're going to clean up the Bayne's Spruit... and a few months down the line you're going to have the same problem again. And the so-called monitoring group is going to come looking for the culprits and they won't find too much. A few months will go by and the Bayne's Spruit will be clean for a while, somebody's again going to dump some muck in there, and the cycle will carry on. So effectively what you need is to put into place a system that ensures that the effluent that goes down into the Bayne's Spruit is... clean, acceptable and so on. What many refiners... and many factories are doing at this stage to avoid dumping into the Bayne's Spruit, they're also dumping into the sewer system, which of course you know is unacceptable. Right? They're looking at the lesser of two evils. Ah... so I think that either way you look at it, on one side we make the Bayne's Spruit people happy, and on the other side we make the sewer people unhappy. I think what we need to do is make sure that... I'm calling... I'm saying effective effluent treatment.

AP What would you see as an affordable effluent treatment?

ES A hundred grand (R100,000) a month... no sorry... a hundred grand once off, I think that will be affordable, I think thereafter R10,000 a month would be affordable.

AP Operating costs?

ES Yes.... What else, I don't know.

AP What about indirectly... I mean I know that in some other countries around the world, for example, companies have been assisted to get 'greener' through for example subsidies, alternatively through tax cuts or tax breaks for putting in effluent treatment and that kind of thing. Would that help the refining companies to get their act together with the effluent treatment, or do you need more direct help?

ES I think that the first thing we need to do here is provide this effluent system that is comparable to one another, and that gives you clean water going into the Baynespruit, that's the first thing that



you need to do. Thereafter to ensure that it remains clean as you suggest okay, that you give a company green status, you understand, or you give them some kind of preferential treatment due to its environmental consciousness.

AP Well that accreditation can happen, partly through... we mentioned environmental auditing. Part of environmental auditing is aimed at continuous improvement to get the ISO14001 accreditation, which helps more with the exports. Are you involved with exporting oil at all?

ES No.

AP ... would that be something Capital would be interested in in the future?

ES Yes, the way the Rand is going, yes I think I will have to look in that direction. Rather than importing... becoming a net importer, I'd rather become a net exporter, and make some export dollars. Ah yes. I understand what you are saying. I think the difficulty here is just to try and marry a whole lot of ideas here. Where do we come from, we are refiners, what are we primarily interested in? We are primarily interested in running our company and making a profit. Here comes Adrian Pole and Nevil Quinn. Now they are suggesting come on guys, how about running your company, making a profit but also being environmentally conscious. We're saying perfect guys, we will do that provided (a) you show us how to; and (b) we don't incur too much cost in doing so, and (d) that the ongoing costs are in check. That's what we're saying. I think that's what I am saying. I don't know what the other refiners are saying. I don't know what the other refiners are saying. You've had various meetings with the other refines here...

AP Willowton so far.

ES May I ask what Mr AA had to say about this whole thing.

AP Well one of his comments is that he considers his company a clean company. We spent... eh showed me the pits that tapped their effluent. The storm water drains are trapped in a pit... and there's a sluice gate... which he says is closed unless there's a particularly bad storm water event... so it's those kind of issues... it would take an hour to go through it all (ASKED TO STOP THE TAPE... OFF THE RECORD DISCUSSION BEFORE MEETING ENDS)

## Interview

**Interviewee:** Garth Mulder, Water Quality Control Officer (GM)

**Interviewer:** Adrian Pole (AP)

**Date:** 25 October 2001

**Venue:** Darvill Waste Water Works, PMB

GM The trouble is we get oil in here, and ultimately if we know it's coming from a certain industry and we've caught them, we'd like to tanker it and take it into their front door and put it in their front door and say 'look, we don't want your oil, you can keep it'. The thing is to catch these guys. They've got enough money, they'll take us to court, it will be four years down the line, some small technicality and they get off it. They're prepared to spend... one of the firm, the last firms, I think they spent something like a hundred and... close to a hundred thousand Rand on lawyers and attorneys and stuff like that. And after four years you've taken so many samples you're bound to forget something, and they'll catch you on a technicality. So... we're really battling to bring these people to justice. Um, we've taken thousands of samples... we've caught them illegally and nothing's been done. Council don't want to do anything. They say they want to do something. They say they want to do something, but they're very scared to do anything because... one company is the biggest ratepayer in Pietermaritzburg. And they've got, you know, I would say a couple of Councilors and all these boys in their pocket because I don't know how they get away with it. You go to a company and you see a guy standing in 8 inches of oil welding with a 380 volt motor next to him... I think they just pay off everybody, quite honestly. That's my honest opinion.

AP ...[f]rom what I understand the... responsibility for enforcing the by-laws at least, is certainly with the Council.

GM That's correct, ja.

AP And, well when I spoke to... Hilton Ryder and Jimmy Pather as well as Mike Greatwood... one of the things that they said was quite difficult for them to enforce these by-laws... was a lack of capacity. Although they seemed to have samplers, and people... one department had... seventeen environmental officers that could go out, but that's for just about everything, from food violations to health violations. And it was quite evident that most of the discharges aren't being dealt with. And it's not just isolated incidents that's happening with the river. From what we've been picking up it's obviously persistent, ongoing pollution. Do they have an investigative capacity themselves that you know of, who does investigations for the municipality.

GM They get hold of Jimmy and they get hold of ... Grant Fryer, and then they would call him out to go. Otherwise we used to do it, but then you know Umgeni stopped their pollution control type of thing, which to me is a load of nonsense. When I came across from Council to here they basically pay towards me carrying on this function, so I still carry on doing it, even though they said I musn't...

AP So it's ultimately Jimmy Pather and... the other name you mentioned?

GM Grant Fryer... he's just down sewage section... We try very much and help each other. They have a camera that they can stick up and see if there's illegal discharges. Apparently it's been giving endless hassles... the lights not strong enough, it keeps blowing, they didn't get the wheels with it. So we were hoping to stick it up there and catch these guys that way, but now we... got a place to sample. Just above our friends Edib, and we're going to catch them now.

AP Is this for sewer?

GM Sewer, but the storm water is right next door to it, so we'll be checking on both... (TAPE OFF) What's it, 26 years in the same line. From the time... it was only Willowton Oil and Cake Mills. Used to walk around in stepping-stones with all the oil around. They have slowly sort of got themselves sorted out. And then I believe that Sealake were kicked out of Sea Cow Lake in Durban

because of all their carryings on. 'Maritzburg of course said... our section said no, we didn't want them to come to 'Maritzburg because we knew what they were going to be like.

AP Which section was that?

GM Pollution prevention, ja, the trade effluent section from Council... We said no. Of course Council said 'oh yes, they're going to give people jobs'... They started with their nonsense, and then Capital broke from Sealake – one of the brothers broke away and became Capital. And then the nonsense started there and then Edib heard that it's easy in 'Maritzburg, and then he came up to 'Maritzburg. So we're sitting with all of these guys in 'Maritzburg. We have over the last twenty something years caught them a thousand times. We've got thick files, like you won't believe it, hundreds and hundreds of letters that have gone back and forward and them promising us to do certain things... they will put effluent plants and they will meter it, all this type of thing, and all they do is just stall, all the time, they just keep stalling and say they haven't got money and all that, it's going to come later. I mean, the evidence... the Witness has been there, they've pumped it down storm water, bricked it up, pumped it into sewers, hundreds of different things. Everything they do is illegally 'cos otherwise if they have to take it and send it to Waste Tech it costs a fortune, if they put it down the sewer they pay on COD, so the higher the COD the more they're going to pay for the trade effluent charges, so if they can get away with it they will do it. And... they know that Council and the law is not very effective at all.

AP ...It's easy to establish that the river is polluted, and it's even easy to go for example to the storm water outlet and find that that's happening. Presumably it's relatively easy for you guys to measure excessive COD's going into the sewer as well. But from there to being able to prosecute them successfully, there seems to be a huge gap. For example, if people are discharging at night, how would that be dealt with, who would be monitoring for that kind of thing?

GM Nobody. Nobody monitor for it. You know the next day you'd go past and see it all there. But I you go... even while it is flowing like in your pictures here from an industry... if you start tracing it by the time you get to that factory that flow would have stopped and they would have flushed it, cleaned up everything. I've actually seen them using fire hose reels to pump effluent out of tanks into storm waters... we've caught them. The whole thing is when you go there... when I was on Council it was easy to go in. When you go to one of these oil industries, they'll make you go to the receptionist, and the receptionist phones Mr Collin or Mr so-and-so, then you've got to fill in the thing, then you go to the security, by that time everything is packed away and clean. So it's access into the premises that is actually slowing that is actually slowing the whole tooty down. And also these firms have got people on the lookout all the time, and if they see an Umgni signed car they blow the whistle and they quickly close up shop kind of thing. Now with us using our own private cars we've been able to sneak down where they can't see us we've caught them twice already within two days, three days.

AP That was quite recently.

GM Yup.

AP Tell us a bit more about that?

GM Indrin, one of our chappies that works with us, went and took a sample outside Springold. The first scoop of his sample – remember it's a grab sample - the first scoop it was filthy. By the time – it's a very deep manhole – by the time he got to the second one it was absolutely clear water. Somebody had spotted him, and they had obviously quickly switched off and then they opened a fire hydrant. We submitted that, it was way over the discharge limit. Dave Callagher and I went two days later, we just went to have a look, and we got a COD in the 8000s. So... and at the same time we went above Springold to check the TDM of discharging, and when Indrin took that sample there was no discharge coming from TDM. There effluent is very characteristic, it's pink, it's a pinky color. So you know if they're discharging or not, and they actually record when they're discharging, exact hours an all to help us. Every time we go above it's just a tiny trickle of domestic sewage. So these people are obviously discharging effluent into this thing... it's either going into the river or into the sewer, because they're using like 6 million liters of water and it's

got to go somewhere. So they just blatantly putting it wherever they think.

AP So you're having some success... at least in catching them and getting, compiling evidence.

GM After a hell of a long time, ja.

AP And what happens with that...?

GM That information goes to Mike Greatwood and subsequently to Johan van der Merwe, the legal advisor. So all those dockets and all the affidavits and everything at the moment are sitting with him now.

AP Has Johan van der Merwe been involved with these kinds of prosecutions in the past?

GM Yes, he has. But it's normally water affairs, because it's a discharge to the river. We've had two or three that we've taken to court, as I say four years down the line it gets chucked out of court.

AP You say DWAF takes... do they also use him, Johan van der Merwe?

GM No, DWAF has got their own legal guys, ja.

AP Do they use private attorneys?

GM Their own. Their own chappies, ja. They're employed by... DWAF, ja.

AP So that's for the discharges into the river?

GM Into the river.

AP Do you know of any successful prosecutions that they've had for discharges into the river from these edible oil industries?

GM Not from the edible oil, no. We have had one or two cases... discharges of oil into the Darvill works, where they've admitted it and they paid for the clean up. I think we've had one incident. But it was only something like eighteen hundred Rand to clean it up, which was ridiculous.

AP ...From a polluter pays principle point of view, it seems... if companies are wanting to avoid paying, it seems quite easy for these companies to do it at the moment... It seems they can at will either discharge into sewer or into storm water.

GM Correct, ja.

AP And the kind of view I got from the companies involved, or at least one of them, was that they can do that with a measure of impunity. They know that Umgeni Water isn't monitoring anymore, and they don't feel they're going to get caught.

GM No, we're still monitoring, don't worry. Ja, we still do it. But it's very simple for us to go and stick a ISCO sampler in if we, if it's possible. We do it to our own companies, our water works... And if this continues we will have automatic samplers on both lines, the sewer and the storm water drain, 24 hours a day, just to build up evidence against these people. But I don't see... Council are saying we've got to first check their effluent plant's going, or this is going. We know it's not working. Our chap is actually out there now looking to go and see just what's going, what progress has been done. I know nothing's been done. But if he doesn't have permission to discharge and he's discharging, it's illegal. Therefore Council must take the steps and go and stop the guy. But then we know he's going to put it down the river, so we're going to have to watch it like a hawk.

AP Um Capital, when I saw Ebrahim Seedat, said that they're not involved in processing oil at the moment. All they're doing is packing oil and they have a margarine plant going. Is that accurate?

GM I think they get their oil from Sealake, they're related and they're helping them out I think.

AP And they're just bottling it? So if their effluents are coming, if they're coming, from the margarine plant.

GM Ja, but they are operating because, I mean when you go past the cooling towers are going, the boilers going, something is going on. Nobody runs cooling towers and boilers to do it. I can actually show you a sample of the stuff... oh hell, okay I threw it in the dirt bin. It's got this much oil on the top, pure cooking oil on the top, 3 mils of cooking oil on the top. And that was the sample that he took. The first scoop was in, and the next lot is now clean after they had spotted him.

AP And that's going into the sewers... without permission whatsoever.

GM No permission, ja.

AP What can the Council do as far as you now?

GM Council can block of their sewer?

AP They can't put them out of business? They can't stop them from operating?

GM I asked Johan van der Merwe if they would rather put a restriction washer in on their water supply, because with a restriction washer in you cannot operate. Therefore he won't be able to pollute the sewer and the storm water drain. But no, he said no they can only block off their sewer. But I can't see why we can't do that, it stops the guy polluting the sewage works and the waterway. But he says no. But, they'll block off that sewer, and then he'll pump it over the wall 'cos the outside sewer is right there. He can just put a pipe over there and pump at night, or he'll put it straight down the storm water drain.

AP Does Umgeni Water or anyone else have the capacity to investigate these matters at night. Night vision goggles, being able to stake out companies and that kind of thing.

GM We have staked them out before. We've staked them out for a solid week. We didn't catch them doing anything, because they've got massive storage tanks so they just store it, store it, store it, store it and I suppose the minute we all packed up they just let I go. We've also caught some of these companies tankering it to a farm, tankering it to another manhole in Northdale or somewhere like this and dropping this stuff, so they will do anything to try and get away with it, anything.

AP It makes it quite difficult.

GM It is. It's extremely difficult to catch somebody, extremely difficult.

AP Okay, on a theoretical level then, if the polluter pays principle is going to be implemented properly, that obviously means that companies must pay for their effluent, that then operates as an incentive etc. So they would have to have the permits in terms of the by-laws. If they were over the permissible limits they would have to pay for that. Um, but it keeps coming to me stronger and stronger that for as long as they can get away with illegal discharges, whether it's illegally into the sewer by circumventing whatever measuring you guys are taking, or illegally into the river, the polluter pays principle is not going to work with these kind of companies.

GM No, it's not going to work.

AP So what needs to happen in your opinion to solve the problem. What would your best-case scenario be?

GM Um, working in conjunction with Council. You have some factories that have three discharge points, illegal some are too. All of them should have a dedicated sewer for trade effluent, with a final day's holding tank holding one day's effluent, which at any time when we go there and take a

sample of, when we're allowed in, that will be representative of what goes down. And it must be accurately measured with a meter or whatever so that we can assess what's going down. And I don't know, we just have to police their storm waters, put ISCO samplers into them all. The whole thing is with this new COD thing that we've got, trade effluent tariff now, if a guy can bring his COD to less than 350 he doesn't pay effluent charges. There are companies in 'Maritzburg that on a daily basis now that are actually coming off trade effluent charges because they've put, they've gone and they're putting in better effluent plants and that, and I can't see why these guys can't do it... unfortunately there are storm water drains around, so if the guy can put it there and not pay that's it. But Council, I think, all these years has been far too soft on these guys. The laws, I mean if you discharge over the limit and we take you to court the fine's like R50 or R500. And you know if the guy can... a waste skip to Waste Tech or wherever is most probably about R2,000. If he can put that down the sewer and pay a R500, that's it. They need to jack up their laws, first of all. The laws are there in place, but nobody's there to enforce them. What they need to do is if you go over the limit with... there is no limit for COD... with Soap Oil and Grease or anything like that, on the formulae when I work out the effluent tariff for every six months, those should all be in place. So, if the guy wants to put oil down he will pay for it. That's the way we're going about it now, with this new thing that we've brought up, the Trade Effluent Tariff. We want to add metals into it, we want to add Soap, Oil and Grease onto it, so when we do catch these guys and we find him 8,000 milligrams per liter or so, he will actually pay for it. That's the only way it's going to make them work is when you hit them in the pocket.

AP How often do you sample the edible oil industries?

GM Twice a month each.

AP Is it possible that they... do they know when it's being sampled?

GM No, I don't think so. It's random, it's computer generated. We try not to go the same time everyday. One day you go at four 'o clock in the afternoon, the next day you go at eight 'o clock type of thing.

AP There's not automatic samplers in?

GM No. The trouble with the automatic sampler is because they don't have a dedicated sewer, you've got domestics in there and the paper jams a lot. We even had one in Hulett's, and it kept jamming it, jamming it. So that's the problem. Even in the storm water as you know South Africa work, plastic packet and KwaHlangu cartons and that, it's very difficult with an automatic sampler to try and pick up something. It's possible, but it's very difficult.

AP Is it not easy for them to circumvent your testing then? If you're only doing it twice a month, is it possible that they are discharging and getting away with it into the sewer at... enormous levels.

GM Whenever... every discharge that is reported to us we react on. We shoot out to the industries and we go and check.

AP So you actually monitor it coming into Darvill.

GM Ja, people monitor it all the time. The minute we have a discharge they will let us know. We shoot out and go to the one's who we suspect. Nine times out of ten, nine-and-a-half times out of ten it's stopped because from the time he discharges there it takes two hours to get here, and you can discharge a hell of a big tank in two hours and have your whole tank cleaned up by the time it get here. That's the very hard thing about it.

AP Are those discharges still happening into the sewer?

GM Yes.

AP How regularly are they happening?

GM Saturday there was a discharge, Friday there was a discharge. Just about on a daily basis.

AP And... these are illegal discharges?

GM Illegal discharges ja. Because by... they know for a fact that by the time we get there, we've got ten fifteen minutes to get there. It takes, as I say, an hour, two hours to get here, the slug first arrives here. Once we've noticed it, we tell our guys if it runs for fifteen minutes or longer, give us a shout and we'll go. 'cos often you just get little bits of oil, you know like little bit of wash down from floors or something like that. Once it's coming in continuously, by the time we get there they've packed up and they've gone to mosque or whatever.

AP That makes it very difficult.

GM It's extremely hard. And that's why Johan couldn't understand how all of a sudden we just come up with a case. It's taken us a year or two to catch this guy. Then he understood, no no he didn't realize that you know we've taken so long.

AP So this is the only prosecution at the moment going for illegal discharges, as opposed to just exceeding the trade effluent by-laws. And that went in, was it last weekend you say?

GM This weekend just past.

AP And he'll be prosecuting that?

GM We hope they're going to seal his sewer. They will be given 14 days, the by-laws state you've got 14 days to get your act into gear, and if they cannot get it all done in four days... and they've got to apply for the permit, they got to pu in the Witness, it's a huge set of things they've got to do.

AP So you've caught them... Capital obviously don't have permission to discharge to sewer.

GM They don't have permission to discharge to sewer at all.

AP That's come across from a few people I've interviewed. And you've caught them actually discharging into the sewer itself.

GM That's correct, so now once the legal guys have sorted it out, they will obviously deliver them a letter to state give them 14 days in which to get everything fixed up, otherwise that sewer will remain sealed until such time as we are happy and City Engineers are happy to.

AP What happens if thy deny it? Does it then have to go to court?

GM Obviously, with another company Council blocked their sewer, they went the following morning, they went to some happy judge who found... got a court interdict for them to remove it straight away, without even consulting with Council, 'look why did you do this?', you know, 'what reason?'. So it look like if you've got a bit of money, you just go and get a court interdict and then they might have it open the next day. But at least we've got to try. That's the law, we've got to try.

AP 'Cos Capital doesn't seem to have an effluent treatment plant, at least not one that's able to bring the loads down to the limits in the by-laws.

GM They started building one, but they never completed it. And they gave us an undertaking that they would complete it and get everything done. We actually had an agreement... which we gave it to them, Simon Mashigo gave it to them, they sent it to their attorneys and they said no ways, we can't... they refuse dto sign. And since then nothing's happened, and we haven't been able to catch them until now. So now we've got to start all over again and build up all this evidence and type of nonsense.

AP So the next 14 days or so we could see an advert going into the newspaper applying for permission?

permission?

- GM No, once Johan's... he's got all the paper... it's sitting with Mike Greatwood, all the papers. Obviously he's taking them over to Johan, because he's got to see what he wants out of it. Once it gets there and if he's 100% sure that they're not going to get kicked in the pants type of thing, then they will send them a letter, 14 days. How long that's going to take, I don't know.
- AP So if they don't have permission in 14 days, they block the sewers?
- GM Correct.
- AP And what steps would then be taken to ensure that they're not discharging into for example the storm water drains?
- GM On Council's side, nothing. I think on Umgeni's side we would definitely try and do something about it. As I say we have a place where we could put an ESCO in safely.
- AP Would it be public knowledge when the drains are blocked, if that does take place...?
- GM I think Umgeni would very much like to get the Natal Witness on it, to bring to the attention what these people are doing. As you can see we're pretty... we like going to the Witness because the minute you go to the Witness then Council seems to jump up and down a bit. We actually threatened them basically, that if something's not going to happen then we are going to go to the Witness, at the meeting. So you know... if... and now we've got the Sobantu people jumping up and down. Obviously... I'm hoping you're going to tell them that if something does happen that they must keep a close watch on it, because they will definitely do that, they won't sort of hang five. That's why I wanted to go for the restriction washer, so they can't operate.
- AP I think that basically covers most of the things we wanted to discuss. Is there anything you would like to add?
- GM We've got all these law in place, but unfortunately the country that we living in at the moment, the murders and the rapes seem to... take precedent. You go to court under the Water Act, and we've been there, and you start off with one public prosecutor. By the fourth year... by the time you get into court, the poor guy, public prosecutor knows nothing about it. And they don't have people in the courts that deal with these things. That is one of the biggest problems. They just sit... they fire the questions at us, the public prosecutor just sits there and does nothing.
- AP Do you think that it would help to have, whether it's through the Department of Water Affairs or Agriculture & Environment, to have specialized prosecutors who have a background in environmental prosecutions and environmental work.
- GM Yes, ja, yes. We wanted to get our own environmental lawyer, but they said there's no money for it or... they weren't interested... somebody to just go for all these type of cases, 'cos I mean we've got other evidence, I can show you files this thick about pollution incidents and stuff like this. But nothing seems to get done. But we now are starting, with this new permit thing which you have to apply every two years, Mike is now going to... 2 years is up, he's going to be sending out new permits, and I guarantee you, especially the oil industries, you won't get a permit back from him.
- AP Is he actually doing that now, because when I interviewed him he didn't... that hadn't been utilized at all?
- GM No it hadn't, but the two years is up now. I said to him that I'll do it for him if he doesn't have the capacity. We'll do it, you give us the letterheads and I'll mail it off to the industries. I actually e-mailed it to him yesterday, all the industries and their addresses.
- AP So this is under the by-laws, they have to apply, they have to give up plans, they have to give details of the effluent, the effluent treatment plant...



- GM They have to put it in the Witness, they have to do all this type of thing, so now every industry in 'Maritzburg is going to be receiving this shortly, 'cos Mike says he's now going to do it. We mentioned this at the meeting with Johan van der Merwe, Mike brought it up, he says it's actually very good because the 2 years is up now, the people have to reapply, they didn't have to apply in the first place because most industries were there. So now he's going to send this out, and all these industries will have to advertise... so we're sort of working towards a similar goal. But lets see how many of these industries actually do it, because I mean they're going to just turn around and say 'but I've been operating for fifteen years'. But then the by-laws state that if you don't have a permit you shouldn't discharge.
- AP ...The one's that do have permits, I presume those are all old permits...?
- GM Nobody ever had a permit in the old days, no.
- AP So they just were operating under no permits.
- GM In the old days you used to get a...was it a license or something... not a license, they used to go through Roads Department, the Trade Effluent Section, Council used to send it for comments all round. Once they all said okay, we're giving you permission, that was it. You never... physically got a permit or piece of paper to state that you can operate for two years and so and so.
- AP So when the industrial effluent by-laws came into being, those companies that were already operating just carried on operating.
- GM They just carried on operating. And that's what's happened always, until we changed the by-laws in, what was it, 1998 or whatever. So since then all these laws are in place, but nothing's happened about them basically.
- AP Before I saw Mike Greatwood I had written to them under the Access to Information Act and that type of thing to get information on these companies, presuming that they would have obtained information in terms of these by-laws, but they didn't have any information like that through the by-laws at that stage, so clearly there's been some movement since that interview, which is very encouraging to hear.
- GM Ja it is, plus the information that's here, in this office.
- AP Is there anything else you'd like to add?
- GM You said that some of these guys... their blatant disregard for the law. Hopefully this millennium we're going to nail these guys, because it can't carry on like this. Umgeni have discharge standards that we have to meet, and if we can't meet them, then it actually falls back I think onto Council, because their sewers, and they're allowing the stuff to come down, even though we sort of... we operate it. We just can't carry on. If these guys will just all pull their weight it will be okay, otherwise if we need to... discharge this stuff onto land, we need a piece of land the size of 'Maritzburg, with metal platings, and the chrome loadings we're getting into the works. You know we need massive land, or we need a thermal dryer, a fifty million Rand thermal dryer. It's going to cost the ratepayer eventually, and the ratepayers are actually subsidizing industry in 'Maritzburg... industry are not paying their full worth, mainly the oil industries are costing the whole of 'Maritzburg.
- AP Is that the costs here at Darvill for treating the effluent?
- GM Treating the effluent.
- AP What do you do with your effluent?
- GM Discharges back to the river, and then Durban drink it.

AP Is there any solid waste?

GM Yes we spray it onto the lands, from here right to the Duzi, I mean it's massive land that we need. So we need more land more land.

AP Is that the landfill site.

GM No no... from here right up to the Duzi, that's where we spray it.

AP And is that benign by the time you spray it out there, that effluent, is the toxins out of it?

GM Yes, basically it's... digested sludge. It's been in the digester I think for 28 days. It's pretty... apart from your tomato seeds which come growing up, it's actually a very good fertilizer, apart from the metals in it. We could really, with a bit of money, use it... apparently you can use it for sugar cane... because the sugar gets boiled... so there is a potential. We've had farmers coming, I think they'll plant rye grass or something. They're trying their level best. But if you're going to go and do thermal drying or something it's going to cost the ratepayers of 'Maritzburg... you can add another R50 million to their rate bill... So if everybody, especially these oil industries, behaved themselves, it keeps the costs down for everybody. But they're not interested in it, as long as they're making the bucks they're not interested in the rest of us.

AP I think profit maximization was the term they were using. Okay, well thank you very much for your time.

GM It's a pleasure. [tape switched off and then on again after informal discussion]

AP On the question of prosecution samples...

GM You've got to have a witness, you've got to have sterile bottles and all the tooty, you've got to take a sample a couple of meters above the discharge into the river, you've got to take the actual discharge into the river, and then you've got to take it say 10 meters below or where it's well mixed, plus then you've got to trace it, and now you have different, two or three factories on the same storm water, you've got to trace it back into the factory and actually take a sample there.

AP How do you do that physically as a matter of interest. Do you have to go up the storm water drain?

GM I've done that before. But you go tearing around. If you... some storm waters feed certain factories. You would... shoot into the factory itself and try catch them at it red handed, which we have done.

AP Take this... this is the... Capital/Sealake storm water outlet. How would you have dealt with that if you had seen that, to try and take a prosecution sample.

GM The first thing I would have done is taken of the stream coming out, upstream... downstream where it is well mixed. Then we would seal the bottles... lock them in your car... you've got to shoot around into the industry and try and catch him discharging. If you can't catch him discharging the samples are worth nothing.

AP So you've got to get into the industry itself.

GM Got to get in there first of all, whether he makes you stall for half an hour. We have been in and caught them discharging. We then take another... sample from there, seal it, it's got to be transported in a special manner, it's got to be opened in a special manner, it's got to be done at an accredited lab, which Umgeni is, but we prefer to send it somewhere else, otherwise you know what they say, so and then everybody's got to do their affidavits, and then four years down the line you get a court date to get into court. They take you down to the river, an acting judge was one of their things, and he says to you 'right where did you take the sample?'. You say 'five meters downstream, according to my affidavit'. You go five meters downstream, in the meantime you've had floods and everything, the rivers totally changed and there's a tree standing in the way. He says

'but you couldn't have taken a sample here', you say 'but approximately five meters'. And they come up with small technicalities... wasn't it just a slug going down that you scooped, how did you hold the bottle, you know, they come up with the biggest load of nonsense. Instead of the magistrate just saying listen, here's all the evidence, it came from here, they caught you here, that's it. But of course you're innocent until proven guilty. They get away with it because the magistrates are not really interested. Totally not interested. I mean, there's the evidence, sometimes we even had SAP guys come as witnesses, and photographs and stuff, and they just get away with it. Frustrating.

AP ...The by-laws as I understand it have... give the power to use reasonable force if necessary to enter business premises.

GM No, the only way you can do it is to go and get a member of the SAP and go in. They might have the powers because some of their members are peace officers. We don't have that. We asked permission to become peace officers but...

AP I think it's the City Engineer that has the powers.

GM The City Engineer has the right to do whatever he likes basically. He can go in there and just open up, Umgeni Water doesn't. Even though under the Water Act we have the right to go in there.

AP But now the investigations seem to be being done by Umgeni Water not by City Engineers...

GM City Engineers are assisting. Now that they know that we sort of packed out on pollution control, sometimes we need their assistance because half our guys are doing catchment management and stuff like this, so it's only like myself and Indrin. If we need assistance and we know it's an oil industry, we know we're not going to get entrance there, we do ask their assistance and they do come and help us. So we are working hand in hand.

AP Are they fieldworkers, or Mike Greatwood himself?

GM It's the likes of Jimmy Pather and Grant Fryer, health inspectors and just members of ... Grant is a Peace Officer. But we have been held up, gun point, inside, and not allowed out and stuff like this.

AP At gunpoint?

GM Well the guy was waving a gun around. They locked the gates on us and refused to let us... when we caught them in the middle of the night. It's quite a frightening thing to try and get in. If they can stall you for five minutes and clean up their act you've lost it. But three hours in mid-air and you've lost the whole lot because you cannot prove it came from them, especially if there's another company that could discharge to there.

AP The causation problem has also been highlighted in most of the interviews as a huge problem. And clearly the... other than jump over their fences or have helicopters drop people, or... change the way the sewer lines and the storm water drains are built. And again the by-laws give the City Engineer the power, when they apply for permits and that kind of thing, to demand that the companies do any works that are necessary etc.

GM Correct. Put a dedicated sewer in, we've asked them to do it.

AP The City Engineer to do it?

GM We've asked them to do this. Because they're always building all the time. We said right, they're doing alterations, surely we want Capital or Spring Gold or whoever to... a dedicated line with no domestic sewerage in it... cost too much money, chop up all this concrete. You see we have the problem with TDM, it's a combined sewer. We've even, I think we've even offered to pay to reroute TDM's sewer right around, Umgeni's offered to pay, so we only have Spring Gold's effluent coming down that sewer. You know it's like desperate stuff.

- AP Presumably that would help a lot. If you knew it was only one company on the line, and it was coming out the pipe end, that's pretty conclusive.
- GM That's what makes it so much easier for us. TDM are as I said, they pump out and they keep times, and they keep it all neat. They're a reputable company... But you'll see it if it's TDM's effluent because it's pink, their's is generally the *(taps photographs of Capital/Sealake storm water outlet)* white or the grey. The minute you see TDMs then what we've got to do we take another Springold sample, run up to the top and take a top one, so we can see what the difference is. Then we can see what the difference is. There's no oil there, and all this oil down there...
- AP The investigations that you've been doing in conjunction with the City Engineers, is that a primary function of Umgeni, or is that still a...?
- GM It's not a primary function.
- AP Not anymore?
- GM No. I feel that a lot of people didn't realize the circumstances I came across. I came across to carry out the trade effluent function. *(Comments re personal circumstances in coming to Umgeni deleted at request of GM)*.
- AP One of the big issues... you say that... some monitoring is still happening from Umgeni, but the official position being put across, for example at that meeting at the Pietermaritzburg Chamber of Commerce and Industry, Umgeni's no longer doing that monitoring.
- GM We still are monitoring, although not as intense as we used to, ja, don't worry, we still monitor, especially the bad spots, the Bayne's Spruits and things. And I'm pretty sure Umgeni is willing to increase monitoring on the Bayne's Spruit, especially now.... I think we're going to have to.
- AP Because clearly no one else is doing it...
- GM No... nobody else does it, monitoring as in taking samples. There might be people monitoring it like you guys visually, or Sobantu residents monitoring visually.
- AP But I mean officially, monitoring... looking, you know checking the outlets, going there at various times, including at night to see what's happening, that kind of thing?
- GM No, and it's not the best of places to be at night.
- AP No, when we were down there we found a body under the railway bridge by Willowton, a vagrant I presume was sleeping under the bridge, had his brain smacked in with a rock or something.
- GM We've been held up there by gunpoint. Not the safest place to go. Certainly will not go out there a night on my own like I used to... take security with us and that type of thing.
- AP I'll tell you another thing, that same day we found the bloated body underneath the railway bridge, the guys from Sobantu who were with us, when they got back to Sobantu a child, a school kid or something was found dead in the river a bit further down towards their area. Testicles chopped off, lips, tongue.
- GM We were held up in broad daylight outside the back of Willowton Oil and Cake. The security guard watched this lot, came out with his pump shotgun and he let off a shot, and they just laughed and ran off. 3 of us, broad daylight.
- AP So safety is obviously another big issue in monitoring these...
- GM It's a very big issue. Our poor sampling officers sample all over the whole countryside. We've got a full-time security firm employed. But you know, for me to phone up in the middle of the night to get a security guy down, by the time that he that he and I finally met up somewhere and we've

been down to Willowton, it's long gone, it's sitting in Durban already. In the old days we used to shoot out on our own. On Council's days I used to have a lot of black laborer staff, I used to leave them parked outside a factory 24 hours a day in a little tent. They had a radio, and they had their bush knives, and fortunately nothing ever happened to them. But we used to monitor them, any factory... once a week. We chose different factories, and they would sit and monitor pH's and stuff, and then we'd bring the samples into the lab. So... much more was done in those days, but now we don't have staff, we've got to do it all ourselves.

AP So how much staff do you have working for you. There's you, there's Indrin.

GM Chris, and Dave does hand us out, Chris is the boss. That's it.

AP So capacity is a problem here, not just in City Council.

GM We used to have the whole section... when we used to do pollution prevention there was eight or nine of us that used to go out, and we used to do all these hazardous incidents on the freeway and stuff like that, we used to go check that they cleaned the river up and inspect. But now they've sort of pulled the section to pieces, and guys are doing catchment management and all this. So basically we're also down to very little staff, ja. We don't have the clout like Council do.

AP The catchment management agencies are... intended, from what I can tell from the National Water Act, to play quite a central role in monitoring and perhaps in prosecutions as well. How do you see that working or playing out...?

GM I don't see it working... Umgeni's I think going into it in quite a big way, but there's just not the staff, there's just not... we've got all these fancy laws and nothings really happening about them. It's a good thing, but I just don't see it panning out as well as they expect it to.

AP If there was a, perhaps attached to the CMAs, a kind of independent team was created to investigate and compile cases for the purposes of prosecution or whatever, would you think... do you think that would be a good way to go? Perhaps even drawing on people from Umgeni, getting secondees in from DWAF or wherever else?

GM If on the same thing we could actually get a special court to deal with these things, and people that understand the problem, I could see that working.. if you can catch the people.

AP So its an investigative thing to get over the causation problem and the evidentiary collection, it's obviously having the right kind of prosecutors that understand the issues, and also the courts who don't take 4 years to deal with the matter.

GM That's right ja. Then we could get somewhere. I'd like to... they could send me to America or somewhere to go see how they do it over there because I don't think the guys play it down over there. But here they're more worried about other stuff, and yet this is just as bad.

AP The Durban Metro seems to have a slightly different approach. They claim that they've dealt with the pollution to rivers quite well, but I still need to study their by-laws and compare them in some detail with Pietermaritzburg to get a clear idea of why it's different.

GM Durban seem to have clout... you see they... Durban don't really worry too much about what effluents you put down, 'cos basically it goes through their works, they don't do much, separate the solids and things, put it all back together and off it goes out the pipeline.

AP Out to sea.

GM So they not really worried. They're more worried about inspecting the premises and saying, 'look there's oil in here and this pollution that pollution, we'll come back in two months time, if you're not done you're in trouble'. And they seem to have a better, I think they have a whole section, a legal section basically which we don't type of have. And they seem to get their prosecutions... I know Pinetown and that were very strict, and people there were terrified. But ours, we've just never got it off the ground to get out there and find the guy. I mean every time I found a low PH, if

I could give that guy a R500 fine, eventually he will stop, after the tenth one.

- AP One thing that was interesting from interviewing the Durban Metro people, in their pollution control, is they have this... consolidated billing. So if for example a company spills into the river and they pick it up, they would go in for example and clean it up, or get consultants to go and clean it up, and that would cost R20,000, R30,000 whatever, I can't remember the exact amount, and they would just put it on the water bill. So they circumvent.... They don't deal with them in a criminal way, so there's not necessarily a prosecution unless there's a specific need for that, but they just put it on the bill and if the people don't pay their water they cut the water off. Which they claim is working quite well.
- GM Well I think 'Maritzburg need to look into that, Mr Greatwood! I think we should look into that, that would be great. I mean because as I say with our new formula, we're hoping to add in metals and oils and soap, oils and greases and that, of course this is going to make them more devious than they are already. But the good companies, they'll be paying for the bad companies... but if we can catch the guys, like we seem to be getting a bit of success now, then they will pay for it themselves.
- AP ...There's these difficulties with the prosecution and the whole criminal justice system, but the guys who are deliberately flaunting the laws to keep their costs down and to make as much profit as they can, and perhaps they're inherently uneconomical companies, I don't know if they would be able to make a profit if they were treating their effluent properly, but clearly some kind of firm stance needs to be taken against them and an example needs to be made.
- GM Hopefully this is going to be the start of it. If you go into the back of Willowton Oil and Cake Mills, there's more Mercedes-Benz's, 500s and that than Carlton City. So they have the money, they just don't want to do it. Why must you spend... they don't see the benefit of spending half a million Rand on an effluent plant. I don't know why, because if these guys as I say could their COD to less than 250, they wouldn't pay.
- AP Willowton claims their effluent treatment is pretty good. They say that they've spent two hundred and fifty odd thousand on it.
- GM Over the twenty years... they could improve vastly. They basically, all these effluent guys, they put in an effluent plant, they get a guy off the street, with most probably standard 6, tell him to operate quite a sophisticated plant without any of the chemicals that are supposed to be used, what do you expect from them (END side A). ...Sealake have done, they went overseas and they found, according to Baboo, they went overseas and they went and looked at some other oil industry plant, and they've really reduced their effluent down.... They've given us permission to put the automatic sampler in their factory. We ran it for a good couple of weeks. We did find a few high ones in the middle of the night, 12 'o clock shift and not... too lazy. But I must admit they do send a lot away to Wastetech. They've sent a hell of a lot of skips to Wastetech. So obviously by removing their solids, the organics out of the effluent, it makes their discharge so much better. And they seem to be behaving quite well. They've, I don't know... chatting with Mr Mohatrar, he seems pretty caring, and I think they are trying their best. Same as Edib Oil, they are trying. He... we basically are doing a bit of work for him.
- AP Who is Edib Oil?
- GM Aaron Sumar. He is trying. I've never had him spill once to the river, in all the time he's been here. He is trying. Every time you go he's put another tank in, and he's trying filters. He's one of the guys that is trying and he's the smallest man who operates maybe a few days a month.
- AP Birmingham Oil is not operating anymore is it?
- GM No, he decided to go into the tissue game, he says they're too cut throat... and he after a long time put in about a half million Rand effluent plant, a beautiful effluent plant, but he just can't go against...
- AP So he's got the effluent plant, Capital doesn't, yet Capital's still running.

GM That's right.

AP Perhaps he could sell it to Capital.

GM That would be an idea. Capital have half an effluent plant. They started on one and then they went bung and that's as far as they've got.

AP So the new phoenix company doesn't have that, they haven't finished it at all. It seems then that... there are problems from the other companies like Willowton, especially if there is a storm event – they admit quite feely that at that stage if the water stops backing up into the company that they'll open the sluice gates - although when we went and looked there yesterday and saw the traces of effluent, it makes one wonder a little bit, although it has been raining recently, so...

GM As I say, they have to let it go somewhere. We've actually asked them to separate their storm water and effluent, because years ago I think Water Affairs gave them permission, and we've now asked Water Affairs to take back that permission, because the minute you have all that... they're putting all that water, and it's a massive property, all that water down the sewer unmetered, unpaid for. This is another fight I have with them all the time. So... storm water should be storm water, separate down to the river, and sewage should be metered to the sewer. But it takes time.

AP But even for... Willowton... they have those pits to trap the storm water and then they say that they separate obviously the fats and that. But just going to AA Moosa's office there was clearly evidence of fats on the floor around various tubs, so...

GM All of the oil industries are like that.

AP So some kind of housekeeping would help to prevent pollution of the river. If they had that clean when the storm event happens, the water would be a lot cleaner. If they have an overflow that would be a lot cleaner too.

GM Ja, it's very hard. They drive around with forklifts carting big drums, and they knock them over and they spill, and then they try and clean it up... the laborers most probably think it's going to go to that big catch pit and it's going to be cleaned up and things like this, whereas it might, unbeknown to him, go straight down the storm water drain. As you say, good housekeeping – dry cleaning as I would say – you know, scraping it up... would go to helping a lot. And it's actually product that they are throwing away, which is money.

AP That again was AA Moosa's... the line that he was pushing, he was saying that for them it's... their policy is not to put any oil down the sewer or the storm water drain, because he claims that they are recycling it, they're using it, putting it back into their plant.

GM Yes, but when you get a very bad batch, what do you do with it. When you can't recycle.

AP A bad batch of oil?

GM Ja, or contaminated or something that you can't really... what you going to do with it? Put it in a skip and pay a thousand Rand, or put it in the sewer, and hopefully nobody captures you?

AP And mostly they don't. So it's only really Capital... Sealake... seems to have their effluent treatment, Edib Oils' got their effluent treatment pretty much on board, so the one that stands out that doesn't have permission to discharge into sewer is obviously Capital. And the fact that the smell's like chemicals... it's a terrible smell coming into the river here, and if that is the Capital and Sealake line, it seems to suggest that they are the problem company at the moment.

GM That's correct, I would say that. 'Cos we've caught them illegally discharging, and we're going to be keeping a very close eye on them for the next couple of weeks. A very close eye.