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Water Scarcity in the Maltese Islands: Geopolitics and Management Issues

Volume 2
of two volumes

Narinder Singh Birdi

Thesis submitted for the degree of

Doctor of Philosophy

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University of Durham

Department of Geography

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CHAPTER 6

WATER CONFLICTS

6.1. INTRODUCTION

Water conflicts are the inevitable result when one or more parties are deprived of a resource as essential as water.

".... conflict over access to environmental resources is a powerful source of social division." (Bryant, 1992, p.22).

The conflict is usually between the have and have-nots, or those that do not have and those that should be supplying them.

"Conflicts between different classes of user - e.g. farmers, urban and industrial - are becoming more common as scarce supplies are shared out amongst a growing number, and hallowed rights and privileges are increasingly questioned." (Winpenny, 1994, p.4).

The conflicts vary from the household or farm scale, to the national scale. For the purpose of discussion here, however, it has been more convenient to group conflicts according to each sector of the economy (and to a certain extent, scale) than to discuss each individually with progressive scale.

Hence this Chapter has been divided into four main sections: Firstly, conflicts between consumers of water (or in the case of the bottled water producers, the suppliers of water) within each sector of the economy. Secondly, inter-sectoral conflicts are discussed, which

usually involve the displacement of one sector's water supply for another sector. Thirdly, conflicts between consumers (in each of the individual sectors) and the WSC (and the Government) over water supply, are discussed. Figure 6.1. shows these conflicts and their inter/intra-relationships. Finally, the conflict over water supplies between Malta and Gozo is briefly presented.

The conflicts are specific in nature and each has its own unique causes and consequences. Hence, the discussion in this Chapter is mostly in the form of case studies.

6.2. CONFLICTS WITHIN THE SECTORS OF THE ECONOMY

This section discusses conflicts within the domestic, tourist, industrial and agricultural sectors. These range from quarrelling amongst neighbours, to conflict between tourists and hotel managers/owners when hotels are struck by shortages, to rivalry and competition between bottled water suppliers over the consumer market.

6.2.1. Conflicts between domestic consumers

There are relatively few conflicts between domestic consumers over water, mainly because households do not visibly share a common source, like a village well. Each household has its own mains connection. However, a WSC source (1993) informed me that there was a time when some areas had outbreaks of physical violence over water, especially Sliema during the mid-1980's. Today, in most cases, co-operation exists between households even when water is hard to come by. However, there is a certain amount of disagreement, which usually amounts to mere grumbling.

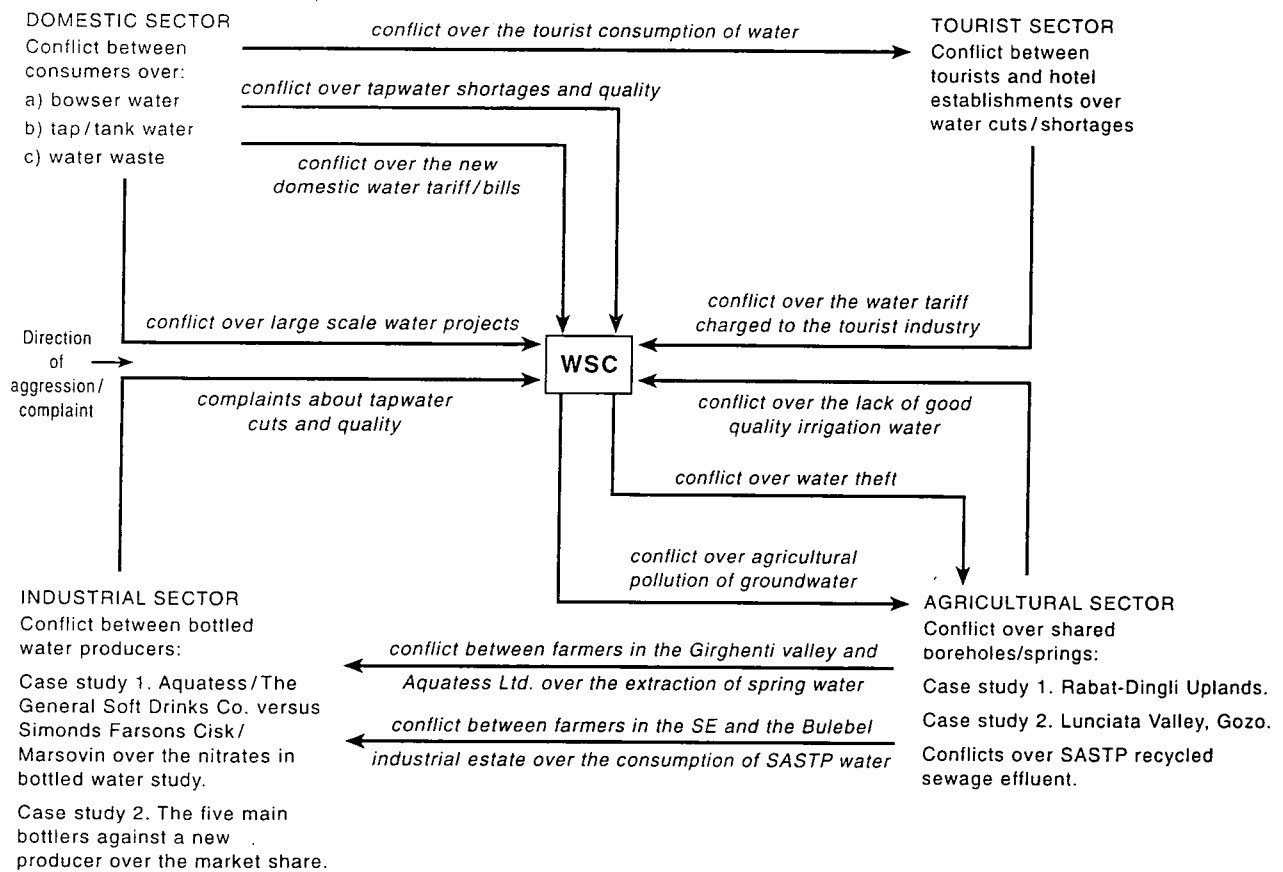


Figure 6.1. Water conflicts in Malta.

When WSC bowzers arrive to supply water, neighbours will sometimes quarrel in the street over who should be given the water first. Sometimes, if only one household has called for the bowser, neighbours come out to try and get what water they can. This often results in an argument with the driver and amongst neighbours, especially if there is not enough to give to everyone.

One interviewee told me, ".... imagine they come over to my place and they [neighbours] see him [the bowser man] giving the water, they say, 'Hmmm, hmmm, hmmm [grumble] no! You have to fill mine it's always them you give, it's always them'."

Another interviewee said, "Sometimes they [neighbours] start fighting as well. Because.... they [bowser drivers] then say, 'We don't have enough water [for everyone]'...."

While living in Msida I often saw that a bowser, arriving to deliver water to homes, would frequently attract a crowd of people seeking water. A WSC source (1993) stated that, "Arguments tend to arise when the Government bowser is ordered.... and not everybody gets his share. Arguments tend to arise because they [bowser drivers] say they distribute water for those who have asked for it on the telephone, but if you go and give water to three people in a stretch of road, it tends to get at all the people in the road [out].... Not all of them would have telephoned for water but all of them would need water just the same, so arguments tend to arise (Plate 6.1.) and some give money [bribes] to the driver. They are tipped." Ultimately, the problem lies with the lack of resources of the WSC to provide water in such situations.

Other than this small scale conflict, I was told that conflicts may occur on a very restricted scale, for example, when, in a building, someone on the ground floor takes so much water that there is not enough pressure to reach upper floors.



Plate 6.1. An argument over bowser water.



Plate 6.2. Water tanks on rooftops.

Furthermore, interviewees in Vittoriosa told me that the rest of their road may not get water because of the lack of pressure. In this case, where some have and others do not, arguments may arise between neighbours, where one's overuse is to the detriment of the person further along the street.

In Gozo, I was told that physical fights may occur and the police are often involved because, "Those living in flats, they will go on the roofs and steal water from other tanks.... they will go roaming on the roofs and will try to get water even late at night...." Plate 6.2. shows how easy it is to go from roof to roof and gain access to water tanks.

Finally, conflict exists between people who try to conserve water and those that use it lavishly, with the former being the angry party, especially if they don't have water and the latter have plenty. This conflict varies in scale from those in the south angry at having no water, knowing that places in the north have ample, to resentment and arguments between people living in the same street. The source who gave a lengthy insight into the Maltese psyche (pp.450-452) is an obvious example.

An interviewee from Pwales told me that often people will deliberately be careless about saving water because they are opposed to the political party in Government: "Some people might use a lot of water, just like that wasting it.... it's where politics might come in. Some people are [of the opinion]: 'It's not my Government. I don't care.'...."

Letters to newspapers are often written to voice anger. The following is a response to a statement made by a columnist, for *The Sunday Times*, about Malta being a water conscious nation:

"If your columnist Daphne Caruana Galizia (*The Sunday Times*, August 15) insists that the Maltese do not waste (and steal) water, she must choose another joke. A

quick look around our island will easily notice the streams of water running down the street coming from washing of cars, boats, gardens, and house frontages, etc. We must also add the water wastage at workplaces where water taps were often left running.... It seems that the more we produce water the more it is consumed. May I ask Daphne where do the millions of gallons of water daily go if the Maltese do not use water as she alleges?" (*The Sunday Times*, 22/8/93, p.15).

Nothing illustrates this conflict better than the disagreement over the ownership and use of freshwater swimming pools between pool owners and those who are quite rightly angry at this lavish use of water, particularly those who do not have enough water in their homes to fill a cup. Pools are mostly owned by private residences and hotels (so the conflict is a part of the competition for water between the domestic and tourist sectors but is also one between domestic freshwater pool owners and those who disagree with them and so is included in this section). The following letter to a newspaper illustrates the conflict:

"An advert in the local press informs us that for as little as Lm259 one can buy a pool 12 feet wide by three feet deep. Other sizes up to 24 feet wide are also available. The smaller one holds nearly 10,000 litres of water while the larger one holds nearly 40,000 litres if it is of the same depth. Probably it is deeper. And there are some who write about a shortage of water!" (*The Sunday Times*, 22/8/93, p.15).

The conflict arises because not only is freshwater (usually from cisterns and private boreholes) permitted for many pools, but many pool owners are illegally using tap water to fill their pools, even though they are bound by their permits to use second class water only.

The greatest irony in this conflict is that the Government did little to stop the National Swimming Pool Complex at Tal-Qroqq, Msida, being filled with tap water, ever since it was first used for the Small Nations Games in May 1993 (*The Times* 25/7/93, p.52).

Daphne Caruana Galizia, columnist for *The Sunday Times*, wrote:

"Perhaps the greatest insult we have been dealt in recent years is the swimming pool built for the Small Nations Games. Costing millions of liri containing millions of gallons of pure water, it is a monument to our government's confused assessment of priorities. To those with no water in their tanks, who are expected to swallow the lie that there is no money to work on our water problem, that swimming-pool is tantamount to two fingers raised in scorn." (*The Sunday Times*, 15/8/93, p.9)

It wasn't until the end of July that the then Environment Minister, Mr. Michael Falzon, ordered the mains supply to the pool to be cut off following numerous complaints from residents in the area, including myself, (I lived a few yards from the pool and complained to the WSC that while I had no water, I could go for a swim across the road) after water cuts lasting up to ten days started since the pool was first used. The pool now has to use second class water (*The Malta Independent*, 25/7/93, p.52).

Random inspections in Malta of 35 seawater swimming pools, undertaken during summer 1993 (June to September), found that 15 were filled with tap water. In 1993, the penalty for this offence could vary from Lm300 to Lm1,000, but poor policing and enforcement meant that many more people were getting away undiscovered (*The Times*, 14/10/93, p.1). Fifteen pools out of 35 is a

significant percentage and there are far more than 35 pools in Malta. In 1994 there were 1,584 registered swimming pools on the island. Of these, 274 have permits (subject to an annual fee of Lm150 for domestic owners and between Lm250 and Lm500 for hotel owners, depending on the size of the pool) to use freshwater, while the rest are supposed to use seawater. Freshwater pool owners are encouraged to use cistern water or private bowzers (*The Sunday Times*, 10/4/94, p.16; *The Malta Independent*, 24/7/94, p.7). However, without proper policing such rules cannot be enforced.

The illegal use of tap water aside, given that it is commonly known that freshwater (second class) is supplied to swimming pools while many people don't have any water at all, it is not surprising that notions of water equity and priority have come strongly into question. Pamela Hansen of the 'Opinion' column in *The Sunday Times* wrote:

"I was shocked last week to see a letter in this newspaper from an owner of a freshwater swimming pool [*The Sunday Times*, 6/2/94, p.3].... I was under the impression that this was not allowed and that only sea water could be used in swimming pools. If fresh water is allowed to be used in pools, it is appalling. How can anyone condone the idea that people can swim in fresh water when others do not have enough to wash with or make a cup of tea (ibid, 13/2/94, p.13).

To make matters (and the potential for conflict) worse, the WSC were due to ask the Government, in September 1994, to ammend regulations to allow tap water for pools since they considered that production was meeting demand and that water was no longer subsidised at such a high level of consumption. This proposal contradicts the WSC's policy of water conservation and is likely to discourage the use of seawater and second class water from cisterns. This could pose a problem in times

of drought and give rise to conflict between the pool owners that have and the householders that have not. It should not be allowed. The irony is that these proposals came just after the WSC had invested long awaited resources to inspect and sample pools for the presence of tap water (*The Malta Independent*, 11/9/94, p.7).

6.2.2. Conflict between tourists and hotels owners

Since the water shortages of the 1980's, that hit the tourist industry as much as any other sector, there has been relatively little conflict between tourists and the owners of the establishments they stayed in (NTOM source, 1993).

A WSC source (1993) informed me, however, that there are still some isolated cases of conflict between tourists and their place of accommodation, over water: "There have been some problems with tourists who were displeased with not finding their daily fair share of water. It was over a certain period and it's still going on I believe. I've heard lately of someone who's requested a reduced rate because of a [water] shortage in his hotel. I believe it was in Gozo." (ibid).

Lockhart and Ashton (1991) decided that an attitude survey of holidaymakers could provide evidence of the existence of any problems, since summer tourist arrivals were,

".... approaching saturation levels and putting a strain on infrastructure, and particularly on water supplies and sewage disposal." (ibid, p.24).

Responses to their questionnaire,

".... drew attention to the failure to invest in the island's infrastructure because of other economic and social priorities.... water supply is erratic and subject

to periodic failure." (ibid, p.30).

Interviewees informed me of a few cases where tourists refused to pay for bottled water from the hotel bar because they had no water in the taps.

As previously discussed, most of the hotels have secured their water supplies. At most of the hotels I visited, customers were not affected by water cuts and shortages because the WSC or the hotel remedied the problem before their guests had time to realise.

6.2.3. Competition and conflicts within the bottled water industry

The bottled water industry is one of the most competitive in Malta, especially since in 1993, the market was approaching saturation. High discount rates often turn sales into a price war.

Competition for good quality water is increasing, as one company director told me: ".... a lot of illegal boreholes` have sprung up and since they're all tapping the same water table, it has led to a decrease in the quality of this extraction...."

It was controversy over the quality of bottled water that led to conflict between companies in 1993, while the entry of a small bottled water company on the market, united the five main bottlers to try and push it out.

6.2.3.1. Conflict over the 'nitrates study'

The study of nitrate concentrations in bottled waters, undertaken by Dr. Alfred Vella, has already been introduced. *The Malta Independent* newspaper commissioned Malta University Services (MUS) to conduct the study because they had suspected that the mineral content

specified on the labels of some bottled waters was not consistent with the contents and was over the EU limit for drinking water of 50 ppm nitrates.

The study, and the consequent drop in sales of *Flavia* and *Kristal*, sparked a conflict between their manufacturers, Aquatess (owned by Tessons-Sullivan) and The General Soft Drinks Co., respectively, on one side, and the manufacturers of *San Michel*, *Fontana* and *Tivoli* bottled waters, Simonds Farsons-Cisk (commonly called Farsons), Marsovin and, Alfmizzi and Sons, respectively, on the other. The latter three benefited in terms of reputation and most probably, sales.

Accusations were made by Aquatess and the General Soft Drinks Co. that the study was catalysed by these three competitors, two of which, Farsons and Alfmizzi (Marsovin was implicated because it produces *Tivoli* for Alfmizzi and Sons) are part shareholders in *The Malta Independent* newspaper. Hence, they were accused of underhand marketing tactics.

Farsons denied commissioning the nitrates study into table waters and explained that they would never consider using such tactics. They dismissed the accusations as a case of 'sour grapes'. A University source (1993) stated that as one of the leading companies, Farsons do not need to arouse adverse publicity for its competitors.

Despite the fact that Marsovin and Farsons had benefited from the study, a senior management source at Marsovin disagreed with its publication and said, "We don't believe that Farsons were influenced by their shareholdings. The big companies try and keep their fights in the markets. If there is something underhand going on then it's so underhand that it's not obvious. I'm not involved in that sphere. I wouldn't know."

No company is going to admit it commissioned the study for its own ends, although it is also important to note that any company would be perfectly within their rights to do so. Pointing out a competitors shortcomings,

even openly, is increasingly becoming a marketing strategy in many countries.

A management source at The General Soft Drinks Co. told me (1993) that they lost considerable sales of *Kristal*, which had not recovered anywhere as close to their original levels by the end of the summer in 1993. He was adamant that it was foul play that led to the study. He said that *Kristal* never had a nitrate concentration of 66ppm, as reported, and was angry that other nutrients, pollutants, toxins and their sources, were not investigated. He said, "The market share was led by *Flavia* and *Kristal* and it was a way to get a hold of this share by Marsovin and Farsons-Cisk."

A management source at Tessons-Sullivan, Aquatess's mother company, also said (1993) that the study, ".... was done on purpose to boost their sales. I'm sure they reverted to this choice of tactic, rumour has it, and it's a very strong rumour.... The article written about us was misleading. It did not give a true picture."

Like The General Soft Drinks Co. (p.418), Aquatess tried to recover their lost sales by placing advertisements in newspapers to show how low the nitrate levels in *Flavia* are compared to foreign bottled waters, which the Maltese public were then converting to. My source told me: "When we tried to put our argument forward, the [Malta] Independent said, 'No', claiming that they did not want to continue with the story, yet I was the first one to hit back at the original story. I think they stopped it because they were being accused of ulterior motives. I had to put the ad in then."

Although in relative terms their nitrate levels are not seriously dangerous, these two companies only have themselves to blame for not adequately labelling their products and not adequately monitoring the quality of their raw and product water. Removal of high nitrate concentrations by RO is necessary and Aquatess does not have an RO plant. Although the General Soft Drinks Co.

does have an RO plant, I was informed: "We're looking to produce another RO at the moment." (University source, 1993).

6.2.3.2. The monopoly of the 'big five' bottlers

Despite the conflict described above, the five big bottled water producers: Simonds-Farsons Cisk, Marsovin, The General Soft Drinks Co., Portaneur and Aquatess, have been known to co-operate when their monopoly on the market is threatened (WSC source, 1993). When a small company, which requested anonymity for reasons that will become apparent, was established in 1991, these five companies, apparently, used their political and economic influence to try and stop this new producer from producing and selling water. In an interview with its founder manager, and at the time, its only employee, I was told how the big five companies were trying to stop him:

There is a 1960 excise law in Malta that is recorded in the Crown Court's non-alcohol beverages act of 1961. It states that water cannot be bottled in containers larger than 2 litres. His small company's water is bottled in 11.35 and 18.90 litre bottles (3 and 5 U.S gallons, respectively) because it is one of the recommended ways of providing water by the United States Environmental Protection Agency. The containers are delivered free door to door by van and then collected on the next delivery and re-used (convenient, particularly for the immobile). Unlike the PVC bottles of the other companies, which are thrown away in landfill sites, they do not leach the carcinogen vinyl chloride into the water (and the environment).

I was told that the big five companies have tried to stop his company because they are afraid of the competition. He told me, "They're a cartel. Five

bottlers, all owned by wealthy families." When one of the current large bottlers came onto the market, the first reaction of the other companies was to, ".... squash someone who was bottling garbage water."

He continued: "The Department of Health would not certify me because the Chief Health Inspector of the island was related to someone [working at one of the large bottlers]," and requested bribes. The third Health Inspector in rank was more reasonable but unfortunately died before the file got to his desk. The next Inspector was a Gozitan. "I almost got something there but he retired. He didn't want to make waves. The fourth one got promoted from Health Inspector to Chief, visited the plant and approved and registered it." From that point on this small company received approval from all departments including the WSC, Enemalta and the Social Services. "They wanted bribes but I didn't give a penny."

However, despite approval from all others, the Customs and Excise department did not approve the product. So the company reapplied for the same license this time for 1.9 litre bottles. He said, "I still want to bottle in large bottles but they still won't let me.... I said why not sell big bottles and still take.... [the equivalent] per bottle and some Minister said that he can't let me do that because I would be stepping on the big boys [the large bottlers]."

At the time of interview, in April 1994, he was due to go to court for bottling without a license in the larger containers. He blamed two of the large bottlers (who ironically, were in conflict over the nitrates study the year before) for pushing the police to bring him to court. He was facing a possible three month prison sentence and a Lm500 fine.

He said, "The big bottlers have a strong lobby in Parliament. They are big financial contributors regularly. One of the bottlers made our Prime Minister - trained him.... I've made friends with the Customs and

Excise. I take them water. They are my buddies and they are laying off me. They see that it's not fair but they have no choice but to take me to court because of the Attorney General."

He also told me that one of the large bottlers, disadvantaged by the nitrates study, accused him of setting up the study and have ever since been trying to stop him from producing his water, which he quite rightly considers is an injustice given the superior quality of his water.

The Times newspaper sympathised and made his troubles known to the public:

"The big boys in the water producing trade (as opposed to the Water Services Corporation, which seems to be not producing the stuff) are rumoured to be gearing themselves up for a battle with a little fish....

Apparently this chap who gives you the life-saving beverage in more eco-friendly containers, is making a bit of a dent in the market and the big boys are using their muscle to try to persuade the authorities that he should be stopped.

They should stop trying to pose as guardians of public health, which is the way I hear that the big boys are pulling their weight, and compete on quality and service rather than creating artificial barriers to competition. So much for competition and private enterprise. It only works when the market is cornered." (*The Times*, 21/8/93, p.5).

From information obtained during Research Period 3, I was informed that this "little fish" was jailed for a short period after the interview was conducted but was eventually granted permission to bottle water in the larger containers after the tax law was ammended.

6.2.4. Conflicts within the agricultural sector

The DA gets to know about agricultural water conflicts mainly through farmers registering complaints at the WSC. A source there (1993) stated: "The WSC is responsible for groundwater and very often complaints are made to them and we get to know because farmers come to us for advice, particularly to know what their rights are."

The following are cases of conflicts over agricultural water at the time of Research Period 1 in 1993, unless stated otherwise. The case studies have been divided into conflicts typical of a certain region because of the water shortages and water distribution and inequity specific to that region or place.

6.2.4.1. Conflicts over shared boreholes and springs

Most agricultural conflicts over water resources occur because when a farmer dies he hands down his land by splitting it up between his sons, but very rarely does he devise a water sharing scheme. Many disputes have occurred as a result. A DA source (1993) informed me that, "Between farmers, there are a lot of conflicts. Very often they don't speak to each other. The conflict is due to accessibility [to water] and the lack of water and overpumping. In the north, if a farmer is allotted eight hours of pumping time a week he may try and go for nine or ten," (DA source, 1993) which if discovered by other farmers can lead to conflict. "There were also some cases of borehole conflict near Zabbar where the main boreholes in the south used to be. The quarrelling over water happens a lot." (ibid). The following two case studies, in the Rabat-Dingli Uplands in Malta and the Luncjata Valley in Gozo, illustrate this type of conflict.

Plate 6.3.
Near the
Habel Abjad
reservoir.
A farmer
has access
to plenty
of water.



Plate 6.4.
Habel Abjad
supply area
periphery.
Water
availability
has declined
significantly.



6. The largest demand for water occurs from March to mid-May, the peak growing season, and this exacerbates the conflicts (ibid).

Although an area of 240ha is equipped with distribution facilities, due to the deficiencies in the distribution system, water charges, and the greed and wasteful consumption of some farmers, only 120ha can be regularly irrigated (Ministry for the Environment, 1992, p.10.2).

Most of the water conflicts occur between: families in adjacent plots, the average size of which is less than 1ha (DA source, 1993); between farmers nearest and furthest from the satellite reservoirs; and between part-time and full-time farmers (Short and Tricker, 1994).

The SASTP authorities know of these conflicts through reports from the DA and the Zabbar Agricultural Extension Office which is responsible for the area, and because farmers come to the plant and complain. Despite the Maltese Islands being a devoutly Catholic nation, as one DA source (1993) said, referring to the farmers, "Ideas of Christianity and co-operation are not always put into practice."

6.2.4.2.1. Conflict between farmers: Habel Abjad case study

Conflict is greatest in the area supplied by the reservoir at Habel Abjad. Most of the factors above combine to make this an area of dispute over water. Although the reservoir is the largest, it has to serve a much larger hinterland, to its east, than the other reservoirs, as well as a smaller area of land directly to its north (Figure 3.16. (p.228)).

With a little humour a SASTP source (1993) informed me that the conflict is also, ".... probably because

people in this area are savages. They want water every day instead of every three days, which is impossible."

The authorities at the SASTP know of many individual cases of physical conflict. I was told that, "A couple of months ago two brothers fought over water. One bit his brother's ear off." (ibid).

One of the main problems in this conflict is that farmers own very small plots of land, in very close proximity to each other. One farmer's land is right next to another's and the small size of the plots means that several farmers within the same vicinity are able to observe how much water each is using. Often, as many as three or four brothers will not talk to each other because of feuds over water. As well as trying to take as much water as they can, they will deliberately flood their fields if their storage tanks are full, just to spite each other (ibid).

Within walking distance, farmers without water are able to see that farmers closer to the reservoir are using water excessively and often hording more than their fair share in storage tanks. The shallow gradient of the channels means that water flow is relatively slow allowing them ample time to intercept it. Charras, Lockhart and Morris, made the same conclusions:

"Farmers within the Zejtun area, and close to the water source at Habel-Abjad, had a very irresponsible happy-go-lucky attitude to the water scarcity problem, leaving little or no water for those further down the water channel network [Plates 6.5. to. 6.8.]. Another major problem was that the channels were often not built at a steep enough gradient to allow water movement anyway.... farmers further down the water channel network steal water from the reservoir [since they receive little].... many complaints are made to the three men responsible for the up-keep of the reservoir, but little is done to curb this theft." (Morris, 1994, p.10).



Plate 6.5. Near the Habel Abjad supply area periphery. Cultivation becomes more difficult because water is less accessible.



Plate 6.6. Habel Abjad supply area periphery. Cultivation is not possible due to water scarcity.



Plate 6.7.
Habel Abjad
supply area
periphery.
Land has been
abandoned.



Plate 6.8.
Habel Abjad
supply area
periphery.
Water channels
are permanently
dry in summer.

Plate 6.9.
Near the
Habel Abjad
reservoir.
A farmer is
using water
excessively.



Plate 6.10.
Near the
Habel Abjad
reservoir.
A farmer is
using water
excessively.





Plate 6.11.
Habel Abjad
supply area
periphery.
Drip irrigation
is used to
conserve water
supply.



Plate 6.12.
A water supply
distribution
valve at the
Habel Abjad
reservoir.

Poor irrigation methods exacerbate the problem. Those nearest to the reservoir tend to apply water in furrows (Plates 6.9. and 6.10.), while some use sprinklers. The windy regime and high evaporation rates make water applications inefficient, but these farmers, SASTP sources (1993) informed me, do not care as they personally receive plenty of water. Further away, some farmers have tried to make what little water they have go further by using drip irrigation systems (Plate 6.11.).

Short and Tricker (1994) in their study of 'Technical Change and the Survival of Family Farming in Malta', said that,

"Of the 460 [farmers] listed, 52 were eliminated on the advice of Malta's Department of Agriculture because of a dispute over water in 1991." (Short and Tricker, 1994, p.215).

These are farmers in the Habel Abjad supply area. They are further away from the reservoir and so receive less water than those nearest to it. From my study of the area, farmers closest to the reservoir had water and most said they had plenty of water. Few knew or were willing to admit that their use of the water was affecting those further away or that there was any conflict.

One farmer, whose land is not close enough to the reservoir to ensure that he always has water whenever it is supplied, told me that today he wasn't going to water his land, but he saw that there was some water in the channel and so he did. He saw it as a rare opportunity. He told me that the farmers do argue, however, "Not all farmers know that others don't have." He was not fully aware of the extent of the problem himself.

Another farmer told me that farmers are always arguing over water. Another said that farmers are always asking for more water and those around him always ask for more than he has himself. A dairy farmer, in the area,

told me, "During the irrigation season that's when they quarrel because everyone wants water.... There's too much wastage.... co-operation is a long way off."

A farmer, who is sufficiently close to the reservoir to almost always receive water, told me that those who were further away, "Have to wait for tomorrow.... it's a problem in a way.... but if you wait they may get tomorrow."

His words are little comfort to the likes of one full-time farmer at the periphery (Plate 6.6.). The channels supplying his land are always dry. He has to use very saline water from a borehole. He said that arguments over water were frequent and he often complains to those closest to the reservoir but to no effect. The fields around him were deserted and barren. He said that the other part-time farmers around him were not here because there is no water in the summertime. His situation is typical of many of those farmers at the periphery of the supply area, a conclusion that was also reached by Short and Tricker (1994).

6.2.4.2.2. Conflict between farmers and the authorities

There is a tense relationship between those that produce the water at the SASTP and the farmers. One farmer told me that despite numerous calls for help by the farmers, they are mostly ignored by the SASTP authorities. On the flipside of the argument the authorities say that the farmers have only themselves to blame. A source at the SASTP (1993) told me that, "The farmers near a reservoir try and hoard water by filling their own little reservoirs. It's every man for himself. The farmers compete vigorously for water and most complaints to the SASTP are from farmers downstream who get nothing most of the time. People come to the plant with shotguns demanding water.... Water to these people

is like giving them gold. They pay very little for it so if you cut off their water supply, it's like cutting off their legs.... They've got three crops growing during the year and still grumble. They get water for almost free and make a profit and still complain."

Farmers also complain and make threats at the Zabbar Agricultural Extension Office. While visiting the office, conversation was interrupted several times because farmers were coming in to complain about the lack of water or someone else's greed and misuse. One was threatening to pull down water channels if he did not get his fair share of the water. Another angry farmer entered shouting, cursing and warning that some of the farmers were close to shooting each other and some were threatening to beat each other with shovels. He was evidently not bluffing because another two farmers came in later with exactly the same warning. The previous week, a farmer, in a fight with another farmer over water, went to the police and a sergeant had to settle the dispute (ibid).

One source at the Zabbar Office explained his task in trying to mediate and resolve conflicts: "There's this seventy year old man who comes in all the time and threatens me. They come here and say that I should put water in the reservoirs. I need to keep my cool, especially in the peak season: March to April.... Drip irrigation has helped to lessen the conflict.... The farmers often go to the newspapers to complain about us."

Many farmers complain about the quality of the water, saying that the water with which they are supplied is too high in chlorides, although there have been no adverse effects on crop growth or quality. The authorities put such complaints down to the argumentative nature of the farmers (ibid).

However, some complaints are justifiable given the SASTP's reputation for production failures and the alleged apathy of the workers there. A part-time farmer,

supplied by the Habel Abjad reservoir, told me that, ".... sometimes they have a fault and it takes a fortnight to repair it.... they say they are waiting for a spare part from England.... On the other hand it's not treated urgently - they don't pay overtime.... They just work from six-thirty till one 'o' clock.... so they won't sort of carry on to finish the job there."

He also complained that water use is not monitored: "There are no people to see who's taking water and who's not taking water.... That farmer he takes water and he wants to take everyday and I go and tell him I want to water my plants, you know, and we start arguing.... It's not fair. They should be monitoring.... They [the other farmers] are having blows.... I don't see.... I heard people shouting to one another."

The conflict of interests between the SASTP authorities and the farmers has been acknowledged as a problem by the *Sewerage Master Plan for Malta and Gozo* (Ministry for the Environment, 1992) which should, hopefully, lead to an attempt at resolving the issues involved:

"Conflicting interests and responsibilities between the producers and distributors (SASTP) and the beneficiaries (mainly farmers) have led to low overall efficiency of the scheme." (Ministry for the Environment, 1992, p.10.2).

By April 1995, the farmers were still in conflict with each other and with the Zabbar Office.

6.2.4.2.3. Farmer vandalism and sabotage

The absence of security at the reservoirs means that farmers are free to turn off or on the gate/distribution

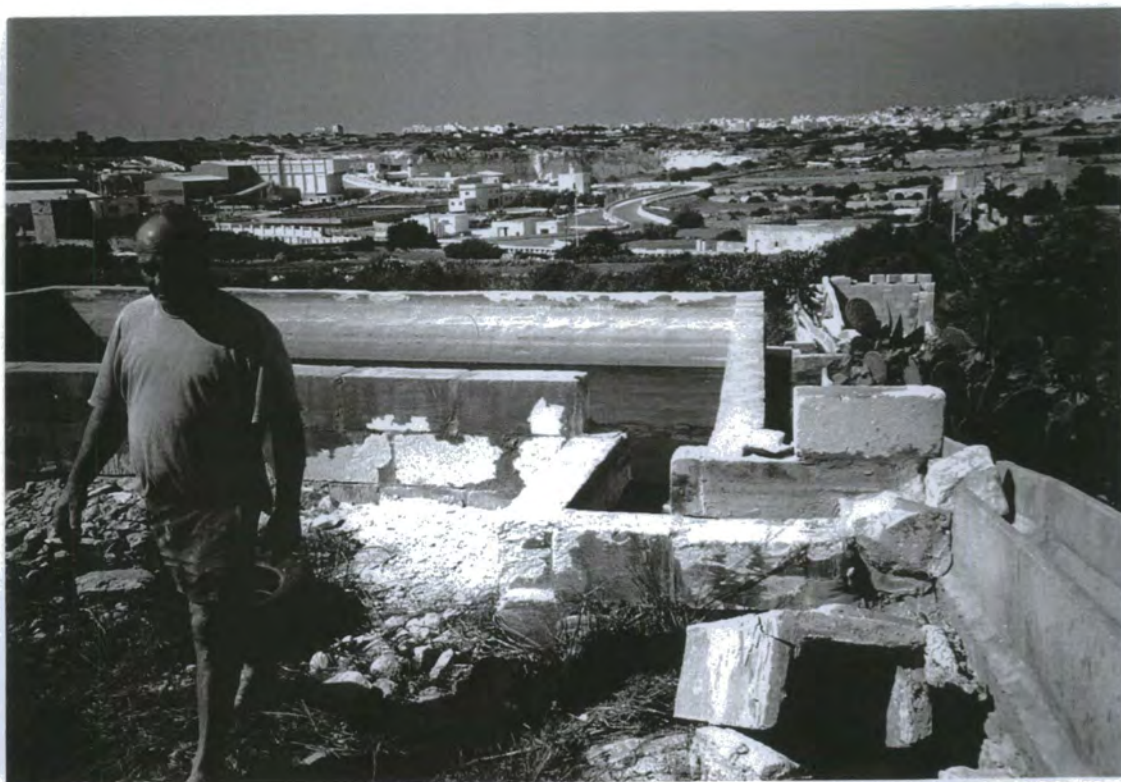


Plate 6.13. Water channels pulled down by farmers.

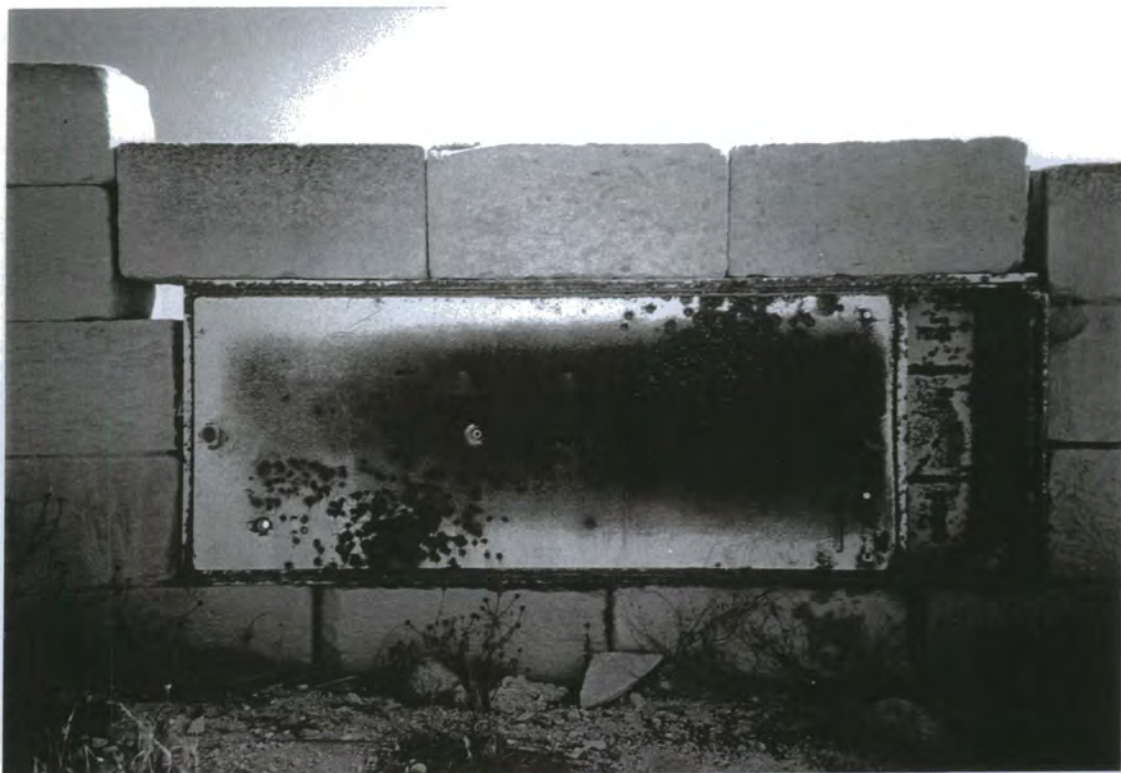


Plate 6.14. Gunshot markings on a reservoir wall.

valve and hence, stop or start distribution. This problem is greatest at the Habel Abjad reservoir (exacerbating the conflict there) where there are two water outlets for two different irrigation areas (north and east of the reservoir). If water is being distributed to one area, often farmers from the other area will not wait for their turn and take distribution into their own hands. Farmers frequently close the distribution valve (Plate 6.12.) (and sometimes remove it so that it cannot be opened) for the area which is not theirs and open the one which will allow water to reach them.

Vandalism by farmers, usually to the distribution system (Plate 6.13.), is common. Either it is to seek harm or revenge to other farmers or to harass the authorities. In the latter case, there are visible signs where reservoirs have been peppered with gunshot (Plate 6.14.), in what seems to be some act of violent rage.

6.2.4.2.4 Maintenance problems and conflicts

The area served by the SASTP is like a maze of stone rubble walls. For the SASTP authorities this is a major problem when it comes to maintenance of the distribution system, especially when the farmers do not report any damage. Furthermore, with crops growing in the farmers' plots throughout the year, it is hard to gain access at all times. Hence, problem solving is slow and the farmers blame the authorities. One argued that, "The wall isn't good and the man that work the wall doesn't do it good." Another complained that, "They don't care about them [the channels] anymore.... because they let them leak.... They used to come before but now they don't....."

Tension exists between the managers at the SASTP plant and field workers. It is difficult for the managers to monitor maintenance teams in the field. A SASTP source (1993) informed me that workers are slow in their work

and take long breaks because they know they are not being watched.

In addition, there are problems with obtaining results from workers at the plant. A SASTP source (1995) explained: "Here it's the usual thing. I started to try and teach these people to convert from breakdown to preventative maintenance. They did not want it because it means more work because it means them coming over [to the plant] more often. They like to work at night,".... when the managers are not there to monitor them, a problem faced by plant managers world over (ibid).

6.2.4.2.5. Bidni: a case study in conflict prevention

In contrast to the Habel Abjad area, water equity in the area supplied by the Bidni reservoir is relatively better and conflict mostly prevented as a result. There are a number of reasons for this:

Firstly, the volume of water supplied, as a ratio of the amount of land irrigated and the number of farmers served, is better proportioned. The agricultural area served (approximately 240ha) is much smaller than the Habel Abjad supply area (so there is less chance that those furthest from the reservoir will be without water. There are approximately 50 farmers satisfied by Bidni (Lockhart, 1994) while 52 are in dispute in the Habel Abjad area (Short and Tricker, 1994).

Secondly, water equity is aided by the fact that most of the supply area is located on the two slopes of a ridge, with the reservoir sitting at the top of the ridge. The channel gradient is steep and so water flows quickly, hence reaching the end of the channel quickly. There is little opportunity for those closest to intercept more than they need (Charras, 1994; Morris, 1994; Lockhart, 1994). Water reaching the end flows into a small man made reservoir (also containing rainfall and run-off) and is pumped back up to the reservoir for re-

use (ibid). As previously stated, some of the land on the south-west facing slope is also supplied by the Habel Abjad reservoir via a secondary pipe from the reservoir. Ironically, this contributes to the shortage in the Habel Abjad reservoir's main irrigation area.

"Irrigation channels and wells were generally well kept and, the land.... appeared quite fertile." (Morris, 1994).

"Habel Abjad on the other hand experienced less fertile land with distance from [the] reservoir as water in the channels ran out." (Charras, 1994).

In their joint study, Charras, Lockhart and Morris (1994) state that farmers,

".... told us that.... the water troughs were well maintained, as all were repaired over the winter months. The water from Bidni is monitored and delegated to each slope on a daily basis - north-eastern flank [slope] receives water on Tuesdays, Thursdays and Saturdays, the south-western flank receives water on Mondays, Wednesdays and Fridays. Sabotage of the water supply was unheard of.... The channels were almost over-flowing with fast-flowing water...." (ibid).

It would appear that the better farmer-SASTP relations in this area are a result of the farmers being satisfied and hence, unlike those from Habel Abjad, they present less trouble for the authorities (ibid).

Water is still wasted and its availability at a cheap price does not help. Irrigation is mostly by ridge and furrow along fields and sprinklers. Leaking channels were observed, as were spillovers into an adjacent road from channels due to fast moving water and turbulence where channels turn corners of up to 90° (ibid).

6.2.4.2.6. Conflict between the authorities
over responsibilities

When interviewing the authorities at the SASTP (1993) I suspected tension between themselves and the DA and asked if there was any conflict between them. The answer was evasive: "They basically tell us which reservoirs to pump and they take care of the distribution [past the reservoirs]." It seemed that at the SASTP they were not satisfied with accepting the responsibility of having to maintain the distribution channels and to try and resolve the conflicts. They are trying to shift responsibility for both tasks over to the DA, which is presently only responsible for water distribution from the five reservoirs. In some ways SASTP's argument makes sense: "It would be a good idea for the Department of Agriculture to charge for the water because we know how much we pump, but what each farmer consumes is their problem. It should be easier for them to handle the distribution [maintenance] problem since they are in contact with the farmers."

The role of the WSC has also come into question. A WSC source (1993) explained: "Sant' Antnin has always been a point of conflict between the Water Works [WSC] and the Public Works [the Drainage Department (responsible for sewage)] because everyone likes to be congratulated in his efforts, but as soon as a problem arises everyone says it's someone else's responsibility."

The point being made here is that it is still ambiguous as to whether overall management and responsibility of the SASTP lies with the WSC or the Drainage Department.

The SASTP authorities also expressed bitter emotion over the fact that although they produce the water, the revenue from the water was going to the WSC: "The Agricultural Department distributes it but the WSC takes

all the revenue and do nothing." (SASTP source, 1993). These conflicts of interest cause ineffective management of problems.

The DA expressed discontent about the management personnel and workforce at the SASTP. The Department sees them as irresponsible and one source (1995) told me that, "We don't have people at the plant who know what are the needs of agriculture and so they don't care less. It's just work to them. Even if we lose two hours of pumping time it is reflected badly on our distribution." For example, a chlorine pump broke down at the plant and although it takes half an hour to repair such a fault, it took the workers there twelve hours. The excuse that is usually given is that the electric pumps are not functioning at all times due to low power supply. "I say that the people who take care of this equipment should be agricultural people." (ibid).

In summary, presently, the running of the plant is under the jurisdiction of the Drainage Department, distribution under the SASTP authorities (up to the satellite reservoirs) and the DA, revenue collection under the WSC and maintenance of the distribution channels under the SASTP authorities. Farmers that go to the DA to make complaints are told to go to the plant to complain (ibid). It is clear that responsibility for all these tasks would be better managed by one authority.

A DA source (1995) agreed with me: "It would be better if one body did all the work.... We have too many heads with different ideas." (ibid). Because of this, disagreement often occurs. "They say they can't supply water because of a power cut. It may not be true, but I don't know. The engineer will stick up for them because they're his men.... The biggest consumer is agriculture. Since the Department of Agriculture is the biggest consumer he should be responsible, then there will be more commitment to the project." (ibid).

However, despite this source's opinion, the DA is in



favour of shedding as much responsibility as possible because of the financial burdens posed (DA source, 1995).

6.3. CONFLICTS BETWEEN SECTORS OF THE ECONOMY

With water being scarce in the Maltese Islands it is not surprising to find that the competition for water between the domestic, agricultural, industrial, tourist and commercial sectors is leading to conflict in certain situations. Conflict is restricted to a few isolated cases, while the competition exists on a more general scale, for if one sector did not consume as much as it did then there would be more available for other sectors.

In an interview with a manager at Malta Dairy Products, one of the largest water consuming industries in Malta, I was told that competition exists, ".... because it is the fact that we [Malta] produce a certain amount of water which has to be shared. So from that point of view there is competition because water is simply limited. For example, if there was no tourism, industry would not have any problems and vice versa."

The following discussion illustrates the kinds of conflict that exist between the sectors of the economy in Malta. Case studies are used to illustrate this.

6.3.1. Conflict between the domestic and tourist sectors

The competition between the domestic and tourist sectors over water is intense during the summer:

"The trends and impacts of tourism development can be assessed in terms of direct land coverage.... These have related loadings on infrastructure services, such as increases in sewage discharge to the coast and water

requirements, in competition with the requirements of other sectors of the economy." (Ministry for Development of Infrastructure, 1990a, p.31).

This competition has been mostly to the detriment of the domestic sector, which has, at times, had to sacrifice its own water supply. This was especially the case in the early 1980's, particularly 1981 when water scarcity was a grave issue. Oglethorpe (1982) stated that tourists were,

".... being blamed for the worsening water crisis. British tourists in particular are used to copious quantities of water, and are often oblivious to the gravity of Malta's water problems." (Oglethorpe, 1982, p.41).

Boissevain (1977) has also observed that,

"With the growth of middle class mass tourism, and the increasing popularity of holiday flats and villas instead of hotels, certain points of friction will develop." (Boissevain, 1977, p.41).

An NTOM source (1993) informed me that, "There is an increasing attitude amongst the Maltese that tourists are ordinary people and not 'demi-gods'. Years of colonial rule had made the Maltese subservient but now they say, 'Let's not stretch things to accommodate these people, especially if it's going to be to the detriment of us local people'. Tourists are treated as equals and they compete for resources like we do. The attitude is, 'Let's be cautious because they use things that we have a right to'."

Inguanez (1994), points to the large number of studies of the social and cultural impact of tourism undertaken since the late 1970's as evidence of this

change in attitude in host countries. He says:

"A wide range of impacts has been identified. Such facts as crowding, congestion, noise, litter, uncontrolled development, environmental degradation were indicated as having negative impacts on the locals, whose reactions ranged from a diminished sense of hospitality to open hostility. It was found that a general resentment towards tourists was created by the ostentatious living of wealthy tourists." (Inguanez, 1994, p.346).

WSC sources (1993) informed me that the "ostentatious" and lavish use of scarce resources, particularly water and electricity by tourists is frowned upon. Most of the Maltese residents interviewed complained that tourists were consuming large amounts of Maltese water, but because of the importance of tourism to the Maltese economy, they were ready to accept this. The following are some views interviewees gave:

"....If we don't have tourism we've had it because it's our main [economic] resource...."

"Tourists take more water.... tourists wash four or more times a day...."

".... they [tourists] may have three or four more showers per day. They don't care.... they use the water as much as they want. They don't know what it means 'cos back home they've got loads of water."

"Now we are having many tourists and the little water we have, we are having to share it with the tourists.... especially in the summer.... I think they create a little bit our problem.... because they come with the mentality that in their country they can use as

much water as they like. When they come here they think they can use it the same.... we respect tourists and they like coming here and it's a part of our economy...."

"We get tourists you see and they waste a lot of water.... it's not a problem because when they come they give money."

"They [tourists] want to have swimming pools and they use more than the rest of us.... if we're short of water it's not because of them."

"The tourist is not a burden. Our economy is based on tourism...."

"Tourists, they do waste water, every time they go in the sea they have showers, you see.... it's a problem, but tourists spend money when they comes to Malta. They waste water but they spend money on other things."

"They couldn't care less. They're used to having a lot at home so they think they can do the same here...."

"Tourists use much more water.... They are not accustomed to our weather so when they get very hot they get a wash.... when summer comes it is [a problem] because we already have shortage.... It might be because of the tourists, it might be because of us.... We've got very little to offer to the tourists.... Tourists are a problem in every way except for the economy.... for us it's [the water problem] getting worse year after year...."

Letters to newspapers complaining about tourist consumption are sometimes written. Figure App.3.6.1 shows two such letters and the following is an extract from another:

"A million tourists per year, whether big spenders or those on a shoestring budget, all use up precious water and when I hear tourists running their baths it seems the water flows endlessly -while I take showers to economise on water. Is it not possible to install some sort of limiting mechanism either at the airport to limit the tourists or in their bathrooms to limit the water consumption?" (*The Sunday Times*, 22/8/93, p.15).

In one of several Ministry of Tourism national surveys (NTOM unpublished data), Maltese people were asked to comment on what was the extent which they perceived the impact of tourism to be on Maltese resources and infrastructure, including, water supply, electricity supply, road traffic and sea traffic. For the summer months, 71.1% of respondents thought that tourists had a negative effect on the water supply. However, during winter this figure was only 28.5%, while the majority of respondents were either indifferent (34.0%) or did not know (33.5%) (*ibid*). These results show two main things: Firstly, that the Maltese are aware that tourists are having a negative impact on their water resources; and secondly, while they are unsure or indifferent about the impact of tourism on water supply during the winter, they are aware of the problems caused by the seasonality of tourism.

As a part of the *Malta Structure Plan* (Ministry for Development of Infrastructure, 1990a), studies were made of public attitudes towards, social, environmental, economic and commercial issues. The aim was to identify areas of concern and the level of public interest. The environment was found to be of greatest concern and although 96% of respondents agreed that,

".... tourists in the Maltese Islands are essential to the economy of the country, 81% agreed that 'tourists use too many resources such as water, electricity and

food'." (Ministry for Development of Infrastructure, 1990a, p.11).

The report found that,

"Some categories of respondents felt very strongly about tourists' use of resources: those aged 35 to 54, married persons, and those who completed their education between 21 and 25 years of age all felt strongly in 90% or over of respondents." (ibid, p.14)

This may well be because the first two categories are likely to be those most directly involved in decision making for domestic water consumption, while the third are generally the most educated and likely to have a better understanding of the water problem than others. The need for improving public services, including water supplies, were frequently mentioned (ibid).

The survey suggests that respondents may be feeling that the economic benefits of tourism are not without an environmental and social cost.

A more recent survey (Department of Tourism, 1992) of the local community's perceptions of tourism was conducted in the summer months of 1992. A total of 523 respondents from all areas of Malta and Gozo were interviewed:

"Respondents were asked how tourists affect the infrastructure and other resources in the summer and winter months... One can note the comments regarding water... There is a greater level of 'indifference' towards tourism in the winter months than in the summer months... This marked change clearly shows that tourism in the summer months is not a sustainable activity since it creates a much higher negative reaction, meaning that this activity has brought increased pressures which during the winter months were not so pronounced"

(Department of Tourism, 1992, p.5).

The results of the survey show that 71.1% of respondents felt that tourism had a negative impact on water resources in the summer months compared to 28.5% for the winter months (ibid).

Again, in a recent study of local perceptions of tourism impacts in Gozo, 85.4% said that they considered tourism to have a negative impact on their water resources in the summer months, while this figure was only 35.4% for winter months (Ellul, 1994).

Given that the carrying capacity for tourism in Malta was exceeded in 1994, any future increases are likely to be to the further detriment of the domestic sector. Furthermore, there may be detrimental economic effects given that although tourist numbers are increasing, per capita revenue from tourism decreased. Data from 1992 shows that there had been a 12% increase in tourist arrivals and income from tourism was Lm180.5 million compared to Lm175.3 million in 1991. However, it was estimated that per capita earnings from tourism had fallen by 8% in 1992 (Central Bank of Malta Quarterly Review, 1993, p.13).

Many Maltese people are beginning to realise these facts and there is an increasing feeling that Malta needs fewer tourists that spend more per capita.

A study by the Product Development Section of the Department of Tourism (1993) of residents' perceptions in Mdina found, like previous studies, that:

"There is a high percentage of respondents that feel tourism is creating adverse impacts on the availability of water and electricity. 88% feel tourism is a cause to the lack of adequate water supply..." (Department of Tourism, 1993, p.5).

The study concludes that,

"It is clear from the responses given, that the Mdina residents feel that tourism in the summer months has reached a scale where the community is getting little in return..." (ibid, p.5).

The NTOM has long realised this fact of Maltese mass tourism and is now trying to make Malta appeal to a wider market than its largely British based one in an effort to try and attract 'quality' tourists from new markets, particularly the United States. This strategy is discussed in Chapter 8 (pp.713-716).

Inguanez (1994) describes essentially what happened in Malta:

"The economic benefits accruing from tourism were so attractive that they blurred the vision of anything else. This euphoria was bound to end. Indeed it did. And it was followed by disenchantment. It was becoming evident that the tourist industry had a price-tag attached to it. The most obvious and polemic issue which became the subject of hot debates was environmental degradation. Osborne (1978, p.19) describes London as a tourist slum and *The Evening Standard* gave open vent to his strong feeling:

'Tourists, whether they be Americans, Germans (especially), Japanese (perhaps most of all), even the biggest nation of geniuses in the world - the Italians, all are human garbage...'" (Inguanez, 1994, p.348).

Osborne speaks of tourists in general. In Malta, water plays a core part of the debate over the impact of tourism on environment and resources. Authorities and local people have questioned whether the benefits outweigh the costs. They are in a dilemma, for although they would like to see tourists use water more resourcefully, the worry is that tourists will not like such constraints to their holiday habits and go

elsewhere. These worries may be in vain, the reasons for which are discussed in Chapter 8.

6.3.2. Conflicts between the agricultural and industrial sectors

There have been a number of cases in Malta where conflicts have occurred because of the displacement of agricultural water supplies for the use of industries. The agricultural sector has been angered by this and sources at the DA (1993) argued that it is unfair that industry has been looked favourably upon, while agriculture has lost out. According to agricultural interviewees (1993), there was a time when farmers were supplied with water by the Government, approximately ten to fifteen years ago. Today, the same has happened with second class water, where industry is in need of it, priority will be given over the agricultural sector.

For example, sources at the DA (1993) informed me of an issue that has for a long time angered the farmers around Qormi: "There is a Coke factory in Qormi that pumps from a borehole that was previously used for agriculture. The borehole must affect the surrounding water supply for agriculture. The rate of pumping will be increasing the aquifer salinity levels. Malta is very small.... Even at the Government farm nearby [at Luqa], I've seen salt encrustations on the soil." The Coke factory he referred to is owned by The General Soft Drinks Co. A source (in a managerial position) (1993) at the company, however, in turn made the same complaint: "What's happened now in the last five years, [is that] a lot of illegal boreholes have sprung up and since they're all tapping the same water table, it has caused a decrease in the quality of water, because of this extraction." As more and more people tap the same source

(the MSLA) its decline in quality is leading to conflict between the various consumers.

Occasionally industrial or commercial activities may unintentionally pollute or disrupt agricultural water supply. This can also lead to conflict. Figure App.3.6.2. is an example, when water supply for some farmers in Gozo was disrupted by quarrying, a case similar to one in the United Kingdom where quarrying was accused of undermining Bath's historical spring water supply (*The Observer* 27/8/95, p.7).

The following are examples of conflicts arising where industrial activities cause either a reduction or disruption in the water supply of agricultural activities.

6.3.2.1. Conflict over spring water in the Girghenti Valley

The Girghenti Valley (Plate 6.15.) is located in the south-west of Malta, near Siggiewi (Spiteri, 1992a; 1992b). Conflict has arisen over water extracted from an underground spring that flows the length of the valley. The spring is the main source of irrigation water in the valley and is shared by all the farmers. Pumping days are allocated for farmers according to the amount required.

The conflict began in 1992 when a part-time farmer, Farmer 'A', located up-valley, near the spring source, sold his right to pump water to the Tessons-Sullivan company (commonly known as Tessons; anonymity is pointless since it is known that only Tessons bottles water from the valley) for their subsidiary's (Aquatess) bottled water, *Flavia*. A source at the DA (1993) told me that, "The company is overpumping the water and it affects the supply of the spring water a short distance away. He [Farmer 'A'] should not have sold it really, but the WSC had approved it and now there is a conflict between the farmers down-spring and the company."



Plate 6.15. The Girghenti Valley.

As a general rule amongst farmers, the extraction of water from a borehole for transportation more than ten metres away from the land is not permitted, but somehow Tessons obtained approval (ibid).

A WSC source told me that although Tessons and Farmer 'A' started to pump legally when they obtained their permit in 1992, this was not necessarily the case later on since all permits are legally subject to renewal at the end of each year. Tessons never applied for a renewal so their permit expired at the end of 1992 (ibid). This source informed me that, "The problem is not so simple because politicians get in the way." (ibid), implying that they may be involved in the conflict or are hindering its solution.

During January 1993, about thirty of the farmers downspring of the valley had collectively begun to protest at the WSC against the extraction of water by Tessons, which they claimed was reducing their supply. The farmers also complain at the Siggiewi Agricultural Extension Office.

A source in Tessons' management personnel, claimed that the company does not take excessive amounts of water and only extracts during the specific pumping days allocated to Farmer 'A'. Extraction (Plate 6.16.) is approximately 40m³ per day in summer and 40m³ once every four days during winter, due to the high levels of nitrates leached into the water by heavy rains. The company sells approximately 27m³ of *Flavia* per day. He said, "If we stop taking water and don't tell them I bet they'll still complain."

Farmer 'A' suspected that jealousy on the part of the farmers had a lot to do with their objections since he is making money out of the water and they are not. His pumping times are restricted by a seventy year old agreement, so that he pumps only on Monday, Thursday and Friday. He shares his borehole with Farmer 'B' (Plate 6.17.), another farmer (and a friend), who pumps on

Plate 6.16.
The Aquatess
water bowser.



Plate 6.17.
Land near
the spring
source. Water
availability
allows good
crop yields.



Plate 6.18.
Farmer 'C''s
wind pump.



Plate 6.19.
Farmer 'C''s
electric pump.

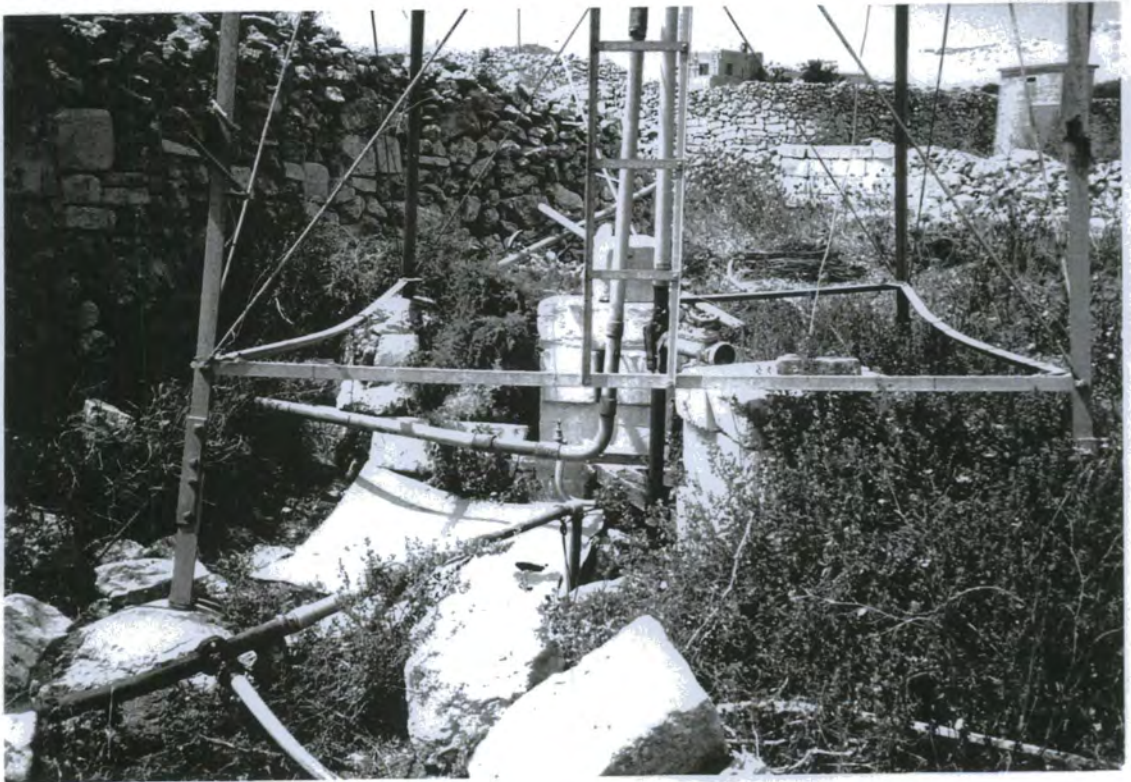




Plate 6.20. Farmer 'C''s land. Water availability allows good crop yields.



Plate 6.21. Downstream (Girghenti) at the spring line/bed. Water usually flows into the well but the bed is dry.

Sunday, Friday morning and Tuesday.

Farmer 'C', also close to the spring source, is pumping water with an electric pump (Plates 6.18. to 6.20.). Farmer 'A' blamed Farmer 'C' of overpumping and causing the reduction in water downstream. However, a WSC source (1993) informed me that Farmer 'C''s pump has been regulated to one-third of its capacity to try and match the output of a windpump. Their investigations found him in order.

Farmer 'A' stated that a second spring in the valley (less significant) supplies the farmers downstream with ample water, although when asked why the valley was dry downstream, he blamed Farmer 'C' of excessive extraction from this second spring too.

Farmer 'A' claimed that the farmers down-valley are threatening him with the backing of an important Member of Parliament. Many of the farmers, most of whom are from the nearby village of Siggiewi, are friends with this politician and he relies on their support. Farmer 'A' said that the politician has a friend at the DA that is helping the farmers to revoke his (Farmer 'C''s) pumping permit. He accused both men of trying to get the Prime Minister to intervene and stop him.

In contrast, Farmer 'B', according to Farmer 'A', was assured that he would not in anyway suffer because the wife of the official at the DA is good friends with Farmer 'B''s wife. Furthermore, Farmer 'A' suspected that the farmers have been taking gifts to the Prime Minister in order to win his favour. However, he said that the WSC do not try to stop him because, "They know I am in the right."

Farmer 'C' is a full-time farmer. Contrary to Farmer 'A''s statement, he said he only extracts from the main spring. He was keen to tell me that Farmer 'A' and Farmer 'B' are guilty of excessive pumping and are causing a reduction in his personal supply.

When Farmer 'C' installed his electric pump he

became a victim of arson when, he claimed, some of the farmers downstream set fire to and burnt one of his storage huts and the crops inside. They blamed him for their water shortage.

Farmer 'B' is also a full-time farmer and owns a reservoir. He admitted that he has a plentiful supply of water but he and Farmer 'A' do not pump on Wednesdays and Saturdays to allow water to flow downstream.

At the Siggiewi Agricultural Extension Office, sources (1993) suspected that Farmer 'C' obtained permission to use an electric pump, and Farmer 'A' to sell water, through contacts and favours. They considered both Farmers 'A' and 'C' to be the cause of the problem because although the conflict began two years ago when Farmer 'A' sold his water rights, it was exacerbated when Farmer 'C' obtained permission to use an electric pump. It seems that during the summer of 1993 the conflict worsened due to the extremely low rainfall that year (ibid).

The farmers downstream argue that their campaign to stop Farmer 'A' from selling water is being ignored by the WSC and the DA will have to take it directly to the Prime Minister on their behalf (ibid). Several suspected that Farmer 'A' may have permission to do as he likes from a higher authority because even Government Ministers cannot stop him. They see Farmer 'C' as a problem too. They claim to know from experience that Farmer 'C' is definitely pumping far more than his allocated time.

A part-time farmer at the bottom of the valley was angered by the consumption upstream. He generally swore a lot and said that it was useless fighting about it since he had got no response to the complaints he made at the WSC in December 1992. He wanted more people to know about the problems since the issue is a silent one, downplayed by the authorities. He went with a group of farmers to *The Malta Independent* newspaper and their case was printed in February but it did not remain in the

public eye.

Another farmer at the bottom of the valley on the spring line (Plate 6.21.) said, "Before the electrically driven pumps, water used to gush out along the canals.... for the two days he's [Farmer 'A'] not supposed to pump, he still does.... The Government actually granted him more land, that means more land to water.... because he's a friend of the Government.... it's always like this in Malta." Just a glance downstream tells that the farmers are suffering from drought (Plates 6.22. and 6.23.)

Another farmer, located approximately half way down the valley, said that his supply had been erratic ever since Tessons started taking water. Normal water levels in his channels had dropped significantly and he had to construct a cistern to store water when it was available (Plates 6.24. and 6.25.). He accused Farmer 'C' of continuously pumping day and night and said, ".... he's got friends in the Government.... and the other one is selling water. They can buy anyone.... the Government, everything.... Yes, a corruption!"

He told me that during the 1980's water crisis, the WWD used to extract water from the spring for domestic consumption leaving water for the farmers only on Wednesday and Saturday. This occurred for about two years and now they are having to again sacrifice their water for domestic and commercial interests.

He said, ".... [Farmer 'A'] knows the Minister.... How can you blame him.... Everybody does good for himself, they don't care about others.... If I was him I'd do the same, [given] that there's the Government or the Ministers behind me... Let's face it."

In trying to throw some light on the arson attack on Axisa's property, I asked him if any of the farmers had tried to take the matter into their own hands. He said, "I risk losing my money, my liberty, go to jail for water? Forget it.... I will if I was a full-time farmer.... only thing they [the farmers] can do is put



Plate 6.22. Downstream (Girghenti). The valley is experiencing drought.



Plate 6.23. Downstream (Girghenti). Cultivation is difficult.



Plate 6.24. Mid-valley (Girghenti).
Water levels in channels have dropped.



Plate 6.25. Mid-valley (Girghenti). A
cistern, constructed due to water scarcity.

diesel in the well.... crops won't die because it stays in the soil. It won't be useful for drinking water."

His suggestion of polluting the spring with hydrocarbons may have been something the farmers had in mind because after the second week in August 1993, Tessons issued a press release for consumers to return their bottled water after contamination was found in several bottles. *The Times* reported:

"Bottled *Flavia* mineral water is being withdrawn from retail outlets pending investigations by the Department of Health. A statement by the Ministry of Home Affairs said yesterday that the health authorities were investigating isolated complaints on *Flavia* mineral water in an effort to establish the extent and nature of the problem." (*The Times*, 17/8/93, p.1).

A University source (1993) informed me that this, ".... was a bacteriological problem because, apparently, the source where they get their supply was contaminated with sewage, but there are ways and means of disinfecting water." However, due to the lack of development in the area, I presumed that it is unlikely that the area needed a sewage system and suspecting sabotage, proceeded to make enquiries about this matter at the WSC where I was informed that a sewage spill was reported by Tessons. However a WSC source (1993) informed me that as far as he knew there was no sewage/drainage system in Girghenti. He also suspected sabotage by the farmers downstream.

A DA source said, "I will tell you unofficially that we are going to stop [Farmer 'A'] and Tessons. *Flavia* will have to stop." This source also informed me that when he read about the pollution of *Flavia*, that sabotage, ".... was the first thing I thought of."

At the WSC (1993) I was warned not to interfere with the conflict. It was described as a "hot potato" and I was informed that, "The dispute is being dealt [with] by

the groundwater board. I wouldn't like to comment too much on it.... I don't think you'll get any information because it's a very delicate dispute."

From my enquiries into the conflict during Research Period 2, I was told at the WSC that as far as they were concerned, Farmer 'A''s right to pump water had been suspended, so strictly he was breaking the law by continuing production. The matter was then in the hands of the police. I was also told that the contamination of the source in the summer of 1993 transpired to be sabotage as suspected and was again told not to "meddle" in the matter any more. A DA source informed me (1994) that to some people Farmer 'A' has a right to pump and that is why he has been getting away with it. Farmer 'A' told me that his permit had not been renewed and that he is to see the Prime Minister soon about the matter.

By April 1995 there had been little change in the conflict situation. Apart from Farmer 'A', most previous sources were reluctant or no longer willing to discuss the issue. A source at the DA (1995), who wished to comment no longer, said, "I don't think anyone will talk to you about Girghenti."

However, a source at the WSC (1995) said that the parties involved are trying to come to a compromise. Farmer 'A''s permit has still not been renewed but he is expected to pump again in the summer. He told me that several approaches have been tried to try and resolve the conflict. When asked what they were, he would not disclose any information. He told me that the crux of the problem is the WSC's inability to meter groundwater extraction. They hope to be able to do this eventually.

Another WSC source (1995), previously not interviewed, was wary about talking of the conflict. He told me that the case is being dealt with by the law and the WSC has asked the magistrate concerned to postpone the case from going to court so that a compromise can be reached without the need for a legal dispute. He did not

comment further and said, "I don't know how much I can tell you about this."

Finally I spoke to Farmer 'A' in 1995, who was now less eager to talk about his situation than in previous years. He told me that no progress had been made in resolving the problem. He had talked to the Prime Minister and nothing had happened since. In his opinion, those that have become involved with the conflict would like to see it end as soon as possible. He thought that no one cared or wanted to be involved anymore. He praised the WSC for understanding his needs but still criticised the DA for being influenced by political powers trying to stop him.

Who these political and official powers are cannot be disclosed because of the sensitivity of the conflict. Who was truly right and wrong was never clear but the most important points that were illustrated by this conflict are: how it scaled from local farmers in the valley to all the way up to Government bodies and Ministers; the large number of parties and accusations involved; and the duration and intensity of the conflict (which was at times violent and 'dirty') which in 1995 was still not resolved.

Finally, in comparison and contrast, the agreement between farmers in the Bahrija Valley (Plates 6.26. and 6.27.) and the Marsovin beverage company, which extracts water from upstream, means that conflict is rare, even when farmers experience shortages (DA source, 1993).

6.3.2.2. Conflict between farmers and industry over SASTP water

The use of SASTP water by industry at the Bulebel estate has been met with objection from some farmers in the south-east area. A DA source (1993) informed me that,



Plate 6.26. Agriculture in the Bahrija Valley.



Plate 6.27. A communal reservoir in the Bahrija valley

"The Ministry of Agriculture does not approve of their water going to industry but we can't do anything about it because it's under the WSC's discretion.... In the mean time we hope that they won't increase the irrigation water supply for industry."

A SASTP source (1993) said that farmers', ".... complaints are more about the quantities we give industry rather than the fact we give them it at all. The farmers here always grumble."

Sources at the Zabbar Agricultural Extension Office (1993) told me how the farmers have taken the matter into their own hands: "The rising main from Sant' Antnin to the industrial estate goes through the fields of farmers and it runs at the surface of the fields.... unauthorised offtakes occur by farmers whose fields the pipe runs through."

The SASTP authorities (1993) are aware of the problem and are in conflict with the DA over this issue: "The pipes from the reservoirs and the one to the industrial estate are one foot thick. The farmers have illegally been tapping them by making holes underneath and attaching pipes to their own fields." (ibid).

The DA, who have the farmers' interests in mind, say that this action is justified since the farmers need the water desperately. But for the SASTP authorities it creates problems when the reservoirs stop pumping water. Air gets in through these holes and when the water is pumped again, there are air bubbles in the pipe which cause it to vibrate, resulting in structural damage and bursts. I was told that, "We've had massive flooding. The farmers and the Department of Agriculture don't realise this." (ibid).

Were there enough water produced to supply the farmers and the industrial estate, then there would be no conflict. Sources at the Zabbar Agricultural Extension Office (1993) said that, "Industry pays a lot for this water. Farmers are the same all over the world in their

mentality. They always expect to get something subsidised or free. The industry doesn't mind the offtake. At the moment it's not interfering with production really."

Given the priority that is given to industry in terms of water supply, it is likely that it will receive more of the agricultural sector's second class water as industrial demand grows. If this occurs before any significant increase in the production of recycled sewage effluent (not expected until 2010 (pp.612-624)) then it is likely that this will further anger farmers and the conflict between the agricultural sector and industry over this water will excacerbate.

6.4. CONFLICTS BETWEEN CONSUMERS AND THE WSC

The WSC has been at the receiving end of complaints over their role in supplying the Maltese Islands with water, mostly from domestic consumers and the Opposition Party. In many cases the conflict has been political, borne out of contempt for those in Government, rather than genuine suffering or concern. This political aspect of the conflict is discussed in Chapter 7.

6.4.1. Conflicts between domestic consumers and the WSC/Government

The conflict between the WSC (and the WWD before it) and members of the public has spanned decades. This is not just because consumers are dissatisfied with the service provided, but because there has been very little trust placed in the activities and promises of the WSC. The fault lies partly with the WSC for not being open and honest in the past (WSC source, 1994). In 1995, when the WSC had begun to try to gain public trust and favour, mostly through the media (pp.647-650), one WSC source

(1995) stated that, "The WSC has a problem with public image. I've had people calling on the phone and swearing at me. I really try to give a good service. To overcome the image barrier, it's so difficult."

6.4.1.1. Conflict over water shortages and poor water quality

Since water is such a vital and frequent requirement any prolonged suspension in supply or drop in quality is bound to cause conflict between consumer and supplier, a situation all too familiar in the UK in 1995 (*Independent* 10/8/95, p.7, 22/8/95, p.13; *Independent on Sunday* 27/8/95, pp.16-17; *The Guardian* 1/7/95, p.8, 12/8/95, p.4; *The Times* 13/11/95, p.1&10; *The Sunday Times* (UK) 19/11/95, p.5)

In Malta, the WSC has a customer services section, which during water shortages is inundated with complaints from angry customers (WSC source, 1993). The best the WSC can do is send bowsers until the supply is resumed. But given that they only have three, it can take several days before a call for help is answered.

During the summer of 1993, a WSC source (1993) justified the seemingly never ending stream of complaints, which increasingly included Gozitan as well as Maltese customers. He said, "I would say that most of the complaints and what's written is generally justified but there is a tendency to make the problem look much bigger especially if it's written in the papers. That nobody cares about their problems is unjustified. People are not concerned with the general situation, just their own water supply.... There is also a mentality in the local people that everything has to be done by Government, even what has to be done by themselves.... They think of all developments as under one big institution.... Unless they've got this water main

extension, the public don't care. They don't see that it means going through and agreeing with another department.... There are some who say they have no water in the taps yet have full tanks. Because of public criticism they make it look as if the problems have expanded immensely."

There have been three years in Maltese history most notable for water shortages and quality problems: 1981, 1986 and 1993. Consequently, conflicts arose in each year between the general public and the authorities. Consumers expressed their anger via the WSC complaints section, or more publicly through, radio phone-in discussions, letters and articles in newspapers, and through public protests/demonstrations. Newspapers are the most accessible and common forum for public complaint and professional criticism. This justifies the large number of references to, and inclusion in Appendix 3 of, newspaper extracts.

6.4.1.1.1. 1981

Figures App.3.6.3. to App.3.6.5. show some of the letters of complaint to *The Times* newspaper during the drought in the summer of 1981. Most of those suffering were living in the north of Malta particularly Sliema, considered by many who lived there to have been long neglected by the Labour Government, since it was a predominantly Nationalist voting area (as is most of the north) (WSC source, 1993). The politics of these conflicts is discussed extensively in Chapter 7.

At the height of the conflict, a public water protest was staged by housewives on 12 August 1981, in Ta' Xbiex. They were particularly angered by the fact that some Government buildings in their area were being supplied with ample water while they had hardly any (*The Times*, 13/8/81, p.11). Full details of the protest are in

Figure App.3.6.6.

6.4.1.1.2. 1986

Water shortages and inevitably, water conflicts between the authorities and the public, continued in subsequent years culminating in the summer of 1986 when the number of letters to the press increased substantially, mainly from Sliema residents. Figure App.3.6.7. shows examples of such letters.

Housewives, mostly from Sliema, organised themselves to hold a public demonstration over water on 11 July 1986 at Castille Place, the office of the Prime Minister in Valletta (*The Times*, 9/7/86, p.15) (Figure App.3.6.8.). The intended peaceful protest resulted in violent conflict in which men and women were beaten by the police, Labour supporters and as one University source (1993) called them, "hired government thugs." (*The Times*, 12/7/86, p.15 (Figures App.3.6.9. to App.3.6.11)).

The Opposition Nationalist Party was in direct conflict with the Labour Government over this issue of water, moreso than any other issue of politics at the time (pp.573-577).

The conflict, verbal and physical continued through the summer of 1986, including aggression directed at bowser drivers who were unable to supply enough water for everyone who wanted it. The following is an example:

"Bowsers mobbed at Marsa [headline]. Marsa residents yesterday mobbed bowsers as they arrived to replenish long-empty rooftop water tanks. They demanded that the men in charge of the bowser should fill their buckets as well." (*The Times*, 14/9/69, p.10).

6.4.1.1.3. 1993-1994

As already discussed, by 1993, with a Nationalist Government in power, residents in the south, a predominantly Labour voting area, were complaining over persistent water cuts and poor water quality. The numerous letters of complaint to newspapers were again a good measure of this conflict. Figures App.3.6.12. to App.3.6.14. show some of these complaints, many of which were written long after the summer as shortages still persisted in several settlements. Since the shortages and low water pressures were almost perennial in the towns of Marsascala and Xghajra, accusations of their neglect by the Government, due to their political affiliation to the Labour Party, were widespread (pp.577-587). Figures App.3.6.15. to 3.6.18. show some of the letters from Marsascala and Xghajra.

Many residents in the south also complained about the saltiness and brown rusty colour of the water they were receiving (Plate 6.28.). Figure App.3.6.19. shows some letters of complaint. Discolouration of piped supplies is very damaging to customer relations (Speed, 1988).

Consumers tended to lay the blame for the water problem with the WSC who received a lot of complaints in the press from them, particularly their customer services section and bowser service. Figures App.3.6.20. and App.3.6.21. illustrate this. Corrupt WSC bowser drivers were beginning to take advantage of people's desperate situation and began to ask for bribes (*Island Sound Radio* news, 11/8/93). Those who could afford to pay for the bowser would get water and those who could not would be without.

There was considerable media criticism and coverage of the WSC's alleged incompetence, the Government's role, and the water problem in general, from journalists and other writers in 1993. This helped to create the very



Plate 6.28. An angry Marsaxlokk resident shows his rusty tapwater.



Plate 6.29. The Vittoriosa water protest march.



Plate 6.30. MLP Leader, Alfred Sant (centre, white shirt) supported the Vittoriosa march.



Plate 6.31. The Vittoriosa water protest march.



Plate 6.32. The Vittoriosa water protest march.



Plate 6.33. The Vittoriosa water protest march.



Plate 6.34. The Xghajra water protest march.



Plate 6.35. The Xghajra water protest march.



Plate 6.36. The Xghajra water protest march.



Plate 6.37. The Xghajra water protest march.

negative image of the Government and the WSC. Figures App.3.6.22. to App.3.6.24. are examples of this and Figure App.3.6.25. illustrates the media satirisation of the water problem.

Like 1981 and 1986, 1993 also had water protests. Three main protests were staged and achieved media coverage on television and in the newspapers. The first of these was staged in Zabbar in April 1993, followed by protests in Vittoriosa (Plates 6.29. to 6.33.) and Xghajra (Plates 6.34. to 6.37.) in August (*The Times*, 27/8/93, p.36). Figure App.3.6.26. shows the coverage given in *The Times* to the Zabbar protest, and Figure App.3.6.27., the coverage of the Vittoriosa protest. The former was attended by the Labour Party Deputy Leader, Dr. George Vella and the latter by the Labour Leader, Dr. Alfred Sant. *The Times* reported of the latter that,

".... angry families took to the streets to protest against water." (*The Times*, 27/8/93, p.36).

The water shortage in the south increasingly made front page headlines in the national newspapers and reports like the following became a source of embarrassment for the Government and the WSC:

"Desperate measures for precious water [headline]. Angry residents of Tal-Hawli in Cottonera yesterday broke into a sealed well after being without water for four days. 'People were up at 4am filling buckets with the green stagnant well water,' said one resident. 'The water will flush our toilets and clean our houses but it is not potable. If people drink from this water an epidemic could arise.'" (*The Malta Independent*, 22/8/93, p.1).

As the summer progressed and the water supply worsened, affecting more and more people, radio stations began to hold debates on the problem, with politicians

and members of the public invited to participate (pp.585-587). They were also airing the views of the distraught and angry. The following call-in on *Island Sound Radio* on 19/8/93 is an example:

Caller: ".... it was about June we started to have, umm, little water from the Government and then uhh, all of a sudden it just stopped, and we haven't had any water from the Government for about two months now. Umm, the solution.... they've given us.... is to phone up the bowser services.... but unfortunately it's a bit of a nuisance because if you ring up they're either engaged or you ring back and they can't come to you because you've rung too late....

Presenter: "Once you call them do you have to wait in?

Caller: ".... the few times we've rung them, they haven't come to the address, you have to flag them down when they're going through the streets, which means staying in all day. Umm, it's really a bit of a nuisance."

Presenter: "Have you actually complained officially?"

Caller: "Yes I've actually taken my complaint to the consumer officer, who is hardly ever there.... I'd really like to draw attention to the people who might have water, you know, even though it might be for one day, they're hardly a patch on Marsascala without water for two months."

Presenter: ".... *Island Sound* has been receiving a lot of phone calls from consumers with complaints about the water situation because they are unable to get through to the Water Services Corporation."

Customer complaints and pleas are often ignored or

not heard. It is often difficult to speak to the appropriate person at the WSC (*The Times*, 2/1/95, p.19; 15/3/95, p.4) as I had experienced the same difficulties while undertaking fieldwork. Complaints were also being received of bowser drivers exploiting consumers' desperation by demanding payment (*The Times*, 13/8/93, p.20).

By 1994 the WSC had its conservation campaign underway (pp.681-698), however many consumers were annoyed that while the WSC was asking them to save water, the WSC itself was guilty of waste by not responding quickly to reports of water leaks by members of the public (see Figures App.3.6.28. and App.3.6.29. for examples).

More than 7,600 leaks were reported in the ten month period prior to August 1994 (*The Malta Independent*, 7/8/94, p.5). This lack of responsiveness has always been a source of conflict but it was particularly significant in 1994 and 1995.

One interviewee told me: "... there was a leakage in a pipe, a water pipe in the road. We reported it. It took them about three days to come.... [another example:] The water is coming all out in my garage and it's clean water. So we checked it and we found everything is alright here so we phoned the Water Works.... they said they heard it [leak] here.... they said it might be up the road and it took them another three days to stop the water running. It's a waste."

When work on a leaking pipe meant digging up a road, often lengthy delays in the work again generated complaints from people by the inconvenience caused (*The Times*, 5/5/94, p.25) (Figures App.3.6.30. and App.3.6.31.).

People also began to complain about the amount of run-off water that was being lost to the sea (Figure App.3.6.32.):

"When the Birkirkara Bypass was being built I asked an architect in charge whether provision for water collection, i.e. reservoirs, was being made: the answer was in the negative. This was under the previous administration. Under the present administration we all heard about the separate water gallery to lead the water collecting in the St Venera Bypass safely to the sea. And then we purify the seawater.... Whenever Government itself builds apartments or houses there is no provision for water reservoirs [cisterns]. Worse, I have seen Government workers obliterate a water reservoir when an old house was pulled down.... We still have to hear of plans to clean out and re-use derelict water reservoirs in private houses either through direct Government action or indirectly through subsidies or tax relief - if only as a vote-catching exercise. Never hold an election in summer." (*The Sunday Times*, 22/8/93, p.15).

6.4.1.2. Conflict over the new domestic water tariff

The latest source of complaint from consumers is the increase in the domestic water tariff. A WSC source (1995) told me that, "People were complaining that there was not enough water and [to add insult to injury] at the same time there is a price increase." During the first two months of 1994 there were public demonstrations over the price increases (ibid).

The new rates came into effect for the third cycle of 1994 (in September). As the number of letters of complaint in the press about water shortages were decreasing, they were replaced by people writing in to complain about the anticipated increase in the domestic water tariff, and once the first bills were received, abnormally large bills prompted angry responses and criticism (WSC source, 1995) (Figures App.3.6.33. to App.3.6.36.). As far back as 1993, when the new rates

were announced, they were a source of political conflict between the Labour Party (who denounced them) and the Government (p.584).

The WSC stated that:

"People are complaining about bills they receive as evidenced by the queries at the Valetta office.... Some 250 customers call or telephone daily at the Valetta counter. Others call at the Luqa offices." (WSC, 1995, pp.7-8).

By the end of March 1995, most consumers had received their first bills under the new tariff. Table 6.1. categorises the complaints and inquiries that have been made at the Corporation's direct counter at Valletta for the last week of February 1995 and the last fortnight of March 1995. Complaints that are not related to the WSC are not included. It can be seen that approximately half of all complaints are directly related to the new water tariff (ibid).

"The Water Services Corporation feels that most complaints arise because of insufficient knowledge of the facts, and of the realities of the situation" (WSC, 1995, p.2).

To try and reduce the conflict that arose after the increased tariff, the WSC attempted to make the public aware of the reasons for the bigger bills. They did this by regularly organising editor's forums (pp.690-691) with the media as a part of their water awareness campaign, where the WSC presents various topics for discussion, including consumer billing.

Possible reasons for the large bills given by the WSC are:

1. A legitimately high consumption, relative to

Table 6.1. Inquiries and complaints related to water bills made at the Valletta WSC office
for the last week of February 1995 and the last fortnight of March 1995

Complaint/inquiry	Last week of February 1995	Last fortnight of March 1995
Number of persons shown incorrectly on bill	477 / 39%	311 / 15%
Explanation of new water rates	326 / 27%	501 / 24%
Requests for new meter reader/to check readings	207 / 17%	185 / 9%
Issue out-of-cycle bill after sale of house etc	102 / 8%	196 / 9%
Request to test meter	45 / 4%	63 / 3%
Changes to account details	59 / 5%	320 / 15%

Source: WSC, 1995a.

what is considered to be average and sufficient (ibid).

2. Losses in the internal plumbing of a household, most commonly through leaks in roof tanks and flushing cisterns (ibid).

3. Errors in the billing system, which may arise in the estimation of consumption or in data entry or adjustments. This problem is not helped by the existing computer tools which are slow and obsolete with software up to 10 years old (ibid; *The Times*, 30/3/95, p.56).

4. The replacement of new meters for faulty old ones (pp.653-657). The new meters are more accurate, whereas before people were getting water practically for free (WSC, 1995a).

Furthermore, (bearing in mind that many of the old meters did not read at low flows and that a large volume of water flow has until recently been at low flows) new meters and recent increases in flow rate and volume, thanks to increased production and new pipes, has increased the accuracy of water metering and so the accuracy of billed consumption (ibid).

This coupled with the price increases, that many people did not fully understand the effect of, has led people to think that they are being charged too much (ibid).

5. Wrongly estimated bills because the WSC could not enter a building to read the meter, mostly because people were out or did not open the door. In these cases the WSC simply estimated consumption based on factors such as previous consumption, the number of people in the building and comparisons with the consumption of other similar households, usually in the same street (ibid; WSC source, 1995).

Recently, many of these buildings have been finally

entered, largely due to meter replacement activities and a greater number of meter readers, some after more than a year since the last reading. The WSC discovered that the reading on many of these old meters was actually much higher than their estimates and people were billed appropriately (WSC source, 1995).

6. Incompetent meter readers who could not evaluate the significance of the black and red digits on the meter reading, representing a decimal point between the two colours (WSC, 1995, p.3).

7. The number of persons shown on the bill and hence the bill itself is incorrect because of a mismatch in WSC databases or because consumers might want a subsidy on a different address from their ID card address (ibid).

To remedy this last problem, consumers need simply collect and fill in a new form from their Local Council office or the WSC office in Valletta or Luqa, and send it in. The customer will receive a revised bill. Unfortunately, some consumers may have sent the information too late to have been included in the first bill in 1995, which resulted in an incorrect bill and further complaint (ibid).

The WSC states that,

"Most problems in the old tariff system were previously hidden or unnoticed because of the low water rates. The new tariffs have highlighted problems of high consumption. Estimates need now to be more carefully and rigorously made. Previously these were not a problem because water was so cheap in any case and a substantial part was free." (WSC, 1995, p.7).

In addition, *The Malta Independent* reported that,

"Miscalculation of the number of persons in a household is leading to complaints of excessive water bills.... errors 'which cost money', persons in a queue at the Water Services Corporation (WSC) office in Valetta said on Friday.... There have also been complaints that identity cards which list children under 16 years of age are not proof enough for the corporation." (*The Malta Independent*, 11/12/94, p.80).

A source at the PA (1995) warned of the wider consequences of the WSC making mistakes. I was told that people's perception will be to continue to consume as they used to since the "farce" surrounding the mistakes will make people think that it does not matter how much they consume, since they will receive high bills no matter what they do. "People are fed up with the Water Services Corporation's mistakes." (ibid).

6.4.1.3. Conflicts over large scale water projects

Given the large area of land required to site an RO plant or a sewage recycling plant, the potential for conflict is high since land is one of the scarcest resources in Malta. What makes the potential for conflict greater is the fact that RO plants must be located at the coast where the demand for land for tourist accommodation, harbour and swimming areas (for tourism/recreational purposes) is greatest. Furthermore, many hotels do not like to be located near RO plants for aesthetic reasons (PA source, 1995).

Most complaints about water projects have come from residents in the vicinity of a plant. Environmentalists have also criticised the location of certain projects. The following cases illustrate this.

6.4.1.3.1. Ghar Lapsi RO plant

Although at the time of construction there was little controversy over the location of the Ghar Lapsi RO plant, there is much regret and anger expressed by the environmental lobby in Malta (*Moviment għall-Ambjent* source, 1993; ECO source, 1995). The plant, then the largest RO plant in the world, was sited in an area of outstanding natural beauty. At the time the concern for the environment was low on the Government's list of priorities and the environmental lobby was weak.

6.4.1.3.2. Pembroke RO plant noise pollution

Residents living in Pembroke have been complaining for a long time that the nearby RO plant is generating too much noise. The Pembroke Residents Association has been writing letters of complaint to the national newspapers and lobbying the WSC to soundproof the plant. Figure App.3.6.37. shows some letters, not just about the noise, but also the water cuts they were experiencing, despite living next to the largest RO plant on the island.

6.4.1.3.3. Pembroke RO plant expansion tender

Polymetrics Seawaters Systems Inc. has been commissioned for the construction of every RO plant in Malta. Several sources (1993) felt that it was time that another company was given the chance to provide Malta with its RO technology. This argument has been the source of conflict between the WSC, and foreign companies prematurely denied contracts, and *The Malta Independent* newspaper which, in defence of these companies, ran a

series of articles in 1993 criticising the WSC for commissioning Polymetrics for a contract before tenders were awarded for it. Firstly:

"The US-based Polymetrics Seawater Systems Inc. was in the centre of controversy late last summer [1992] following reports in this newspaper that the company had started work on the construction of two trains before a tender had been awarded, leading other foreign bidders to say they will be reluctant to tender again for jobs in Malta." (*The Malta Independent*, 28/11/93, p.7).

Then again in 1993, the newspaper objected to the WSC's commissioning of Polymetrics for the Lm5 million extension of the Pembroke RO plant in 1993, while Polymetrics' competitors claimed unfair awarding of the contract and a scathing criticism of the WSC and the Government and its treasury (ibid, 8/8/93, p.52). The WSC Chairman reacted by criticising the newspaper for being biased and not disclosing all the facts (ibid, 15/8/93, p.29). The articles in Figures App.3.6.38. to App.3.6.42.) illustrate the conflict, which led Parliamentary Secretary for Water and Energy, Ninu Zammit, to sue *The Malta Independent* for printing an article about the Pembroke RO extension tender that he claimed,

".... was intended to negatively affect his reputation and to expose him to public ridicule." (*The Malta Independent*, 19/9/93, p.4).

6.4.1.3.4. Sewage treatment plants

There has a been a large amount of conflict between the residents of Marsascala and the solid waste recycling plant at Sant' Antnin, due to the smell generated from

the plant, which the wind sometimes carries over to the settlement (ibid, 15/8/93, p.17). Although this is only indirectly related to the SASTP, which produces recycled water, it has an effect on people's perception of the plant. They have complained to the plant and the press about the smell and my own visits to the plant were nauseating at times. Figure App.3.6.43. illustrates the conflict.

As a result there have been some setbacks in the plans to locate new recycling plants at Ras-il-Hobz in Gozo and Wied Ghammieg (pp.615-620), because of objections from local residents.

6.4.2. Conflict between the WSC and agricultural consumers

The main source of complaint from agricultural consumers is that they are only supplied with a small amount of subsidised water for washing. Most would like the WSC to supply them with water to irrigate with. In 1993:

"Complaints about a shortage of good quality of water in the countryside are on the increase, a statement by the Rural Youths said. The group said that although its coordinator, Labour MP Noel Farrugia, had presented a petition to parliament, the authorities had not yet met the farmers to look into the situation. Mr Farrugia insisted that as 200 *tomna* of irrigated land were under threat due to a lack of water, the Ministers of Environment and Agriculture should intervene immediately to get the situation back to normal." (*The Times*, 2/8/93, p.20).

A WSC source (1993) stated: "We don't provide agriculture [with water] which has led to a conflict: the

agricultural sector protests at this. Agriculture utilises a number of private wells, run-off water, treated sewage and unfortunately illegal tappings of the Government mains. [and] There's the conflict with ourselves and them. We've just set up a theft unit and it usually involves going on the field and seeing what is going on."

In addition, with long standing criticisms (mainly about chloride levels in tap water) and new criticism of groundwater pollution and its effects on tap water (mainly the high level of nitrates) being levelled at the WSC, the Corporation is increasingly becoming aware and concerned about agricultural pollution:

"It is evident that the relationship between agricultural land use and groundwater protection is complex and a conflict of interests between agriculture and water use is frequent. Good management and an optimisation of relations between both sectors is a must." (*The Times*, 14/10/94, p.17).

6.4.3. Complaints from industrial consumers

As a part of the *Malta Structure Plan* (1990a) structured interviews with 51 private businesses and other organisations were undertaken to understand their needs and problems. First and foremost it was understood that,

"Many firms complained of difficulties due to problems with infrastructure. There are serious shortages in public utilities such as power supply, water....." (Ministry for Development of Infrastructure, 1990a, p.19).

From the survey conducted of industrial water use for this study, it was found that most industries that took part in my survey had relatively little to complain about in regard to water shortages, but found the erratic nature of tap water quality a problem. Portanier's water analyst told me how the water quality used to be very bad but has improved. Similarly the Bulebel industrial estate has experienced both water shortages and sub-standard water quality.

6.4.4. Complaints from the tourist sector

A longstanding source of conflict between the WSC and the tourist industry is that they have to pay commercial water rates, which are the highest of all (NTOM source, 1993). A University source (1993) stated that members of the tourist industry, ".... have been clamouring for a reduction in electricity and water rates but I doubt if they're going to get it."

All the hotel managers and owners that I interviewed told me that they were unhappy with the water rates they had to pay. The following are some of their complaints:

"They are expensive.... we are not happy about it, no!"

"The water rate, well, has been quite very heavy for us for a very long time."

"Nobody's [hotels in Gozo] happy with that, because we don't have the work year round.... it's not like Malta.... Gozo has a 6 month, maybe 7 month life expectancy [for annual tourism], Malta has all year round."

"No, we are not happy."

"It's too much."

"[it is cheaper for] The manufacturing industry, textile industry and especially the mineral [bottled water] industry, those who are selling the water.... they sell water and pay 4c5 per cubic metre.... the hotels pay one pound [Lm] per cubic metre.... the Government thinks we're getting a lot of money.... the price is ridiculous.... and the minerals [mineral water] industry.... they are selling water and not using it."

6.5. WATER CONFLICT BETWEEN MALTA AND GOZO

When Gozo supplied Malta with water via the submarine pipe under the Gozo channel, many Gozitans complained that their water was being used by others (University source, 1993). A WSC source (1993) informed me that, "In the summer, when Gozo suffered shortages in the 1980's, there was a lot of water coming to Malta via the pipe. Had it been kept by the Gozitans they would not have got any problems. They were annoyed at Malta taking their water."

In August 1994, Malta supplied Gozo with water from the Cirkewwa RO plant for the first time because of the increasing demand for water there and the previous year's drought. Ironically, the conflict today is that Gozo does not want this water. This sentiment is borne of the local Gozitan pride that generates a strong regional feeling. Gozitans want to be independent and not have to rely on Malta for anything. Many Gozitans resent the Maltese (those that reside in Malta) for several reasons. Many Maltese, for example, come over to Gozo in large numbers, are noisy, spend very little money and leave the island littered, according to some of the Gozitans I spoke to.

Unfortunately, Gozo has little choice and although the Minister for Gozo wants to convert the old distillation plant in Gozo into an RO plant, it is unlikely that his wish will be granted unless the proverbial fairy godmother is a close friend with political influence and sway (WSC source, 1995). A source at the University (1995) informed me that, ".... it is better and cheaper to pump water over to Gozo. They want everything - an airport, an RO plant, a power station - they want independence.... There is a very strong feeling what they have here [in Malta] they also want, preferably better and bigger."

6.6 CONCLUSION

It has been shown that the conflicts discussed are varied and exist at every scale. Given the small size of the Islands there is an extraordinary number and variety of water conflicts. This reflects the scarce nature of the water, the suspect nature of the law and law enforcement, and in consequence, the willingness of individuals to fight for what they perceive to be their water rights. Customers are also in conflict with the authorities over the inadequate system of distribution and maintenance. The causes of these conflicts are complex and numerous. Most of the physical problems and inequalities in water supply discussed in Chapter 5 are to blame, but social and political rivalry, and not forgetting human nature, are also important. Of course, human greed and selfishness is an issue in every aspect of day-to-day life, but in the case of water, notions of territoriality and self-preservation come particularly into force. This is mostly because water crosses boundaries be it in underground springs, in channels across fields or in pipelines transversing settlements

and regions. It is because it is so vital that people will do almost anything to make sure they are self-sufficient. The paradox is that they will do anything to get water as long as anyone but themselves provides it: a mentality that relies on the Government to provide for them. This then suggests, for instance as shown by people's reluctance to include cisterns in new residential developments, that many people would sooner be without than help themselves.

Key factors in the conflicts include, water scarcity, sharing by one or more parties of sources of water, inadequate water sharing regulations and their enforcement, and, in a few cases, corruption and favouritism where the powerful and friends of the powerful win and the less influential lose out. This unfairness can lead to further conflict especially if the losers are aware of the fact that the winners are only winning because the powerful and influential are enabling them to do so. This can vary from the household level, as with the housewife who said she could help her neighbour because she was close to a minister, to the large scale, as with the southerners who believe that they are deprived because of national party politics. Generally,

"In water management misappropriation of water is the main source of conflict." (Ghosh and Lahiri, 1992, p.65).

From a subjective perspective, there are some conflicts that are more important than others, particularly those that adversely affect the personal lives of consumers. For example, although people complain about water cuts, in reality most people are able to fill their tanks if the cuts are announced in advance, which they usually are. A full tank can usually see them through the duration of most cuts. Such complaints are often unfounded and are probably the result of

selfishness or a dislike of whichever political party is in power and the desire to make trouble by making the problem seem bigger than it actually is. The same goes for some of the farmers in the SASTP irrigation area who, before the SASTP was introduced, had only rainfall, but who now are able to reap the benefits of more than one crop, yet still complain to the SASTP that they want more water while using it greedily, selfishly and wastefully. In genuine cases of water deprivation where some farmers are unable to make a living, the conflict, if there is one (it is often the case that the most humble and least aggressive people lose out, yet many remain stoic and pessimistically uncomplaining), is much more important. The same applies to those households in the south that can be without water for up to several weeks. Their plight and personal conflict is far more important than, say, the squabbling between bottled water companies over the exact level of nitrates in their products, especially since so many domestic consumers are unsuspectingly drinking tap water that poses a risk to their health.

What remains is conflict resolution, which can only come about if all parties in a conflict situation are satisfied. Often the various bodies concerned are not interested in doing this and frequently there are losers.

Politics are a difficult barrier to conflict resolution. As long as a large number of people are not satisfied, water will remain a political issue and the source of conflict between parties and their supporters. The smallness of the Islands and corruption in authority means that those with friends in high places will continue to benefit and those without will often lose. This obstacle to a fair and just solution needs to be removed. It will be a difficult task given that it concerns mainly removing the corruption that is rife amongst those in authority. It is crucial that the public and pressure groups bring about the corrective measures necessary for this. The politicisation of water is

discussed in Chapter 7 which illustrates in further detail how politics is an important cause of many water conflicts and also a barrier to their resolution.

CHAPTER 7

WATER POLITICS

7.1. INTRODUCTION

Malta's two main political parties (and the only significant ones until the 1990's) are the Malta Labour Party (MLP) and the Nationalist Party (NP). After the NP's defeat in the 1971 general election and up until 1987, Malta was governed by the MLP whose leader, for most of this time, was Dom Mintoff (Boissevain, 1994; Sultana, 1994a).

In 1987, the NP, led by Eddie Fenech Adami, gained victory over the Labour Party and retained Government during the 1992 general election. The leader of the MLP today is Dr. Alfred Sant.

This Chapter discusses the differences between these two main political parties in their general policy and political allegiances and support. Their approach to water resources exploitation and management is discussed.

Water, along with other environmental and resource issues, is one of the most powerful political propaganda weapons used by politicians in the Maltese Islands:

"In the year of grace 1993 'the environment' has become a fact of social and political life in the Maltese islands. This situation has come about through a combination of strangely diverse factors, perhaps a combination unique to these islands." (Mallia, 1994, p.689).

This emphasis on 'environment' has given rise to a number of environmental pressure groups including a new 'green' party called *Alternattiva Demokratika* (AD). The

role of these groups is discussed. The power and influence of politicians in the decision making of water managers and in water resources' research is also discussed.

Water's scarcity and poor quality in some settlements made it an ideal source of criticism for the Government's opponents for many years, as it was in the UK as recently as 1995 (*The Times* (UK), 13/11/95, p.10).

This Chapter explores the relationship between water resources and politics and how water has become highly politicised. The sections subtly introduce each other with a discussion on the importance of politics in Maltese society, followed by a brief on how water, due to its political nature, is a sensitive topic of discussion. Water politics are introduced and the use of water in the propaganda war between the two main political parties is illustrated. This leads into a discussion of how the water policies of the two main parties have been traditionally in conflict; the role of political power in influencing who and where is supplied with water; and the political manipulation of water resources' research. Finally, this Chapter presents the increasing disenchantment of the political process amongst the Maltese public (because of the political conflict over issues such as water) and the rise of groups that represent the interests of the environment and the whole public, rather than their own interests and those of their supporters only.

7.2. THE MALTESE AND POLITICS

Political affiliation of the public is very much related to class in Malta. Sultana (1994a) identifies three major class groups in Malta: the 'dominant class', the 'petty bourgeoisie' and the 'subordinate class' .

The dominant or capitalist class has a very strong

affiliation to the NP. It is divided into the power elite and the bourgeoisie. The power elite has few members and comprises ministers, high ranking civil servants and controllers of public or state enterprises and the media. Compared to the power elite the bourgeoisie has very little power and is comprised mostly of businessmen and professionals who own and control Maltese enterprise (Sultana, 1994a).

The working class in Malta are involved mainly in manual work and mobilise their power in the form of Trade Unions, the largest of which is the General Workers Union (GWU). The working class makes up the largest section of the population and are strongly affiliated to the MLP (ibid).

Bridging the gap between the dominant class and the subordinate class, the petty bourgeoisie or the 'middle class' as it is better known, includes,

".... small businessmen, shopkeepers, tradesmen and self-employed artisans.... semi-professional, supervisory men and women engaged as salaried employees in capitalist enterprises, or in the administrative, welfare, control, coercive and service agencies of the state, and the like." (Miliband, 1987, pp. 332-3; Sultana, 1994a).

Unlike the dominant, or capitalist class and the subordinate, or working class,

".... whose interests and allegiance are clearly demarcated and oppositional, conflictual paths - the petty bourgeois oscillate between the two major classes depending on whether or not these groups experience capitalism as an external force." (Sultana, 1994a, p.46).

If the petty bourgeoisie are proleterianised then they are likely to form an allegiance with the working class and the MLP, since they experience similar life

conditions and interests. When the economy is favourable then this class will side with the ruling class and are likely to vote Nationalist. This may have helped to contribute to the Nationalist victory in 1987 since standards of living and consumerism were rising (Sultana, 1994a).

For the Maltese, politics is a part of every day life and allegiances to a political party are strong amongst most members of society. Pirotta (1994) explains:

"Since their inception in Malta over one hundred years ago, political parties have come to exercise enormous hold and influence over the Maltese electorate. Every five years or so, during general elections, over ninety percent of those entitled to vote, although under no legal compulsion to do so, turn out to cast their vote in favour of one of the contending parties and its candidates.... Furthermore, tens of thousands of Maltese tend to flock to political meetings at which party leaders are usually the main speakers." (Pirotta, 1994, p.96).

The south of Malta is a traditional working class area and hence, a Labour stronghold. The NP's more affluent supporters largely reside in the north. The implication of this division is that there is a strong north-south political conflict between parties and supporters which manifests itself in a number of issues, such as water resources. This spatial and political division is important to the discussion in this Chapter, which will show that the politicisation of water creates problems and hinders their solution.

Political opinions are strong and often taint otherwise objective facts, for example, in the writing of newspaper articles, even many of those quoted and referred to in this study (568-570).

There is a strong bond between voters and political

parties in Malta. In a 1994 survey of voters, 55% of respondents saw themselves as being close to a political party, compared to 39% in the rest of Europe (Gallup, 1984). Living in Malta, whilst conducting my research, this bond came across strongly in many people I spoke to as well as through the media. Tabone (1987) found that 42% of the families, in his study of the Maltese family, had at least one member who was a card carrying member of a political party. Also, almost 72% buy a political newspaper and 46% attend political meetings or some other form of political activity (Tabone, 1987).

"But even more significant is the fact that just over 30% of the families interviewed openly admitted their readiness to obey their preferred political party always and in everything. This finding seems to emphasise the great loyalty which parties enjoy among a large strata of Maltese society - even, that is, when their instructions and directives go against the citizens' personal traditions of Maltese society." (Pirota, 1994, p.97).

This pattern of loyalty and voting is unlikely to change. Fenech (1988) states that despite efforts or promises to eradicate this polarisation, there has been no change in voting patterns and allegiances:

"Intense party polarisation among the population is a corollary of this rigid voting behaviour.... the two parties remain distinctively conservative and socialist respectively, although neither extremely so....

.... The Nationalist Party has always been a middle-class party with middle-class values.... On the other hand, the Labour Party, while it has never advocated class struggle, has been borne and bred in the working class and broadly represents its interests...." (Fenech, 1988, p.134).

7.3. WATER AS A POLITICALLY SENSITIVE TOPIC OF DISCUSSION

As has been stated several times previously, many interviewees and informants were afraid to talk about water because it is a politically charged and sensitive issue. This has posed a problem throughout the research undertaken for this study, in terms of being an obstacle to people speaking their minds. One University source (1993) was reluctant to give information saying, "It's all too political, what you are asking." A WSC source (1993) told me, "This is a very, very, hot issue, extremely hot." He told me that he could not say anything that may implicate himself or the Corporation and is the reason why almost all listed sources of information are anonymous in this thesis. Another WSC source (1993) said, "Politics and water are two things that go together - you won't get information from anyone."

Similarly, many of the members of the public, including farmers, were wary of my intentions and were often afraid to speak openly at first or were aggressive. I was frequently mistaken for a Maltese citizen and some did not believe that I was a British student without assurance from accompanying Maltese students.

Generally, the Maltese people have good reason not to speak openly to just anyone about a topic as politically sensitive as water. The potential for me to 'gossip' about what people had told me, if I were not who I said I was (as many believed on introduction), is great. This point is emphasised by Mizzi (1994) who says:

"In such a small country, everyone tends to know everyone else. It is commonly said that if one knows five families, one would have a connection to everyone on the island! Thus there is no sense of anonymity. It is virtually impossible to get away from a situation in Malta because of its small size and interconnected networks....

The physical layout of most Maltese communities, combined with the Maltese architectural styles, facilitate opportunities for observing one another's daily activities and the generation and dissemination of gossip. Streets are often narrow and houses are generally set closely to each another. Many houses have a closed balcony, an ideal observation post for the street below and the activities of passers-by, without one's self being observed. Many older women, and some men, sit just inside the doorway, with the door left ajar and while away the hours watching the world go by.... It is a perfect arrangement for neighbours to watch each other surreptitiously.... It is in just such an environment that gossip can be most effective." (Mizzi, 1994, pp.375-376).

So not only were people afraid that I might give their views to the authorities, especially since they have been tape recorded, but the very presence of a stranger (and neighbours know who is and who is not a stranger) with a clipboard and pen coming to ask questions about water resources, raises suspicion (and possibly an inquisition) as to what the informant may have said, particularly if their views are already well known in the neighbourhood (if, for example, they have strong anti-Government sentiments, particularly in relation to water supply). Gossip, be it the truth or not, may cause harm to a person. For example, one interviewee, who was afraid to lose his job, only agreed to speak after being thoroughly convinced by his son that he would remain completely anonymous. An interviewee from Zurrieq told me, "Some people say they don't want to get involved in politics.... Sometimes they are afraid of the consequences they might face, for example they say, 'I'm saying something about the Government at present' and they might get blackmailed or something like that.... it used to happen and.... sometimes it's still

happening."

For these reasons WSC sources had particular cause to worry. Given my non-English appearance and the nature of my questions, one WSC source thought that I was an investigative journalist, despite proof of identity from the University of Malta. He had good reason to since,

"The rise of investigative journalism must be taken very seriously. It has the potential of becoming the backbone of journalism acting as a conscience for society. This is not easily achieved when each major newspaper is the notice board for a structure of power." (Chircop, 1994, p.267.)

For this reason he was evasive and suspicious in that first interview, but had opened up by the second meeting having met my supervisor, Professor Ewan Anderson.

7.4. WATER POLITICS

The apparent inequality between the north and south, in terms of development and infrastructure levels, has been seen to be to a large extent due to politics. The means of water supply and to whom it is supplied has been determined to a large extent by which political party is in power and their development policies and political biases.

The location of the RO plants exemplify this. The Ghar Lapsi RO plant's location is interpreted by many as a political decision, built by the Labour Government in 1982 predominantly to serve the south (MDC source, 1993). University and FIS sources (1993) informed me that the original technical report chose Salina in the north as the original site but for reasons that may or may not be political it was located at Ghar Lapsi. At the WSC, a

source (1993) told me that Ghar Lapsi RO plant was a political decision but was incidentally a good decision since the south had growing water demands. A University source (1993), who although a Nationalist supporter, stated that today it was quite obvious that, ".... funds are generally going to construction in the north...." Another University source (1993) felt that, "The choice of the sites [for RO plants] has been overtaken by politics rather than technical considerations." A WSC source (1993) said that even if their locations were politically decided there are plenty of technical factors that can be used to cover this up. It is probably no coincidence that the new power station at Delimara obscures the once picturesque view from the country home of ex-Labour Prime Minister, Dom Mintoff.

Vella (1994) states that the two main parties are

".... the left and right poles of a hypothetical political spectrum.... one is also often tempted to infer.... opposite visions of social and economic development. In such a case, an unexplainable gap would appear between their operative discourse and action, on the one hand, and what they 'ought to be saying and doing' on the other." (Vella, 1994, p.56).

When the MLP was in power before 1987, the NP and many of its supporters in the north blamed the water shortages (in the north) on MLP policies arguing they were deliberately neglecting the north because of its political allegiance to the NP.

The water problem in general across Malta was blamed on the Labour policy of not advocating desalination on more than just a limited scale (while the NP took the opposite stance and strongly advocated large scale desalination).

Speaking of the two main political parties, Pirotta states,

"Priorities have been, and still remain, disparate in a way which can perhaps be significantly explained by the diverging core social class support that each political party commands." (Pirota, 1994, p.110).

Responsibility for the water problem lies with both parties, directly, for example the overpumping of the MSLA under the Labour Government, and indirectly, for example the poor enforcement of planning and development control by the Nationalist Government before 1971 and to a certain extent after 1987. Policies that did not protect the environment and its resources were borne out of party politics. Certainly up until 1982, for Labour, the spending of capital on large projects such as RO plants went against their tradition of minimalist spending and up until the 1987 general elections,

"The MLP still seemed to be harbouring suspicions that 'the environment' was a devilish anti-worker plot." (Mallia, 1994, p.696).

In 1969, the Nationalist Government passed the Town and Country Planning (TCP) Act, but it was never adopted and was eventually abolished by the Labour Government in 1981.

"This was a disaster of the first water, with long term effects. Had the TCP Act come into force in 1969, it could have provided a period of public education at a time when development pressures [and consequently pressure on water resources and infrastructure] were still quite limited." (Mallia, 1994, p.693).

Despite little environmental material in Labour's 1981 manifesto, they passed The Building Development Areas (BDA) Act of 1983 to try and control development sprawl.

"Unfortunately, the BDA Act vested the Minister of Public Works with wide discretionary powers, which were mainly used to satisfy demands by clients. The end result was just the opposite of the declared intention of the Act - a further surge of building sprawl with political clients as main beneficiaries.

The blatantly abusive manner in which the BDA Act was applied gave rise to some public awareness of potential and actual environmental problems.... Other, not strictly environmental problems like water shortages acted as a catalyst to a number of public protest demonstrations. Participants were often roughed up by the police, by political thugs, and in one case by members of the *Ghaqda Kaccaturi* [Association of Hunters]." (Mallia, 1994, pp.694-695).

Today, MLP supporters are accusing the Nationalist Government of long neglecting the south of Malta and of spending too much money on producing water when the distribution system is inadequate. This is discussed in the following section.

7.5. POLITICAL PROPAGANDA AND CONFLICT

Water has been used, mostly by Opposition parties, to direct criticism at those in Government. For example, water was used to apply political pressure on the Labour Government in 1986 to try and alleviate the shortages in the north with mobile RO units and the construction of the Tigne RO plant. Unfortunately, they were unable to do this in time and many have argued that they lost the 1987 general election because of the water problem, more than for any other reason according to one PA source (1993).

"When the PN [NP] was in opposition, water shortage was one of the issues which fuelled its propaganda

monster." (*The Malta Independent*, 19/9/93, p.30).

The NP's propaganda promised water for everyone, while the MLP manifesto,

".... argued for the need 'to strike a balance between the needs of the people and the protection of the environment'. It was not made clear which needs of which people were being served by poor quality water.... Even less was there any hint that protection of the environment was one of the people's long term needs.... For the Nationalist Party, there was clearly a lot of political mileage in environmental issues, given the gross 'sins' of the government and the rising tide of public awareness." (Mallia, 1994, p.696).

"The Labour summers often reflected in strong measures Malta's major natural scarcity.... The Nationalists in opposition, nevertheless, used the water scarcity as a major symbol of their political warfare. They exploited a genuine people's gripe for political ends." (*The Times*, 5/9/93, p.5).

Now that the Nationalists are in power, they are being blamed for the neglect of the south in terms of water supply and quality (as well as other issues), by the MLP and its supporters.

"Politically, the roles have changed, with the Labour Party firing criticism at the government." (*The Malta Independent*, 19/9/93, p.30).

Since the NP came to power, water supply in the south has worsened, relative to supply in the north. At the same time the NP stands accused of endowing their voters in the north with RO plants. One need only read the letters, complaints and articles written in

newspapers in 1993 by the public and journalists (Appendix 3), to see that it is the political passion and devotion that Pirotta talks of that underlies the conflict.

It must be noted that water is not the only politicised issue in Malta. Almost any opportunity to criticise opponents is seized upon. Unfortunately, due to the antagonistic atmosphere of the political arena, it is often destructive criticism (WSC source, 1993). Water is the most important political weapon because, being a basic human need, it directly concerns what everyone wants and attracts their attention more than anything else. Malta has secured its food supply, the other basic human need, but has yet to properly secure its water supply.

If consumers complain, then the Opposition Party will speak out with them. In an interview with the Opposition Leader, Dr. Alfred Sant, he told me that the reason why he complained to the newspapers about the extraordinarily high water bill he received (along with many other people in the first four months of 1995) (p.584) was to, "stir things up a bit". As one University source (1993) put it, "Everyone in Opposition has used it [water] against the people in power. They always say they can do one better."

The mass media has served as an effective means for delivering this propaganda. There are eleven different radio frequencies owned by the Maltese authorities, leaving two for television, one broadcasting *TV Malta* and the other, after much contest in 1993, the MLP's *Super 1 TV* to complement its *Super 1 Radio*. There is not even enough advertising revenue to sustain ten radio stations (Chircop, 1994).

"If, however, the media as implemented on the island are akin to ideological billboards then their existence will continue beyond financial feasibility. This was the

case of political party newspapers, the General Worker's Union paper and also the Church-run newspaper *Il-Hajja*." (ibid, p.365).

The use of the media by politicians is of course not exclusive to Malta. For example, during the water shortages in the UK in summer 1995 (*Independent on Sunday*, 24/9/95, p.6; *The Guardian* 4/8/95, p.7),

"Britains' water companies were embroiled in a political row.... after official figures showed that a fifth of the water in England and Wales is being squandered through leaks from the mains.

With the continued hot weather putting thousands of households under hose pipe restrictions and one large company applying for special drought powers, the leakage from water mains was condemned as unacceptable by consumer groups, the National Rivers Authority and the Labour Party...." (*The Times* (UK), 4/8/95, p.1.).

The political nature of newspapers in Malta is an important consideration for the journalist:

"Given that the major newspapers become political notice boards, one can see how the journalist has to compromise between her/his profession and the political structure, which is the employer. This subtle interference starts at the very moment of recruitment." (Chircop, 1994, p.365).

Many of those who write for the most politically one-sided newspapers are likely to be firm supporters of the respective party. Malta's mainstream newspapers are less obviously politically biased. They include *The Times*, *The Sunday Times* and *The Malta Independent*. However, they are considered as having Nationalist biases (not surprising since the power elite control the

mainstream media) and a writer may have to compromise his or her political or apolitical views for the newspaper's, as is the case in some of the articles discussed here and in Chapter 6.

One can see from the articles shown in this Chapter (Appendix 3), that prior to 1987 *The Times* was highly critical of the Labour Government's water policies and published many articles from Nationalist MP's and supporters on the water issue, but carried relatively few by Labour writers.

The Times, *The Sunday Times* and *The Independent* have been used mostly in the media analysis of the water problem, conflicts and politics in this thesis because although they are argued by many to be leaning to the 'right' politically, they are the least biased newspapers (University source, 1993).

Newspapers are the most frequently used forum for political conflict (between the two main parties) and criticism of the Government and the WSC (from the public, journalists and the Opposition Party). Given this, the extensive references to, and inclusion of (in Appendix 3), newspaper articles is justified.

There are three main periods with respect to water problems and the inevitable political propaganda and conflict that arose. These were 1981, 1986 and 1993.

7.5.1. 1981

The conflict between the public and the Government, discussed in Chapter 6, is caused to a large extent by political differences. During 1981's water shortages, the NP and its supporters criticised the Government's groundwater extraction policy, while lobbying for desalination as the solution to the problem.

Sliema is an important Nationalist stronghold, hence the large number of letters of complaint in *The Times* (pp.529-530). These and criticism in articles are

indicative of the political slant of *The Times*. The articles in Figures App.3.7.1. and 3.7.2., which criticise the Labour Government's water policy while praising Nationalist proposals, illustrate these points.

In Figure App.3.6.6., which describes the Ta' Xbiex water protest held by housewives, the political nature of the protest is evident:

"They [protestors] wanted to know why people living in nearby Government estates were 'enjoying the commodity' when they did not have any. There are about 60 flats in the area.... People of different political colour look at the problem differently. Many Socialists argued, for example, that the Government was wise in tapping natural ground water resources. They held that the installation of water distillation was too costly and that the Administration should continue to follow its present policy of drilling more boreholes.

But the Nationalists disagree with these views, maintaining that the island needed to build a sound infrastructural basis to ensure an adequate supply of water for the local community and for the growing number of tourists. Distillation was costly but the island could not possibly make further progress without an adequate supply of water." (*The Times*, 13/8/81, p.11).

It is no coincidence that such protesting came about just before the 1981 general election:

"There were some of those trenchant declarations which political parties in Opposition are so adept at making, particularly at election time...." (Mallia, 1994, p.694).

The NP, in its 1981 manifesto, made the following criticisms and promises:

"All necessary steps will be taken to ensure that we never again have to live through the nightmare experience of a critical water shortage, such as has been our lot these past two years. The situation is entirely of Mintoff's making and need never have arisen. Mintoff on coming to power in 1971 cancelled the order for two additional distillers which had been placed by the outgoing Nationalist Government. These two distillers, along with others previously installed, would have secured our water supply for years to come; the programme was embarked upon on the advice of experts who saw no alternative if we were to cope with the anticipated increase in demand for water; and Mintoff was fully aware of expert opinion on the subject. But he insisted on cancelling, even though it meant hundreds of thousands of pounds worth of damages arising from abortion of contract, all of course payable out of public funds.

Against all expert opinion Mintoff determined instead to increase the rate of extraction from ground water sources. The result has been a serious deterioration in the quality of water being served to the consumer, despite mixing with distilled water; and the water tables have been severely over-exploited to the point where they may now possibly have been irreparably damaged.

Mintoff left the existing Malta distillers too long, and had to spend substantial sums of public money to get them working properly again; even so now they are being so over-worked, and under-maintained, that their capacity to continue functioning efficiently much longer is in serious doubt. He had also to disburse (out of public funds) very large sums this year to get water from Gozo to supplement Malta's depleted supplies (after spending further large sums, as well, to get the Gozo Distiller working). Now, ten years too late, he has finally come round to the realisation that there really is no alternative to desalination.

A decision has been taken to purchase other desalination units, but of course costs have risen immensely since 1971 and we are going to have to pay a very heavy price for Mintoff's obstinacy and irresponsibility. The prospect of having to pay several extra millions [of pounds] compounds the injury caused by the hardships and privations arising from the water scarcity, and by way of the damage done to the aquifers (damage which may prove very difficult to correct) which are the most valuable natural resource we possess.

A Nationalist Government will provide our people with an adequate water supply, of good quality, and will do all it can to enable the damaged water aquifers below ground to recover to an acceptable degree, if Mintoff's policies have not already caused them irreparable harm." (Partit Nazzjonalista, 1981, pp. 54-55).

The NP published a variety of party propaganda like this prior to the general election, promising to solve the water problem, including a booklet called *il-Bidla* (The Changeover). A large section of the booklet criticises the Labour Government in failing to provide water (*ilma*) and how the Nationalists promise to solve the problem via desalination (Figures App.3.7.3. to App.3.7.9.). The front cover showing the dripping tap (Figure App.3.7.3.) states, 'Without a changeover.... no water in the tap'.

The result of the 1981 election was a Labour victory, but the MLP were accused of gerrymandering (University source, 1995).

7.5.2. 1986

The complaints and letters continued to pour in during the years after 1981 (Figure App.3.7.10. shows press criticism from 1984 and 1985) and in 1986 the Labour Government, now led by Dr. Mifsud Bonnici (Mintoff

retired as MLP leader in 1983) with a general election coming up in 1987, had its worst water crisis on its hands. The worst hit areas were again mostly in traditionally Nationalist voting areas, particularly Sliema. The problem became a major topic of discussion (Figures App.3.7.11. and App.3.7.12.).

A source at the MDC described the highly charged political arena prior to the 1987 election: "I used to live in Sliema - in the past we used to have cuts very regularly, for example, from 6.00 am to midnight.... The Labour Party had certain policies which certain people did not like, for example, a wage freeze for five years. It [Malta] was getting Eastern, nearly communist like.... There was violence too as there was no respect for opinions. It caused demonstrations and even shoot outs. People were getting murdered over party propaganda. When we had water cuts we had demonstrations. People were hanging posters and walking out on to the streets with empty pans and this was all used as one source of propaganda by the Nationalist Party." A University source (1993) told me how before the 1987 election people would march to the Prime Minister's office banging pots and pans in protest. "It was a bit over the top and mostly Nationalist Party propaganda."

With regard to water protests and demonstrations, the instigators almost always claim them to be apolitical, although they rarely are. This was the case with the 1986 demonstration by Sliema housewives and with subsequent others in 1993 (pp.581-584). One of the organisers, Mrs. Pullicino,

".... stressed that the newly set up group was apolitical." (*The Times*, 9/7/86, p.15).

This may have been true since it was claimed that the housewives included those from traditionally Labour voting areas as well as Nationalist strongholds. However

the protest resulted in conflict, where political supporters of both major parties were involved in some way to the extent that people were physically beaten by the police and Labour extremists. The incident was followed by a verbal backlash by Nationalists in *The Times*:

"The Nationalist Party Youth Movement (MZPN) yesterday issued a statement in which they condemned what they called as the Police attack on Dr. Ray Zammit [their President], during the demonstration in Valetta.

The Movement said the action of the Police and of Labour supporters during yesterday's protest was a clear admission that the government was to blame for the water shortage crisis." (*The Times*, 12/7/86, p.15).

The NP leader also denounced the conflict:

".... PN [Nationalist Party] leader Dr. Eddie Fenech Adami saying at Santa Venera that 'the lessons the police have been given by North Korea were being carried out on Maltese citizens'.

This statement was not only unfounded, it also made no sense, the Information Division said. One could not understand where, it added, the Leader of the Opposition or whoever informed him had seen any member of the Police practising karate or judo during Friday's protest." (*The Times*, 16/7/86, p. 13).

Traditionally Nationalist supporting newspapers and those with Nationalist biases carried articles directing criticism to the Labour Government's neglect of the north. *The Times* newspaper ran several articles of this kind and some examples can be seen in Figures App.3.7.11. and App.3.7.12. Criticism from Nationalist MP's, particularly Dr. Michael Refalo and Nationalist

newspapers (Figure App.3.7.13. and App.3.7.14.a.), like *The Democrat* (Figures App.3.7.14.b. and App.3.7.15.), were also well publicised. Parallel to these articles *The Times* also ran reports on water problems and droughts elsewhere in the world, a subtle way of scaremongering the Maltese public that the same fate was upon them (Figures App.3.7.16. and App.3.7.17.).

Although lesser in number, articles in defence of the Government were also published in *The Times* (Figures App.3.7.18. and App.3.7.19.). Understandably, such defence appeared more frequently in Labour supporting newspapers such as *l-orizzont* (Figure App.3.7.20.). More blatant criticism of the Government came from the strongly Nationalist newspaper *IN-...TAGHNA* (Figure App.3.7.21.). It was the political pressure from Nationalist MP's and supporters suffering from the water shortages that forced the Government to speed up the opening of the RO plant in Tigne and expand production at the Ghar Lapsi RO plant (WSC source, 1993).

The MLP, in their 1987 election manifesto, had vague and half-hearted promises on water and other environmental issues. Typically, for the Nationalists, given the Labour Government's poor track record on environmental issues there was a lot to be gained politically from this.

The Labour Government hit back at the Nationalists' promises of water by trivialising their promises to mere 'dreams' (*Weekend Chronicle*, 21/3/87, p.9). In Figure App.3.7.22. the water problem is legitimised by giving credit to the MLP for,

".... upping the standard of living [and a] housing programme [that] has been so fast and so successful, that more and more households have required supply." (ibid, p.9).

The latter was by no means a good thing or planned. The MLP's defence, however, was not strong enough and despite providing mobile RO units (*l-orizzont*, 17/7/86, p.1), Tigne RO plant and increasing production at the Ghar Lapsi RO plant, they lost the 1987 general election. After their victory, the Nationalists explained the water situation through further criticism of Labour's mistakes (Figure App.3.7.23.). Meanwhile, the MLP blamed the NP for lost time and water production because they removed Labour supporters from the Water Works Department for replacement with inexperienced Nationalist supporters. The former MLP Parliamentary Secretary responsible for water and ports,

"Mr. Sciberras said the Nationalists criticized borehole water extracts. He said the Nationalists should stop this extraction, even if only for one week, to have proof of what they were saying." (*The Times*, 4/8/87, p.2. (Figure App.3.7.23.)).

Completely halting extraction would have been disastrous, but the MLP were now able to propagate the argument that the Nationalists had for so long used against them.

7.5.3. 1993

By 1993 the role of complainant and critic had been reversed for the first time since 1987. Now letters of complaint came mostly from Labour supporters in the south suffering shortages and poor water quality. Press releases by Dr. Alfred Sant, the MLP leader, and Charles Buhagiar, the MLP spokesman on the environment, criticising the Government and the WSC were frequent, even in *The Times*. Criticism also came, to a lesser extent, from the new *Alternattiva Demokratika* (AD) party

who have a strong environmental and conservation concern to their politics and try to represent all members of the public (pp.597-599).

Figures App.3.7.24. to App.3.7.31. are examples of such criticism (including that from AD). The use of the cover illustration of the NP booklet *Il-Bidla* (Figure App.3.7.3.) in Figure App.3.7.24. for a full page advertisement, is one of the many ways the MLP has been putting across its message that the NP has never been able to fulfil its pre-election (1987) promises.

On 27 September 1993 the MLP called for the resignation of the Parliamentary Secretary for Water and Energy, Mr. Ninu Zammit, over what they called a worsening of the water situation in Malta and Gozo, after wrongly investing in increasing water production without seeing to its proper distribution (rehabilitation of the distribution system before increasing production is the MLP's present argument for successful water supply (pp.588-589)). Mr. Zammit dismissed the allegation against him as "totally unfounded". Figure App.3.7.30. includes the details of the conflict.

The criticism and allegations levelled at the WSC and the Government necessitated it to issue several press releases in their defence. Figures App.3.7.32. to App.3.7.37. are examples of explanations and justifications for the water problems in press releases issued by the WSC Chief Executive, Mr. Antoine Riolo and his deputy, Mr. George Cassar; Mr. Ninu Zammit and Mr. Michael Falzon, Minister for the Environment. The latter (App.3.7.37.) prompted counter-criticism from the MLP (App.3.7.38).

Protests, motivated both by public outrage and politics, were staged at the WSC stall at the 1993 Trade Fair at Naxxar, mostly by residents in the south. They brought with them samples of discoloured tap water. Many were from Marsascala and Marsaxlokk, both Labour strongholds.

While undertaking my survey, the political argument against the Government frequently arose in Labour strongholds. The following are some examples:

"Everybody grumble.... this time it's worst, very bad, especially with this Government.... if you're 'red', you've had it." (Cospicua).

"When the Nationalist Party was elected in 1987, the situation is getting worse and worse.... we had better quality.... they (the NP) should have kept their word..... even Government Party supporters grumble."

"We have at least two days every week without water.... the Government he says that he's got more than more [water], got enough, but I don't know if this is true or not, because if you've got water, you shouldn't cut the water.... it stops.... and when it comes again you have to throw away about fifty or sixty gallons because it comes all rusty.... here they [the Government] say, 'I'm alright and bugger you Jack'." (Marsaxlokk).

"There are arguments with the Government.... when you shout at them nobody hears...." (Marsaxlokk)

".... they [the Government] don't invest here.... the Government knows about the problem and he's doing nothing.... Most of the well off people live in the north and they don't take care of the south." (Marsaxlokk).

"Sliema [has more water].... because the Government is on that side.... where their support is, and they neglect the south." (Marsascula).

"I've been here in Marsascula for over two and a half years. Since about four to five months, six months most - not even one drop of water, a day.... nobody fix

it.... We buy the bowser every two weeks. We buy a bowser. It cost me six pounds per fortnight for water." (Marsascalea).

This last respondent was exceptionally angry. I asked him what he does if he runs out of water. Erupting into a rage he said,

"Kill ourselves, I go back to my country. Second home town.... Australia.... this is the worst part of Malta.... Because they [the Government] are stupid and because they doesn't think what the people need.... Some people they use it for nothing.... They waste it.... not round here.... over here they have to get the jar or the drums and they go up to Zurrieq or somewhere else and they get freshwater.... That's my cousin over there. He lives on the ground floor and not even a drop of water and they [the WSC] charge you the same [for meter rental]. Use it or not they charge. I ring the Water Works for a few drops of water to fill up the tanks, over four and a half months no-one come."

I asked him, if there were many arguments over water. He said,

"Plenty, go door after door and they can tell you. They shoot you 'cos they ran out of water, they shoot you!.... [if] They [the WSC] prefer you [politically] they give you at least a bowser of water, and [when] we ask them - 'nothing at all'. Because over here there's two flags, the blue flag and red flag. The blue flag it's a this party [presently governing] and the red is the Malta Labour Party.... to get some water you have to go to your mother's place."

In Nationalist strongholds, people were more reluctant to blame the Government for the water problem

and often came to their defence:

"It's just an act of God.... the Government is doing its best."

Some blamed the MLP for causing the problem when they were in Government and believed that the Nationalists have inherited it:

"This water problem started in the Labour Government.... we used to experience more cuts in Marsa under Labour.... Now once or twice a week...."

The public water protests in Zabbar, Vittoriosa and Xghajra were politically motivated and the Zabbar and Vittoriosa demonstrations were supported by the MLP Leader and Deputy Leader. The Zabbar protest on 24 April 1993, was a reaction to the water shortage and the study of tap water salinity in the south, by Dr. Alfred Vella and commissioned by the traditionally Labour, Guze Ellul Mercer Foundation (p.593). The study found unacceptable levels of salinity in tap water in the south. The protest was organised by the Foundation and attended by Labour's Deputy Leader, Dr. George Vella, who told the demonstrators that,

"No Government minister had denied the contents of the report on water quality..." (*The Sunday Times*, 25/3/93, p.69).

The protest march in Vittoriosa on 24 August 1993, in which I participated, was politically charged from start, outside the MLP headquarters, to finish (Plates 7.1. to 7.4.). The Labour Leader, Dr. Alfred Sant, walked with the residents who carried empty buckets and bottles and protest placards. Dr. Sant spoke to the crowd, blaming the Government for their problems and protestors

Plate 7.1. The Vittoriosa water protest march. Demonstrators outside the MLP headquarters.



Plate 7.2. The Vittoriosa water protest march. Demonstrators hold red and white (MLP colours) buckets.





Plate 7.3. MLP Leader, Alfred Sant (centre), supports the Vittoriosa water protest march.



Plate 7.4. Reporters and camera crew from the MLP's *Super 1* TV cover the Vittoriosa water protest march.

called for the resignation of Ninu Zammit. Newspaper reporters were present, but only one television camera crew covered the event: *Super 1 TV* (Plate 7.4.), the MLP's television station.

During the summer in 1993, the Nationalist Government announced the increase in water rates. It was met by protests and of course, criticism by the Opposition. It was a perfect opportunity for the Opposition to argue that raising water rates is unacceptable (Figure App.3.7.39. and App.3.7.40.b.) even though they were long overdue. A WSC source (1993) informed me that the public, who may not understand the full facts, may be swayed to support Labour on this issue. When the rates did eventually rise (in 1994), the billing mistakes and gross overestimations in bills provided a further opportunity for the MLP to criticise its opponents, including the well publicised overbilling of its leader (*The Times*, 29/3/95, p.9) (Figure App.3.7.39.b.). As stated earlier, Dr. Sant had suggested to me in an interview that he went to the press to heighten and publicise the problem, probably knowing that it would be to his advantage. Subsequent to this, Ninu Zammit publicly stated that he had also received a miscalculated water bill (*ibid*, 30/3/95, p.9) (Figure 3.7.40.a). This gave the Government an opportunity to show that the mistakes were not discriminatory and gave a full explanation for the mistakes.

Another example of how a water issue is taken on board by politicians to try and sway the public, is the Qrendi pipeline project to alleviate the shortages in the south (p.671). A source at the WSC (1993) told me that the new Qrendi pipeline was being used by the Nationalists in a similar way to how the Labour Government promised the north an RO plant in 1986 to try and win support (*ibid*). When the pipeline was delayed the MLP seized this opportunity to complain about the deliberate neglect of the south in favour of less

immediate priorities in the north like the upgrading of Pembroke RO plant.

An interviewee from Zurrieg said of the project, "I think it's going to be a political issue so that when it happens they can say, 'Open the taps and we've given you water'.... you've got to keep politics in brackets.... I think it's a possibility they will use it like that. Otherwise if it's so much of the problem, they should do it. They should work at it night and day...." Despite being responsible for its construction, this was the opinion of a few WSC sources (1993). One told me, ".... why was the go ahead given for it so late when it was so badly needed. It's political, almost entirely a question of funds. The Government was more concerned with the directing of funds to RO plants in the north."

Another WSC source (1993) informed me that although Sliema was at the end of a distribution line, it was neglected because it was predominantly voting for the Opposition and today (1993) there is a similar problem in Marsascala. For the same reasons, "Nobody will ever say that Sliema up to seven years ago was neglected because of politics.... The Marsascala project [Qrendi pipeline] was postponed for about four years. Had it been an area that voted heavily for the party in Government I believe funds would have been made much earlier." (ibid).

As the summer progressed in 1993 and the water problem worsened, political debates over water became more common, both inside and outside Parliament. The edited transcription of an *Island Sound Radio* discussion on the water problem on 22 August 1993 in Appendix 5, illustrates the political nature of such debates. The discussion was attended by Mr. Mark Borg, representing AD, and Mr. Charles Buhagiar, MLP Spokesman for the Environment. Representatives of the Government and the WSC declined to attend. Listeners were asked to call in and air their complaints.

The radio debate illustrates the political

manipulation of the water problem by the Opposition and the conflict between consumers and the Government. Mr. Buhagiar dominated the discussion while the AD representative had little chance to talk, although when he did he was less critical than Mr. Buhagiar who was able to use the absence of Government and WSC representatives to his advantage.

By giving the impression that 61% of water never reaches the consumer, Mr. Buhagiar misleads listeners into thinking that the Government is losing more than 17% of water through leakages, something that may have had an adverse impact when the Government asked consumers not to waste water (pp.681-726). It was an argument that he was still touting a month later via a different media, *The Times* newspaper:

".... Charles Buhagiar, who claimed that only 39 per cent of water produced in Malta was being used by people and the rest was being wasted. Mr Buhagiar claimed it was the corporations inefficiency and the government's policies which encouraged waste.... However, Mr Zammit [Parliamentary Secetary for Water and Energy] said that Mr Buhagiar was mixing up unaccounted water with water wasted through leakage." (*The Times* 24/9/93, p.36).

His statements also angered the WSC:

"As has been often repeated, the statements by Mr. Buhagiar equating unaccounted-for water through leakages are without a technical basis. Whether intentionally or not, they are therefore, unjustifiably damaging, at a national level, the efforts of the Corporation to win public support to its campaign of water conservation and avoidance of waste by consumers." (WSC, unpublished letter).

In the radio debate, Mr. Buhagiar also blames the NP

for the non-adoption of distributive solutions that the MLP were going to undertake prior to 1987 (just like the Nationalists blamed the MLP for cancelling their order for distillation plants after they lost to Labour), even though the WSC had begun to lay redistributive trunk mains (pp.670-680). Meanwhile, he failed to mention that as one WSC source (1993) said, "The Labour Government laid pipes without proper foundation and the pipes were the cheapest available and prone to rust...."

Some solutions he proposes, like the dual water system, are ideal although there are barriers to overcome (pp.637-639). It is important not to portray the MLP as purveyors of lies, but what this transcript emphasises is that politicians (including the NP when they were in Opposition) will use, omit and distort information and statistics for their own political gain and propaganda.

Mr. Borg's backing of the consumer reflects his party's role as one that has brought hidden environmental problems into the open in defence of the public and the environment.

The water debate between the two major political parties continues and the WSC remains a major topic of debate in Parliament. The report in *The Times* in Figures App.3.7.41. is the Parliamentary debate over water in November 1994. This report leaves no doubt that even one year on after the 1993 drought, water remained a highly political issue in the Maltese Islands.

In 1995, I asked the Prime Minister if he considered the water problem to have been solved. His answer was neither, "Yes," or, "No," but was evasive, which was what I expected and, as one ECO source (1995) put it, "Just like any politician would answer."

7.6. WATER SUPPLY POLICIES

The main water supply strategy of the NP has been to increase the production of water by desalination. Their large public spending figures have come under MLP criticism. NP policy is reflected in the WSC's aims. In an interview with a very senior source at the WSC (1993) I was told that, "It's best to build sources of supply first.... supply comes before a pipe." After coming to power,

".... the Nationalist Government proceeded on its path of economic liberalisation coupled with increased public spending.... they represent a major policy departure from the economic policies pursued during the previous sixteen years of Labour Government. The Government held that, in contrast with previous protectionist and often austere policies, liberalisation increased consumer choice, raised the quality of life....

.... These views were at the centre of the debate when in December 1991 the Government once again presented a deficit budget for 1992. The Government pointed to the booming economy as a justification for increasing public spending whereas heavy investment was required for major infrastructural projects [most of which was for RO plants (Figure 3.7. (p.186))]. The opposition charged that the economy was being fed artificially by heavy government borrowing.... and that the Government was running into debt by trying to be all things to all people in what was the run-up to the general elections." (Fenech, 1992, pp.471-472).

Mr. Buhagiar's water policy proposal in the radio debate (Appendix 5) is, to a certain extent, in conflict with the NP's strategy. Only recently has the distribution system become a concern of the Government's.

Were the two to agree on the same approach to water management, they would appear guilty of reconciliation of each other's ideas, which is what the political arena should not be about, but unfortunately is.

In an interview with Dr. Alfred Sant (MLP Leader) he told me that if he were Prime Minister he would work on the distribution system first before embarking on increasing water production. He believed that the unaccounted for water figure was higher than the Government was stating, particularly the figure relating to leakages.

The WSC is not autonomous since it is directly influenced by Government policy. For example, the decision to increase water rates taken in 1993 was made by the then Minister of the Environment, Michael Falzon, not the WSC Board of Directors. The WSC is funded by the Government and only for Government approved projects. For example, all tenders have to be processed through the treasury, for anything from an RO plant to chairs and tables (WSC source, 1993). In 1993, the Government was not pleased with the level of water lost through leakages (ibid). The WSC was told that the Government would be ready to invest more in production as long as the water produced was not wasted through leakages (ibid). Hence, WSC/WWD policy has changed from one administration to another. Some aspects of the policy may remain the same, but since the changeover in 1987, RO production has increased while Labour's previous policy of relying on groundwater has declined, relatively.

Finally, it must be noted that although the politicisation of water and management is caused by the various physical water problems (scarcity, quality, etc.) it is also part of the general water problem since it hinders solutions to these problems and creates conflict. Were the two main parties to work together rather than against each other, there would be less of a problem.

7.7. POLITICAL POWER AND INFLUENCE

Given that it has been established in Chapter 6 that a position of political power and influence can be to an unfair advantage for oneself, family and friends, then it comes as no surprise that it is generally considered that central Birkirkara, where the Prime Minister lives, is unlikely to be adversely affected by water cuts (University source, 1993). This was confirmed by some of the residents interviewed there.

The same applies to consumers who have problems with their water supply, amongst other things, and would like to speed up the remedial process. If they know someone important with influence on the island, or even who is a friend of a friend, this is easily done.

For example, I observed a housewife from Msida, approaching a bowser giving water to a flat belonging to another woman. She had rung for the bowser for several days and it had not come. I asked her if she had asked the bowser driver for water. She said, "Yes of course we were supposed to get yesterday and today and when I asked them.... they said, 'You're not listed'. That's what he said.... that lady has [something] to do with the Minister you see, that's why she said, 'If he doesn't give you let me know'.... with the Minister near [close to her]."

The same favours occur in the agricultural sector. For example, a source at the DA (1993) informed me that any farmer with Parliamentary contacts will often be able to have them call up the DA to give those farmers preferential treatment. A WSC source (1993) told me that pumping permits are granted to certain farmers with political sway. In some cases, Government water mains supply has been extended to certain farmers' fields as a result of political contacts. In many fields the unusual sight of water meters can be seen. The case study of Farmer 'A' and Tessons-Sullivan against the farmers from

Siggiewi (pp.511-524) serves to illustrate how water conflicts can be politicised right down to the smallest scale. A minister, a DA official and the Prime Minister were in some way implicated by the parties in the conflict.

The corruption and deliberate ignorance surrounding such breaches of the law is not just limited to the theft and illegal pumping of water resources. It is a strong characteristic of Maltese society. Mallia (1994) gives several examples where politicians and the police have aided 'clients' who have been openly breaking the law. In one example from 1989, a concrete ready-mix plant outside Zebbug was operating without a permit with both the knowledge of the then Minister for the Development of the Infrastructure, Mr. Michael Falzon and the Commissioner of Police. The plant was connected to the public water and electricity services thanks to Mr. Falzon's junior minister, the Parliamentary Secretary for Energy and Water, whose brother was one of the original plant owners. The plant was never stopped and it transpired that it was supplying the Nationalist Party Club in Attard (Mallia, 1994). Examples like this can help to fill in the blanks as to what could be the political processes underlying the Girghenti case study (pp.511-524).

Finally, as previously discussed, the Minister for Gozo has been trying to apply pressure on the Government to build an RO plant in Gozo. A source at the WSC (1993) informed me that the only reason for this is the political prestige he would gain by being the first to do this. It was also rumoured that the large number of water cuts in the summer of 1993 were made deliberately to argue the case for an RO plant. If it goes ahead, it will be because the Minister for Gozo has managed to influence fellows and friends in Government. A WSC source (1993) said that it is a, ".... very hot issue" and goes up to cabinet level. Another WSC source (1993) informed me that

Gozo would get an RO plant but not within two or three years. That was in 1993 and by April 1995 the Minister for Gozo was still lobbying. It must be noted, however, that much of this issue is based on unofficial information and hearsay, but as already stated in an island the size of Malta, and especially Gozo, very little can be kept secret.

7.8. POLITICAL MANIPULATION OF WATER RESOURCES RESEARCH

Water research and studies have been undertaken by Maltese academics which, although legitimate and not unfounded, have to a certain extent been politically motivated to be used as another form of party propaganda. Two examples serve to illustrate this: the study into salinity levels in tap water by Dr. Frank Portelli in 1983 (*The Democrat*, 9/7/83, p.5) and a subsequent study ten years later, also on salinity levels in tap water, by Dr. Alfred Vella in 1993 (*The Times*, 16/4/93, p.18) (pp.371-374).

The former study claimed that after conducting tests on tap water, it was unfit for drinking due to salinity levels above the WHO maximum recommended level of chlorides at 400ppm. Dr. Portelli was also a Nationalist candidate and his report provoked a reaction from the Labour Government's Principle PRO, Mr. P. Mifsud, who dismissed Portelli's statements as "baseless" (*The Democrat*, 9/7/83, p.5). The article in Figures App.3.7.42 and App.3.7.43.b. from *The Democrat* detail the argument between Portelli and Mifsud.

"No doctor worth his salt, added Dr. Portelli, is going to state that this amount of salt has no effect on patients suffering from high blood pressure or heart disease." (*The Democrat*, 9/7/83, p.5).

Dr. Portelli's claims were used as Nationalist propaganda and resurfaced again in 1987 just before the general election (Figure App.3.7.43.a.).

In 1993, the study of tap water salinity by Dr. A. Vella, commissioned by the Guze Ellul Mercer Foundation, reached similar conclusions (Figure App.3.7.44.) and was the catalyst for the Zabbar protest march (*The Times*, 16/4/93, p.18). By then, however, the WHO recommended maximum for chlorides had been revised to 150 ppm, so the gap between how much salt tap water did and should contain, in some places, was wider than before. The Guze Ellul Mercer Foundation represents the General Workers Union (GWU) which has strongly supported the MLP and is the party's closest financial and political ally.

"The Labour government's policy of making it (the GWU) a participating ally in formulating its policies - two union representatives attended cabinet meetings - made for an unprecedented stability in industrial relations which was a decided incentive to investment. Also, as a consequence of this policy, the GWU has come to see its role as that of guardian of workers' living standards generally, concerning itself with issues beyond the shopfloor." (Fenech, 1988, p.136).

Sources told me that the Foundation has commissioned other studies and held conferences on the problems of the south of Malta. For example, the three day conference on 'The development of the south of Malta,' in April 1995 at the Germa Palace hotel in Marsascala, was organised by the Foundation. The conference was attended by academics (including myself), environmental groups, local councillors from southern settlements and members of Parliament including the Prime Minister and the leader of the Opposition. It highlighted the various problems in the south of Malta which are, of course, of utmost concern to the MLP.

7.9. PUBLIC DISENCHANTMENT WITH THE POLITICAL PROCESS

Pirotta (1994) has argued that a growing number of people are becoming disenchanted with the political bickering over issues that matter, such as water. Pirotta states that:

".....evidence of growing disenchantment with political parties, especially among young people and the more articulate of the population, may be discerned from the growing number of letters and articles in the Maltese press which seem to conclude that parties are somehow bad or harmful to Maltese society. One reason for this stems from the acute levels of polarization that have characterised Maltese politics from the best part of this century but which have been made worse by the way party competition was conducted during the 1980's." (Pirotta, 1994, p.98).

The following extract from an article written in *The Times* is an example of the kind of letters and articles Pirotta talks of:

"The usual politicians and their apologists pass the usual wishy-washy excuse - it is all the other lot's fault, their years of neglect, and so on.... Blaming it all on yesterday, ignoring one's own mistakes, lambasting each other and the like, will not solve the water problem.... That all governments face problems is also a fact of life. That they make those problems bigger by their foolishness is being proved again.... It is only politicians who strive to sell the impression that perfection is of this world, provided the levers and plush seats of office are entrusted to Their Own Lot." (*The Times*, 5/9/93, p.5).

Further evidence of this disenchantment is the

controversial issue of whether or not political parties should participate in the new Local Councils introduced in 1993. In a voter survey about the Local Councils, 59% of respondents said that they would like to see political parties refraining or be disallowed from influencing local elections (MISCO, 1993). Pirotta argues that this illustrates,

".... voter frustration at the way both major parties have, over the years, sought to monopolize every activity or project at the expense of individual citizen participation." (Pirotta, 1994, p.98).

Some WSC sources (1993) expressed their annoyance at the way the political parties squabbled over water rather than try and pool resources to solve the problem. One said, "It's a political issue.... and they [politicians] just use the people's suffering to get the message through..... Today the Labour Party is making political mileage out of it."

7.10. ENVIRONMENTAL PRESSURE GROUPS

The recent emergence of environmental pressure groups has brought the issue of environmental degradation including water resource sustainability into the public forum. A small number of the public, mostly educated and younger members, are understanding the underlying causes of the water problems and formed these groups. They in turn are making the public aware of problems who in turn demand more from the two main parties.

After Independence, Parliament did not feature environmental planning legislation and the introduction of the 1969 TCP Act was of little significance.

"The fact is that until the early 1980's

environmental issues were not really on the political agenda. Election manifestos of the 1960's and 1970's were essentially devoid of such items.... There was more 'environmental' material in an unofficial floating voters' election guide (Mallia, 1981) than in the publications of the two main parties." (Mallia, 1994, pp.693-694).

Any environmental protection measures were rarely enforced and the environment came last and least on the agenda of most developers and even in Government policies and projects (ibid).

"Even if rather ancient and ramshackle, there already existed a legal framework, dealing with 'environmental' matters, even though the environment had not visibly been on the social or political agenda when the various pieces had been put into place. That pleasant surprise was followed by a rude shock: whatever regulation or legislation existed was largely being observed in the breach, even by government. As a result of this, the proper development of environmental sensitivity in these islands has, until recently, depended much more on the activities of non-governmental organisations (NGOs) than on official activity." (Mallia, 1994, p.686).

Environmental blunders such as the siting of the first RO plant at Ghar Lapsi paved the way for a growing environmental movement to protect the interests of the environment and the public.

"The robust style - one cannot really speak of policies - of the then Minister of Public Works, flanked by equally robust police methods, led directly to the emergence of environmentalists in the European mould, quite prepared to go in for a degree of public action....

This ensured that aspects of environment which had hitherto not received much attention - land use, air and water quality, energy policy - would be kept in the public eye as much as the traditional ones of the historical environment, hunting and trapping and general ecology." (Mallia, 1994, p.695).

This change has led writers like Pirotta (1994) to note,

".... that political parties in Malta are no longer the sole political agenda setters and there are a number of instances when parties have had issues forced upon them, as in the case of environment-related issues. (Pirotta, 1994, p. 99).

There are two main environmental pressure groups in Malta, both voluntary organisations, that concern themselves with water resources, amongst other issues. These are *Moviment għall-Ambjent* (the Maltese equivalent of Friends of the Earth) and the Malta Ecological Society (ECO). The latter organised the *Roundtable on Freshwater Resources* held in April 1995 which was attended by representatives of the WSC and *Moviment għall-Ambjent*, academics and the Parliamentary Secretary for the Environment, Stanley Zammit. The Press were invited and most importantly, any members of the public were informed and invited through advertisements in national newspapers. Although participation by the public was minimal (just three overseas academics, including myself) the pressure applied and questions put to the WSC and Government representatives by members of ECO and *Moviment għall-Ambjent* were highly critical and probing and the Roundtable received media coverage in *The Malta Business Weekly* (30/3/95, p.4) (Figure App.3.7.45.).

Of significant importance for the environmental lobby is the emergence of the AD party on the political

scene in the run-up to the 1992 general election. Their success has come about in mobilising environmental and resource issues on the political agenda to a greater extent than the environmental groups have, particularly those issues that may be hidden or go unnoticed, such as the use of tap water for irrigation by farmers (*The Times*, 4/9/93, p.16) and nitrates in tap water (Mallia and Vella, 1991). With regard to water, the solutions they have proposed have concentrated on conservation and efficiency of water use, which the Government has only just begun to advocate as a serious remedy to the water problem. For example, AD's spokesmen on energy, Professor Edward Mallia was one of the first to state that,

"A more realistic price structure is urgently required, together with conservation campaigns throughout the year." (*The Sunday Times*, 23/2/92, p.16)

This preceeded Government action and possibly influenced Government (pp.681-698). They are the only party that has tried to represent and work for all Maltese people.

"Party credibility and the two-party system itself became an issue as did the environment, in part due to the fact that a new party with 'green' overtones (*Alternattiva Demokratika* AD), which was active mainly among young people, campaigned as a third alternative within the context of a system where traditionally a margin of only a few thousand votes separates the two large parties." (Fenech, 1992, p.472).

AD members have close links with the University and environmental groups such as *Moviment għall-Ambjent* (some of its members are also actively involved in the work of *Moviment għall-Ambjent*) as well as undertaking

independent research in environmental problems such as the problem of nitrates in tap water (Mallia and Vella 1991). Bearing a strong resemblance to European 'green' parties, the success and support for AD is likely to increase as the environment becomes a greater issue in Malta, especially if the disenchantment with the other two political parties continues to grow.

7.11 CONCLUSION

Politics plays an important role in Maltese society with the two major parties enjoying a strong affiliation from their respective supporters. This is counter-productive to a progressive and harmonious society. Supporters of whichever party is governing, it seems, are the main beneficiaries of policies, while areas and voters that traditionally support the Opposition are neglected. Appalling and unfair as this sounds, this is a frequent reality in many parts of the world, regardless of the political systems in operation. It is just more extreme in some places than others. The degraded state of the Maltese roads and the lack of public utilities and services in the south is just one manifestation of this bias, water scarcity being another, albeit a far more important issue. Hence, water politics are not only a cause of the water problem but help to sustain and inflate it by neglecting one half of the country and so creating further conflict.

Water resources have been politicised and the water problem monopolised by both the NP and MLP and their respective supporters, each blaming the other. Political behaviour can be akin to that of schoolchildren where one party tries to convince the school teacher (the voter) that it is the other's fault and win favour. This can lead to a state of confusion and distrust amongst the more discerning voters who may become disillusioned. The

squabbling has hindered, to a large extent, solutions to the problem. If only the time, energy and money spent on propaganda and campaigning were focused on actually tackling the problem, the situation would be much better, despite the political one-sidedness of the parties. The politicisation of water is probably the most fundamental problem that needs to be addressed. To reduce groundwater extraction, increase RO production, improve infrastructure, etc., would not comprise a holistic and equitable solution if only one half of the nation is going to benefit. The whole of Malta needs to be equally addressed and, as stated in Chapter 6, this can only happen if those in Government value and support the whole of the Maltese Islands, not just those areas from which they receive the most support. This is probably the most important issue that needs to be addressed to help solve the water problem. There is no formula, but a radical change in thinking and priorities is needed. Unfortunately the present way is so ingrained in society. Supporters can be as stubborn as their politicians.

The politicisation of water, as with all political topics in Malta and Gozo, has led to a kind of sensitivity surrounding their discussion. People are often afraid to speak out for fear of the personal consequences of what they might say. This hindered my research to a small extent. More importantly, in the kind of democracy that officially exists in Malta, people should not be afraid to express their opinions, but unfortunately it's an indication that such a level of democracy is so difficult to put into practice in a society of this size, where personal contacts and relationships count for so much.

The media has been the main arena for water politics. It has served as the main means of propaganda for both main parties and as the voice of supporters in anger and defence. Although this is a good thing, since consumers' views and complaints can be publicly aired,

many media formats (mostly newspapers) display extreme political bias and may both under or over-represent public sentiments and help propagate and perpetuate the divisions in sentiment. However, the result is that consumers will tend to use which ever medium will most readily represent them. The problem here is that many of those suffering in the south may be discouraged to complain in some of the more traditionally Nationalist newspapers, including *The Times*, which means that the extent of their plight may not be fully understood by those in power or the consumers in the north who have access to water. It might be hard to believe that at this scale such a level of unawareness exists, but it certainly does if those with water have not experienced the problem first hand or had the suffering described to them in some detail. The First World know in theory that the Third World suffers but the reality usually only hits home when that suffering is directly experienced. Another possibility is that although *The Times* receives many letters from southerners, many of those depicting extreme cases of deprivation may not be published for political reasons. Indeed, the coverage of the 1996 general election in *The Times*, one of the leading and most politically neutral newspapers, but with a Nationalist slant (and hence, not neutral enough), was clearly biased in favour of the Nationalist Party (who incidently lost).

Political conflict also arises because of the opposing ideologies of the two main parties. This is reflected in their approaches to water management over the past two decades, each party claiming that their approach is the best and the other's is wrong. Were the parties to agree or compromise by working together for all the people, then the water problem (along with other problems) probably would not be as severe as it is, particularly if they were to consult and act on the advice of specialists (academics for instance). The very idea that water provision is, or should be, an

'ideological' issue is highly unfortunate and its constant use by both the main Maltese parties has certainly been a key factor in water provision inequalities. This must change but, unfortunately, this is unlikely given the nature of the political arena, where empty promises are often made to gain or remain in power, while decisions are made that often disadvantage a large proportion of society and the environment.

Academic research has been used to serve the propaganda needs of political parties, with studies commissioned to show that present levels of water quality are unacceptable. Although the intentions of those conducting the research might be well meaning and the results highlight problems which often need to be urgently addressed, the real motives are often based on a different order of priorities such as the selfish desire to gain votes, rather than work for the good of the people.

As stated, the ongoing conflict between the MLP and NP has led to the disenchantment for some in the political process, who are now looking for someone with a genuine concern for the well being of the whole of society and its precious environment. Thankfully, this has helped pave the way for more neutral and environmentally friendly groups such as AD and ECO which try and work for the benefit of all people. Despite this, it remains the case that the majority of the people continue to support their traditional party on dogmatic grounds and changing political loyalties to give support for these groups will occur very slowly if at all. And yet the evidence since 1993 shows that there has been a change of emphasis in the right direction.

CHAPTER 8

WATER RESOURCES MANAGEMENT AND FUTURE PLANNED DEVELOPMENTS

8.1. INTRODUCTION

The *Malta Structure Plan* (1990b) states that with regard to water supply,

"Future policy is aimed at:

1. Increasing desalinated water to meet rising demand
2. Improving water quality
3. Extension and reinforcement of the distribution system
4. Investigation into increasing the use of second class water for non potable uses." (Ministry for Development of Infrastructure, 1990b, p.15).

This Chapter discusses these solutions, some of which are being adopted, and proposes others for increasing water supplies, encouraging water conservation and improving water quality and distribution and hence, water equity.

8.2. INCREASING WATER SUPPLIES AND RESERVES

There are four strategies that are to be implemented to increase first and second class water supplies and reserves.

1. A new RO plant in the south of Malta to specifically cater for this region's needs.

2. New water storage reservoirs are to be constructed (Ministry for Development of Infrastructure, 1990a; 1990c). The first, at Swieqi, is awaiting planning permission and is expected to have a capacity of 45,500m³ to 68,200m³ (10 to 15 million gallons), but this ultimately depends on the site granted by the PA (WSC source, 1995).

3. The management of road stormwater run-off and possible controlled aquifer recharge using this water (ibid).

4. New sewage recycling plants are to recycle all sewage by 2010, providing ample water for agriculture, industry and possibly aquifer recharge and potable supplies.

A University source (1993) informed me that the Government intends to have completely solved the water problem by the year 2000. If the Government continues as it intends to, then it is likely that the water problem will at least be under control. The new sewage recycling plants will generate such a large amount of recycled water that Malta could even become like an attractive tropical island, given careful management. With the solutions to the problem will come high prices to be paid: "Water will be available but we'll have to pay a lot for it. Now it's cheap, but not available." (ibid).

That was in 1993. By 1994, water rates had significantly increased and production had risen to the extent that the Water and Energy Parliamentary Secretary, Ninu Zammit, confidently announced:

".... Malta now had [has] a spare production capacity of a few million gallons a day to make up for any damage which could arise." (*The Times*, 15/9/94, p.21)

8.2.1. Desalination

University sources (1993) informed me that to eliminate the water scarcity in the south, the region requires approximately an additional 11,300m³ of first class water per day. This will require diverting water from the new trains at Pembroke RO plant and a new RO plant in the south.

During 1994, the former aim was partially complete by the laying of a new larger main from Pembroke to the Ta' Qali reservoir (pp.671-674) (WSC source, 1995) and plans were in hand for the construction of the latter to begin in 1995 (*The Times*, 19/1/94, p.16); *ibid*).

By April 1995, the new RO plant was still in the site selection phase and awaiting public consultation with the PA. The plant will initially produce 9,100m³ (2,000,000 gallons) and is likely to be upgraded to 27,300m³ (6,000,000 gallons) soon after it is commissioned. Its maximum production capacity will be 40,900m³ (9,000,000 gallons) of water per day with the possibility of expansion up to 54,600m³ (12,000,000 gallons) per day (*ibid*).

Other sites considered included Hal Far and Ghar Lapsi (*ibid*). Given that the land at Hal Far has a high ecological value, including the cave Ghar Hassan, a popular tourist attraction, while Ghar Lapsi is an ecologically sensitive area (WSC source, 1995), the plant

will almost certainly be located at Zonqor Point at the limits of Marsascala (WSC, 1995b). Figure 8.1. shows the potential sites and reasons for rejecting sites along the rest of the southern coast are given.

A public hearing has occurred in Marsascala and residents have been reassured that the plant will be sound-proofed (WSC, 1995b). The sewage outflow near Marsascala, at Wied Ghammieg, which often malfunctions, depositing untreated sewage near the shore, may be a pollution hazard to the new plant's feedwater (*The Sunday Times*, 31/7/94, p.8). However, results over thirty consecutive days from two test wells were encouraging, even under worst-case scenarios, when a minimal dose of chlorine was sufficient to treat the feedwater.

The PA have asked the WSC to submit an evaluation of the environmental cost of all possible RO plant sites to them (PA source, 1995).

The Tigne RO plant will be shutdown in the near future because of a planned tourist development on the site (*ibid*). The new RO plant will not only compensate for this, but will represent a major redistribution of RO water from the north to the south (*The Times*, 4/9/93, p.32).

By September 1994, daily water production was up to 150,500m³ (33 million gallons) (*The Times*, 2/9/94, p.21), giving Malta a spare production capacity (*The Times*, 15/9/94, p.21). The WSC were confident that they were successfully keeping up with demands (WSC source, 1995). They announced in April 1995 that water production was to increase to 164,200m³ (36 million gallons) by the summer (*The Times*, 9/4/94, p.1).

The large reduction in the number of complaints over water shortages is an indicator of an improvement in water supply since 1993. This can be observed by looking at newspapers. Analysis of newspaper articles from *The Times*, *The Sunday Times* and *The Malta Independent* shows a significant reduction in complaints after October 1993.

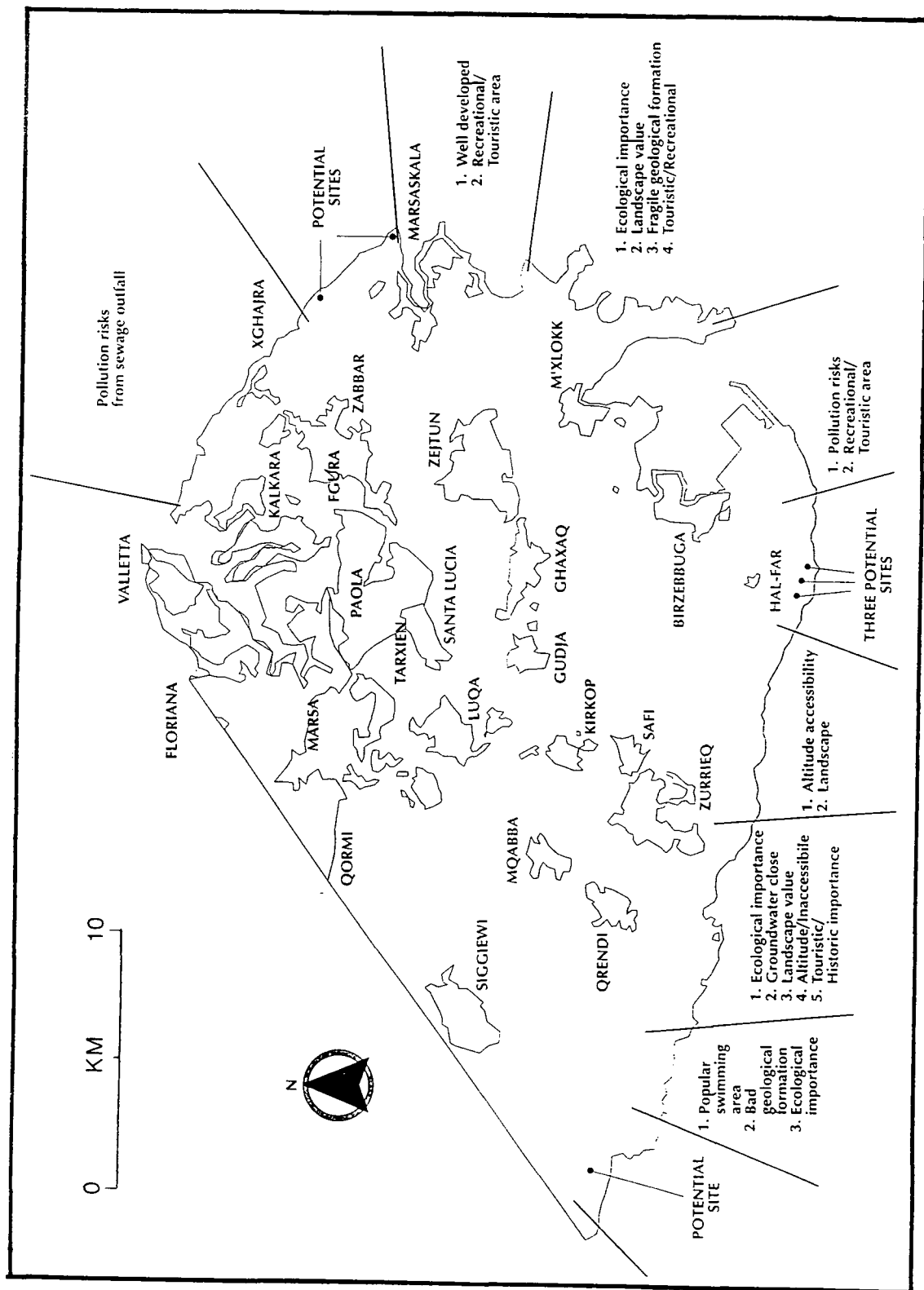


Figure 8.1. Potential and excluded sites for the location of the new RO plant.
Source: WSC, 1995b.

Figure App.3.8.1. shows samples of letters of commendation to the WSC. University and WSC sources (1995) informed me that there were very few water cuts during the summer of 1994. Those that were due to water rationing were least common. Any water cuts of a long duration were because of power cuts. A WSC source (1995) said, "Technically, even though water will always remain a problem on the island, we are in a phase where we can supply potable water to all areas without hassles, regular problems or many major water cuts.

8.2.1.1. RO plant security

Special coastal barriers surrounding the RO plants should be implemented to protect them from oil slicks and other seaborne and landborne pollution. If there is a disaster there should be at least one to two days store of water on the island in case more than one RO plant is affected, which is quite probable since the majority are located along the northern coast. Replacement membranes should also be made available in case of damage (*The Malta Independent*, 25/7/93, p.3).

The only suggestion of implementing security measures is POLICY PUT 4 of the *Malta Structure Plan* (1990c):

"Strategies will be developed for the safeguarding of essential supplies (particularly fuels and water) and distribution systems, to achieve minimum disruption in the event of natural, accidental, or deliberate calamities." (Ministry for Development of Infrastructure, 1990c, p.109).

WSC sources (1995) informed me that little has been done on this matter, although by November 1994 the WSC was,

".... considering a study by foreign experts who reported on ways to prevent and counteract the effects which oil pollution accidents could have on Malta's reverse osmosis plants.... RO plants have become indispensable for water production and their continued operation, even in emergencies, is a matter of concern, the corporation believes." (*The Times*, 21/11/94, p.56).

This kind of forward thinking is needed to secure valuable sources of water. The Maltese Government should take note of the example from the Sea Empress disaster in Britain in 1996, a major source of embarrassment for the Government who should have learned to take precautions after the Braer disaster in 1993 (*The Guardian*, 23/2/96, p.6). Booms, salvage tugs and access to state-of-the-art ships, for recouperating spills, in nearby countries need to be secured to cope with similar disasters in the Maltese Islands.

Finally, the RO plants need to be fenced and security cameras or guards be placed to prevent sabotage.

8.2.1.2. Gozo

The construction of an RO plant in Gozo is unlikely given that transferring water from Malta is a cheaper option. Instead, by April 1995, the WSC had begun to refurbish the water supply infrastructure at Gozo to facilitate the transfer of water from the Cirkewwa RO plant in Malta (WSC source, 1995).

8.2.2. Rainwater harvesting

The potential to capture and store rainwater in small decentralised reservoirs has not been realised in

Malta. Enlarging drains alongside roads and utilising disused quarries as reservoirs are worthwhile prospects.

Furthermore, in addition to the small dams across the island and,

"Because of rain water importance, government is determined to go ahead with the implementation of more water catchment schemes. Risq il-Widien Projects follow up the development of Wied il-Qliegħa which was undertaken many years ago. The basis is to catch water in the valleys by means of earth dams in the valley beds. They also include the cleaning of these valleys. It is proposed to include afforestation schemes and recreation areas for public use." (Ministry for Development of Infrastructure, 1991b, p.38).

By April 1995, a tender had already been issued by the WSC for the damming of *widien* in Gozo (WSC source, 1995). The WSC is trying to determine the exact extent of urbanisation with the help of the PA to calculate an up to date figure for run-off in the Maltese Islands. More run-off recorders will be placed around the Islands with the first in Msida (WSC source, 1995).

Also by April 1995, the Water Re-use section of the WSC was investigating ways of substituting first class water by utilising non-potable water, including rainwater. Demand for the water in the industrial and agricultural sectors was being estimated (WSC, 1995b). Appendix 6 lists their tasks, aims and strategies.

An inventory is being made of urban and rural storage facilities (*ibid*). The WSC now know where most of the small scale open reservoirs (constructed during the 1970's and 1980's) are but they need to be cleaned and their potential re-estimated.

The WSC is also trying to assess the total storage capacity of domestic cisterns, what use is made from the water they hold and what else it could be used for (WSC

source, 1995). Public buildings are also being investigated. Parishes, for example, are numerous and should all have cisterns. Many were constructed during the times of the Knights of St. John and their potential will be assessed. Some are already used by the DA to fill their bowsers for distribution to farmers, but there is no record of how much of this water is used (ibid). Run-off water is already being transferred from the Inner Harbour area to rural agricultural areas (ibid).

Springs presently used for potable supplies will, it is hoped, be used for agriculture and certain industries. This water can also replace seawater in the tourist sector for toilet flushing, reducing corrosion of pipes and the loading of wastewater with chlorides. It can be used to water public parks and other public facilities and could be used for aquifer recharge if enough is available (ibid).

It is hoped that agriculture, particularly the relatively new vineyards, and also concrete mixing plants and batching plants located in the vicinity of the springs, will use the water (ibid). Heavy water consumers in the Mosta area have been marked as potential customers for surface run-off collected in the Qliegħa Valley (WSC, 1995b).

Similar surveys and second class water projects will also occur in Gozo (WSC source, 1995).

8.2.3. Reducing water loss to the sea

The WSC acknowledges the need for increasing aquifer recharge and decreasing water loss to the sea. Measures to facilitate infiltration such as increasing grass cover and large scale afforestation have been considered. At the *Roundtable on Freshwater Management* held in Pieta in April 1995, the Parliamentary Secretary for Water, Dr. Stanley Zammit, was impressed by and approved of the

likely success of such grassroots measures. Increasing the surface vegetation of the Maltese Islands, will reduce run-off loss to the sea and increase aquifer recharge, although it is uncertain whether losses by evapotranspiration will increase. Studies will have to be undertaken in appropriate species selection and to see if the gains outweigh the losses.

De Bono (1977) proposes that to reduce water loss via subsurface springs and diffused flow in the Maltese Islands, the following measures be implemented:

"i. Interception by boreholes and production through pumping.

ii. Groundwater recharge by means of intercepted storm water run off or treated sewage effluent [already under consideration].

iii. Sealing off fresh water outflow channels."

(De Bono, 1977, p.163).

However, the economic and environmental implications of these methods need to be considered first.

8.2.4. Increased wastewater recycling

To comply with the Barcelona Convention of 1977,

"Regulations enacted by the European Community [European Union] and as stressed in the Government's Structure Plan, have compelled authorities involved to consider seriously the absolute need to treat all the sewage before disposing it into the Mediterranean Sea. Plans, designs and execution of these projects are in hand. These will ensure that by 2010, all sewage will be treated to marine disposal standards and to higher

standards when water extracted from the sewage is reused for other purposes." (Micallef, 1994, p.22).

A secondary benefit of this will be an abundance of recycled effluent of the kind produced by the SASTP:

"As water resources are limited, the potential benefits to be gained by the reuse of sewage effluent are particularly important in the fields of agriculture, industry, recreation, landscaping, and other tourism related uses." (Ministry for Development of Infrastructure, 1990b, p.16).

The Structure Plan's POLICY AHF states that irrigation supplies are to be developed by all possible means, including recycling and storage. POLICY PUT 8 states that water re-use is to include: controlled aquifer recharge using collected surface run-off; treated sewage effluent; and the greater use and management of road stormwater run-off (ibid).

In addition, the WSC Act 1991 states that one of its objectives is:

".... to provide for the treatment and for the disposal or reuse, as appropriate, of sewage and wastewater...." (House of Representatives, 1991, p.787).

Table 8.1. compares water consumption and the resulting wastewater volumes for 1990 and projected for 2010. It can be seen that recycling all wastewater by 2010 will provide vast quantities of second class water.

The number of studies, mostly University of Malta dissertations, that have been undertaken on the subject of recycled water in the Maltese Islands (Robertson, 1919; De Bono, 1977; Zamitt, 1979; Micallef, 1988; Galea, 1992; Micallef, 1994; Debono, 1994) reflects the huge

Table 8.1. Water consumption and wastewater production (million m3) in 1990 and projected for 2010

Consumption (million m3/annum)	Consumption in 1990	Amount ending in sewers (80%)	Projected consumption in 2010	Projected amount ending in sewers (80%) in 2010
Domestic	19.8	15.84	25.8	20.64
Tourism	2.4	1.92	3.1	2.48
Industry	3.0	2.4	3.9	3.12
Other sectors	4.4	3.52	5.7	4.56
Total	29.6	23.68	38.5	30.8

Note: Consumption is production minus leakages (approximately 20% of production).
Source: Micallef, 1994.

potential for increasing water supply this source presents.

8.2.4.1. The upgrading of SASTP

Enquiries have already been made with a Danish consultancy, Conicosult, to upgrade the SASTP production capacity with funding from the European Investment Bank. In 1993, plans were in hand to increase production from 7,000m³ to 17,000m³ of recycled effluent per day within two years (COWIconult, 1993).

Security of the satellite reservoirs will be included in the upgrading of the plant. Most of the equipment in the plant will be completely refurbished and centrally computer controlled to enable the monitoring of every part of the plant, to know what volume of sewage is incoming, to operate gate valves remotely, to automatically backwash sand filters and to know the exact water level in the satellite distribution reservoirs (SASTP source, 1994). This should make the plant more efficient and reduce lengthy breakdowns.

By April 1995 the upgrading had been postponed to August 1995 due to delays (SASTP source, 1995).

8.2.4.2. New sewage treatment plants

Three new sewage recycling plants will be constructed, one in Gozo at Ras-il-Hobz and the other two at Ta' Cumnija and Wied Ghammieg in Malta (*The Times*, 11/4/94, p.1), places where sewage outfalls already exist (Figure 3.17). Along with the SASTP, these will recycle all of Malta and Gozo's sewage (*The Times*, 13/12/93, p.17). Local plans will designate sites with suitable geology (Ministry for Development of Infrastructure, 1990c). The total projected cost of these three projects is Lm12.5 million (1991 prices) (*The Times*, 9/7/93, p.1).

Construction of all three is due to begin in 1996 (WSC source, 1995) even though the Barcelona Convention of 1977 obliges Malta to begin treating large discharges by the mid-1990's. (Ministry for the Environment, 1992; Jaccarini and Degaetano, 1993)

The water will be used mainly for agriculture and the amount of land under irrigation is expected to increase as a result. It has been envisaged that eventually it will be so plentiful that much of it will have to be discharged into the sea. Table 8.2. shows the proposed sewage treatment plants with the tentative year of commissioning and projected initial production for those years.

Information from a DA source (1995) states that the sewage recycling capacity in the final stages of the plants in 2010 will be as follows:

Ta Cumnija - 8,000m³/day;
Ras-il-Hobz - 6,500m³/day;
Wied Ghammieg - 58,000m³/day;
Sant Antnin - 17,000m³/day.

The most likely area to be supplied by the Wied Ghammieg plant and the SASTP is located east and south of Valletta, outside the groundwater protection zone. This includes 104ha of industrial zones (Bulebel, Hal Far and Ricasoli) and potentially, approximately 2,000ha of irrigated and non-irrigated agriculture outside the protection zone.

However, only 1,000ha of agricultural land can be satisfied by the plants which will initially treat approximately 75,000m³ per day of effluent by 2010 (assuming an efficiency of 50% - i.e. 2,000m³/ha/month) (Ministry for the Environment, 1992, p.10.5), while Micallef states a higher figure of approximately 85,000m³/day with almost 88% to be used in the south-east area (Micallef, 1994, p.36).

Table 8.2. Tentative year of commissioning of proposed sewage treatment plants and projected flows

Location	Main catchment areas	Recycled water production m ³ /day	Year of commissioning
Sant' Antnin	Marsa Central	17000	1993-1995
Ras il-Hobz	Gozo	4950	1995-1997
Ic-Cumnija	Malta North	6700	1997-2001
Wied Ghammieg	Marsa Sea, The Three Cities and Marsa South	58050	1999-2001
Total		86700	

Source: Debono, 1994.

It is estimated that industry will use 2000m³/day, less than 5% of the recycled water. Micallef (1988) has proposed that much of this, with further treatment, could be used to replace the large amounts of tap water used in the shipbuilding and ship-repair industries:

"When a ship is to be painted in drydock, the surface of the steel plates has to be very clean, free of oils, salts, sea-shells and fouling materials etc. For this reason high pressure hosing is used; the water being of very high quality since it has to remove salts.... When tests were carried out.... the final effluent had to be desalinated.... Since the effluent is slightly saline the cost of producing fresh water by treating this effluent (which will be suitable for ship-washing but not for drinking purposes) is quite low." (Micallef, 1988, p.vi).

The Ta-Cumnija plant could provide irrigation for 75ha in the north, given that salinity is acceptable (measures to ensure this are discussed on pp.619-622). This is equivalent to an area of 750m x 1,000m and a potentially good region of this size is the one between Marfa Ridge and the Mizieb Valley, south of Mellieha Ridge (where irrigation is presently undertaken with groundwater in close contact with seawater) but falling outside the Tal-Mizieb pumping station protected zone (Ministry for the Environment, 1992; Micallef, 1994).

The Gozo plant at Ras il-Hobz is expected to cater for approximately 60ha of land, which is easily found outside the groundwater protection zone, near the proposed plant site (Micallef, 1994).

Although DA (1995) sources quoted a final treatment capacity of 6,500m³/day for the Gozo plant, the *Sewerage Master Plan for Malta and Gozo* (Ministry for the Environment, 1992) states that it will be approximately 4,000m³/day. With this latter figure, the Gozo plant will

be able to cater for the irrigation of 60ha or an area of 600m x 1,000m. An agricultural area of this size can be found outside the groundwater protection zone, near the treatment plant, just south of Ghajnsielem and west of Mgarr (ibid, p.10.5).

The sewage will be treated to different levels depending on the time of year:

"During the irrigation season, basically all the sewage is envisaged to be treated to unrestricted irrigation standard and used in agriculture. The demand for industrial second class water will only constitute a few percent of the total effluent production. Outside the irrigation season (in winter) the sewage will undergo secondary treatment before discharge to the sea, in order to comply with EC [EU] directive (no.271/91) on urban wastewater management." (ibid, p.2.1.)

By April 1995 the DA was working with the WSC to furnish a design for the distribution of this water. The project is to be funded by the Drainage Department so the ultimate decision on the design will be theirs (DA source, 1995).

The Sant' Antnin experience allows for up to 4,000 microsiemens/cm effluent salinity during the irrigation season (Ministry for the Environment, 1992). It is envisaged that the salinity level of all the sewage in Malta can be reduced to below 4,000 microsiemens/cm making it suitable for irrigation (ibid). This is an important consideration since the salinity of recycled sewage from northern coastal areas (Marsa Sea) is higher than 4,000 microsiemens/cm (Table 8.3.) (ibid).

Furthermore, Table 8.3. shows that the sewage from Zabbar, Zejtun and Zurrieq (and Birzebbuga) is very saline because of the intrusion of seawater to a certain part of the Zabbar-Zejtun sewage gallery in Birzebbuga, as well as the high salinity of the tap water in the

Table 8.3. Drainage supply areas for the treatment plants and respective salinity of sewage supplied

Drainage (sewage supply) area	Salinity range of sewage (microsiemens/cm	Treatment plant/s supplied
Marsa land (C)	3500	Sant' Antnin/Wied Ghammieg
Marsa sea (A)	4000	Wied Ghammieg
Wied Ghammieg (B)	4500	Wied Ghammieg
Cumnija (E)	4000-5000	Ic-Cumnija
Anchor Bay (E)	6500	Ic-Cumnija
Birzebbuga (D)	7500-9500	Wied Ghammieg
Gozo	3500	Ras il-Hobz

A,B,C,D and E correspond to the Sewage Master Zones shown in Figure 3.17. (p.231).
Derived from Micallef, 1994.

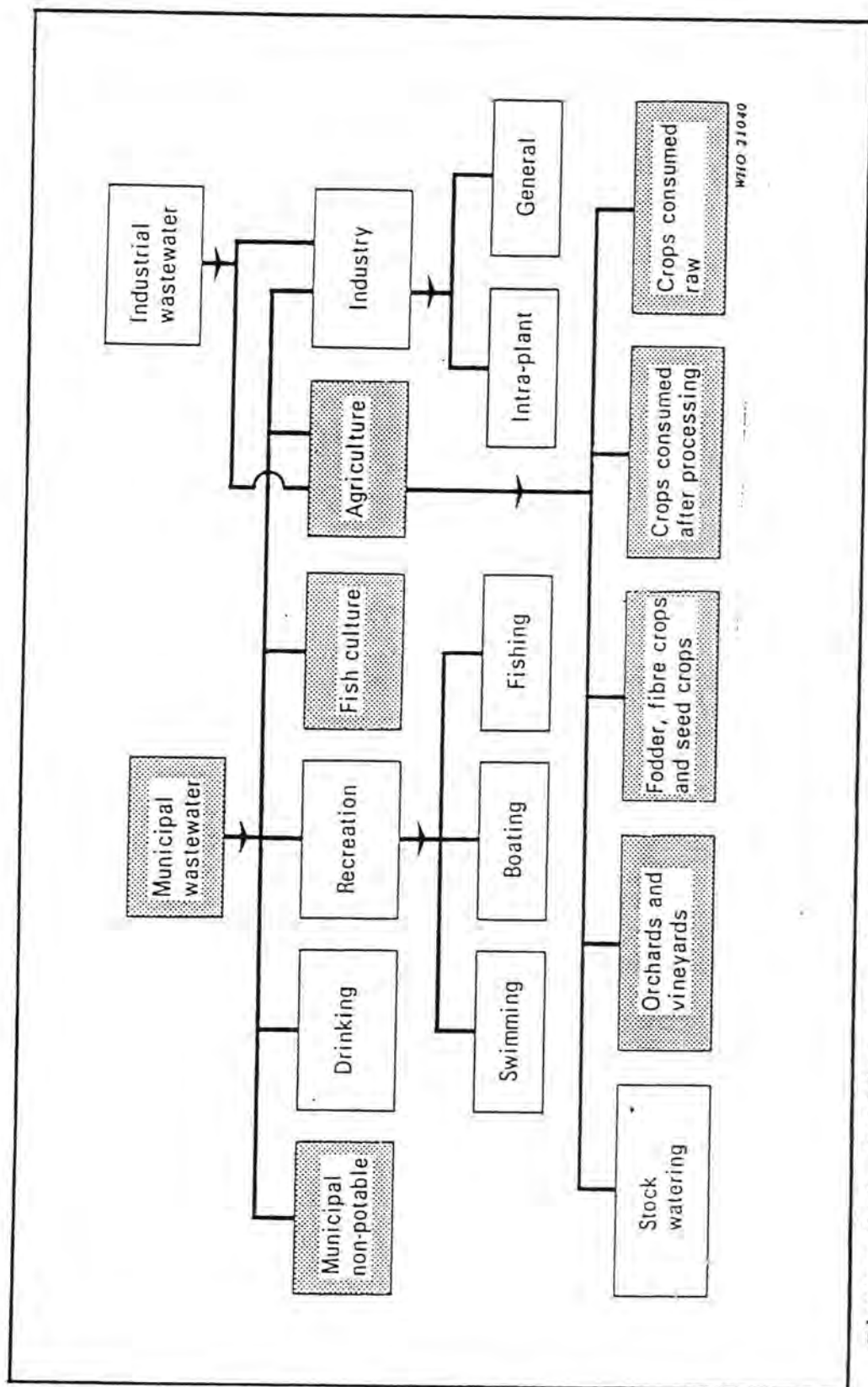


Figure 8.2. Outline for the use of recycled wastewater.
Source: Haiste International Limited, 1990.

south. Repairs to this section and those in the north, along with the restriction of brine discharge to sewers and the improvement of tap water quality (80% of raw sewage is first class tap water), should bring the chloride content to 4,000 microsiemens/cm or below (ibid; Debono, 1994).

It is proposed that the separate treatment of industrial sewage be undertaken, probably at Wied Ghammieq, and that the new Sewer Discharge Control regulations be enforced and the stringent import control of undesired substances be continued (Ministry for the Environment, 1992).

Other proposed uses for recycled wastewater are:

1. Greenbelt (parks) areas irrigation
2. Golf course irrigation
3. Landcape irrigation
4. Industrial reuse.
5. Groundwater recharge
6. Landscape impoundments
7. Marsh enhancement.
8. Flushing sewers
9. Dust suppression on roads and quarries and construction sites.

(Micallef, 1994; Debono, 1994).

Figure 8.2. summarises the main potential uses for recycled wastewater. Of these uses, it can be seen that the potential for municipal, or urban, use should not be overlooked. Given that agricultural demands drop to almost nothing during the winter and that industrial use is likely to be minimal, the importance of making use of the treated wastewater in the home or urban level should not be ruled out. Micallef proposes that it may be used for:

"- partial recycling inside building, offices. This

use involves the supplying of flushing water for toilets from recirculated wastewater that has been treated.... This inevitably implies a dual pipe system.

- supplying municipal systems with wash water for streets, equipment and water for firefighting. Obviously, its usage must not cause impairments to the system such as proliferation of bacteria, corrosion or cause unacceptable health hazards." (ibid, p.39).

Micallef suggests that the water may be used for partial aquifer recharge (pp.628-629) as something that would address both the issues of improving the quantity (freshwater lens thickness) and quality of water stored in the MSLA or to set up an underground hydraulic barrier to seawater intrusion of the MSLA along the coast. Furthermore, he suggests the:

"- reinjection into the drinking water system after treating it to potable standards. This usage requires a thorough examination due to psychological impacts. This system is widely used in deserts and has been under study for use in space missions. Because of the salinity level in the reused water it is often necessary to mix it with fresh water to meet drinking standards. If this is not possible it must undergo desalination. Great care however must be taken to remove organic pollutants, ammonium and bacteria." (Micallef, 1994, p.40).

Otherwise,

".... considering the comparatively low salinity of the water and the low contents of nitrates, recharged effluent may be used for the RO plants in order to reduce the operation costs, which largely depend on the salinity of the water.... seawater, which is the main source of RO plants, has a more than ten times salinity level."

(Ministry for the Environment, 1992, p.10.3).

- an alternative to the above would be to treat the effluent to potable standards and blend it with a greater volume of water in an aquifer presently not utilised. This is the aquifer in the vicinity of SASTP and lies outside the Groundwater Protected Zone." (Micallef, 1994, p.40).

Since, according to University (1995) and *Moviment ghall-ambjent* (1995) sources, this aquifer has been used to supply Cottonera with substandard water, this last suggestion is undesirable if this practice continues.

8.2.5. Potential problems and recommendations for remedy

Given the proposed increased use in recycled water, the prevention of the leaching of salts and nitrates, from the increased use of recycled water for irrigation and the associated increase in fertiliser application, will need to be monitored and controlled to prevent further pollution of groundwater. Micallef states that:

"One of the drawbacks to using sewage in agriculture is that it may raise the nitrate level of the groundwater.... irrigation with sewage treated water, will still be allowed solely outside the groundwater protected zones until further studies are carried out to ascertain whether or not and to what extent, irrigation would affect groundwater quality." (Micallef, 1994, p.35).

Furthermore, it has been suggested that the effluent's quality needs to be improved (bacteriologically and in terms of nitrates and chlorides) so that its use can be unlimited on all irrigable areas (Debono, 1994).

"Parameters that need to be corrected in the effluent's characteristics so that treated effluent could be utilised unlimited on all surface irrigable area should be considered and treatment for their possible elimination thoroughly costed." (Micallef, 1994, p.35)

Given that it has been established that the groundwater protection zones cannot safeguard groundwater and that many groundwater sources are already nitrate rich, then the implications for large scale use of recycled wastewater, even outside groundwater protection zones, necessitates quality improvement measures, such as blending the effluent with collected rainwater or passing it through an RO plant solely for nitrate removal (which would have lower energy costs than conventional RO plants) (ibid).

Furthermore, studies and if necessary measures, need to be undertaken to ensure that there is no bacteriological contamination of groundwater supplies from the extensive use of recycled sewage effluent.

The concept of the 'living filter', where most soils can be very effective in removing bacteria from water that percolates through them (De Bono, 1977), shows that,

"Quality improvements of the water takes place in the top metre of the soil." (Zammit, 1979, p.8).

The worry is that Malta's soil cover may not be sufficiently deep in many places (ibid) and the fissured limestone below would allow the rapid passage into the aquifer and possibly directly to or very near wells, boreholes and pumping stations (Debono, 1994). Zammit warns that,

"The soil cover is not deep averaging around 1m and lies on fissured limestone. Malta lies on its own aquifer, so that irrigation with reclaimed water poses a

danger of ground-water contamination, since this scanty cover cannot be relied upon for purification." (ibid, pp.55-56).

Finally, there is a mismatch between sewage water quality and quantity, and seasonal agricultural demands. Sewage water is of better quality and more abundant during the winter when large amounts of rainfall inadvertently enter the sewage network, but this is the time when agricultural demand is negligible. It would be a pity to dispose of the treated water into the sea. Even if other uses are found for it, there may be a surplus. The WSC's Chief Executive has, justifiably, recommended that,

"In order to use efficiently the treated effluent it is important to have either a groundwater or surface water seasonal reservoir (if possible, the present quarries should be used)." (Riolo *et al*, 1993, p.45).

8.3. SOLUTIONS TO THE WATER QUALITY PROBLEMS

For reasons of health, equity and achieving EU membership, the Maltese Islands needs to improve the quality of its tap water.

"It is the stated intent of the Government to seek full membership of the EC [EU]. In the field of the environment there are already about 130 different EC [EU] regulations, directives, decisions, and recommendations which Malta will have to ratify." (Ministry for Development of Infrastructure, 1990b, p.28).

The following discussion presents measures that are to be taken to improve water quality and suggests others.

8.3.1. Reducing groundwater extraction

WSC consultants have recommended that groundwater extraction needs to be immediately reduced by 10% to contain the further deterioration of the MSLA (Riolo et al, 1993). This is being done and substituted with RO water (WSC source, 1994).

In the long term it is necessary that there is an average reduction of groundwater extraction of 40% to 45%, to allow the aquifer to recover from the damage already done and restore its quality (ibid; WSC source, 1995). It is recommended that this be done as soon as new supplies can be secured.

Given that groundwater extraction presently accounts for approximately 40% of production, this would mean having to reduce total water production by approximately 16% to 18% (WSC source, 1995) and hence make up for the reduction either by increasing RO water production or introducing conservation and efficiency measures (WSC, 1995a).

During the summer of 1993, the Environment Minister, Michael Falzon, stated that the use of Government boreholes was to be phased out and in December 1993, Dr Stanley Zammit, the Parliamentary Secretary for the Environment, announced that the WSC planned to reduce extraction by 45 per cent over the following five years (*The Times*, 13/12/93, p.17). Yet, in 1994 it was announced that pumping stations and boreholes were to be fitted with electronic equipment for operation by remote control, which should increase their efficiency (*The Times*, 11/11/94, p.27) and probably their output.

Furthermore, strict measures need to be introduced to curb the illegal drilling of new boreholes, and restrictions and monitoring placed on new electric and diesel pumps. The metering of private boreholes to discourage liberal and wasteful use of groundwater is under consideration (ibid).

8.3.2. Artificial aquifer recharge with recycled sewage effluent

DA sources (1993) described what is considered to be an ambitious plan to recharge the aquifers artificially with recycled water to replenish the MSLA freshwater lens, increasing its quality, as well as the quantity, of its reserves. However,

"Health experts have serious questions regarding organic compounds that are present in wastewater and our ability to reduce them to safe levels. These doubts increase further when we realise that a large number of new and potentially toxic chemicals are developed each year. Laboratories are unable to adequately detect all of these chemicals without expensive monitoring programs." (Micallef, 1994, p.37).

Again, Zammit warns that,

".... treatment is required even for groundwater recharge, due to the fissured condition of the aquifer and the scanty soil cover." (Zammit, 1979, p.76).

The Sewerage Master Plan for Malta and Gozo (Ministry for the Environment, 1992) states that:

"Using treated sewage for recharge or domestic consumption (first class water) cannot at present be recommended. The sewage would have to be purified to drinking water standards before recharge, due to the fissured soil/rocks which may lead the water directly into (or very near to) wells or boreholes." (ibid, p.10.3).

Current thinking amongst sources (1995) at the WSC, the DA and the University is that this statement may not

necessarily be true and recharge without treatment is under consideration.

If recharge across the island is not possible then it is likely that the water may only be injected along the coast to act as an underground hydraulic barrier between freshwater and seawater to try and prevent saline intrusions (WSC source, 1995). WSC sources (1995) informed me that recharge would certainly be prohibited within the vicinity of production boreholes to prevent any possible contamination.

A study is to be undertaken of the area being irrigated by the SASTP to see if there has been any accumulation of harmful residues from the use of recycled irrigation effluent in the aquifer immediately below the region. The WSC are now working with the UNEP on an in-depth study for the whole of Malta (ibid).

Presently, the WSC's best guess is that they will find that the SASTP water has not affected the quality of the aquifer (WSC source, 1995). This estimate is seriously doubted by University (1995) and *Moviment għall-Ambjent* (1995) sources who were of the opinion that at the very least, nitrate levels would increase.

It is unlikely that tests in the SASTP area will give a representative notion of the effects of the effluent on groundwater, since the geology and its fissured nature varies across the island. The exact details of Malta's geology are virtually unknown (WSC source, 1995).

The proposed sewage treatment plant at Ic-Cumnija will offer the WSC the chance to experiment with artificial aquifer recharge in the Mizieb Basin on a small and manageable scale since,

".... the geology of Ic-Cumnija (Mellieha) to Pwales across the Mizieb Basin is known to favour groundwater storage with a minimum volume of 300 million gallons [1,363,800m³]." (WSC, 1995b, p.11).

8.3.3. Groundwater blending and polishing facilities

The quality of tap water has drastically improved recently in some areas because of the full commissioning of Pembroke RO plant and the use of its water and other RO water for improved blending and distribution (WSC source, 1995).

However large differences still exist between the north and the south. To remove this inequity, the sufficient blending of water from all sources is required to equalise nitrate and chloride concentrations for all settlements, to conform to health regulations. In the case of nitrates, Mallia and Vella (1991) have demonstrated that:

"Considering the weighted average nitrate concentration of groundwater (70ppm) and its share of the water budget (45%) together with the corresponding values for RO water (respectively 0ppm and 55%) it is theoretically possible to obtain a water blend for the Maltese Islands with a nitrate concentration of about 30ppm.... at least every attempt should be made at blending groundwater supplies with RO produce in order to comply minimally with the WHO guideline [45ppm] if not to approach the idealized blend concentration of 30ppm." (Mallia and Valla, 1991, p.8)

Although new mass transfer pipelines are being constructed (pp.670-680), the WSC has not yet reached the stage where most people are achieving a satisfactory blend of water (ibid).

It is recommended then that in the short term as an alternative or even as a long term parallel to blending, a new RO plant be used for the polishing of highly nitrate groundwater. Polishing is the term given to the passing of groundwater through an RO system to improve

its quality. The lower salinity of groundwater, especially that of the perched aquifer would mean that energy costs would be much lower. Such a plant seems to be a viable option for Gozo given the health risks posed by their nitrate-rich groundwater. In the mean time, Gozo should blend its water with RO water from the Cirkewwa RO plant (Mallia and Vella, 1991).

In terms of chlorides, the production of more RO water and the consequential reduction in the need for groundwater will help improve quality as long as this RO water is adequately blended with groundwater supplies. The most long suffering settlements along the southern coast should see a marked improvement once the new RO plant, expansion and rehabilitation of the distribution system in the south and redistributive pipelines from the north to the south are complete (pp.670-680).

A WSC source (1995) stated that in the future, "Our philosophy is to collect all groundwater; to blend it in reservoirs because the WSC wants to invest in the polishing of groundwater for nitrates and chlorides. In the future there will be a polishing plant near, or at, one of the reservoirs."

Plans to distill extremely pure water that could be mixed with RO water to further improve its quality were announced in May 1994 (*The Malta Independent*, 8/5/94, p.3). The pending construction of a distillation plant with the Delimara power station would contribute to these plans by providing high quality distillate at a relatively low cost (ibid: 23/5/93, p.6, 20/6/93, p.8-9), for blending with groundwater that is very high in chlorides (*The Times*, 23/11/93, p.1).

8.3.4. Water filters and domestic RO systems

A variety of water filters and very small RO systems are available for the public to purchase. The latter are designed to fit aesthetically under the sink but unfortunately cost approximately Lm200.00. The irony is that they are least affordable for most of the people who need them the most, those living in the traditionally lower income households in the south. Figure App.3.8.2. illustrates some of these devices, of which the EcoLite Reverse Omosis Drinking Water System by Ecowater Systems costs Lm230.00.

8.3.5. Groundwater protection

The *Malta Structure Plan* (Ministry for Development of Infrastructure, 1991b) states that,

"Contamination Zones have been identified to protect aquifers from pollution, particularly where water is extracted. Potential threats to the aquifer are prohibited or strictly controlled within these areas. The Water Ordinance 1943 is the main legal framework within which this can be done." (Ministry for Development of Infrastructure, 1991b, p.38)

In 1994 the WSC finalised a revised set of groundwater protection regulations aimed at all sectors. Groundwater protection boundaries were delimited based on EU practices. These came into practice soon after the spring of 1994 (WSC source, 1994). However, previous discussion has shown that the groundwater protection zones provide a false sense of security.

What is most important for groundwater protection is to improve public campaigns and increase awareness to prevent the harmful and illegal disposal of potential

groundwater contaminants, since it is considered that taking offenders to court is not effective on its own (WSC source, 1995):

"Watercourses should be kept free of debris, both of natural origin such as the material carried into the valley by stormwater, and material dumped illegally.... Currently it is the Police, and in some cases the Armed Forces, who are responsible for enforcing existing legislation including that dealing with the environment. This has proved far from ideal. The proposal to appoint Environment Wardens has been made and should be seriously discussed and considered.... Modern and effective environmental legislation needs to be introduced. This however will not be effective unless the Maltese public becomes aware of the necessity for this legislation and of the need to observe it, not because of the threat of some sort of punishment, but because it is essential for the personal and public good. This detailed environmental awareness does not seem to exist to the desired extent, and an intensive educational campaign is necessary." (Ministry for Development of Infrastructure, 1990b, pp.38-40).

Authorities need to impose and publicise large penalties and police and enforce the laws against illegal tipping. Given the small size of the Islands this should not be expensive.

Given that,

"Illegal dumping is a national pastime", (ibid, p.110)

a system to collect domestic waste of all types or the provision of a large number of collection centres inside or near settlements would help reduce this problem.

The two legal dumping sites have not been seen as a threat in the past. However, as previously discussed, uncontrolled and unprotected tipping at these sites poses a threat. The Government has proposed the construction of a gatehouse at the entrance to the Maghtab rubbish tip to introduce a ticket system to better control tipping. Skips are also planned outside the dump for small quantities of waste so that people do not need to drive all the way to the dump, hence controlling and facilitating access for the many that use the dump everyday (*The Times*, 6/4/93, p.3).

Furthermore, the prevention of waste, increased recycling, incineration, and landfills are to be the strategies to cope with the pressure on the Maghtab and Wied Fulija sites. The landfills require proper lining and covering to prevent groundwater contamination. Public sector workers have participated in a course run by the Malta Council for Science and Technology to teach general aspects of groundwater protection, technical barriers, covering systems, risk management and the monitoring of waste sites (*ibid*, p.3). Furthermore,

".... Danish consultants [RH&H Consult of Virum] had said that the method of solid waste disposal in Malta should be radically changed. They suggested a three-phased 17-year programme which involved a technical and environmental upgrade for the period 1992-96, the implementation of advanced technology incineration in 1996-2000 and a comprehensive waste management sytem by 2010." (*ibid*, p.3).

It should be noted that,

"The discharge of toxic and harmful wastes is prevented through prohibiting or restricting the import of such matters as asbestos, pesticides, heavy metals, and organic solvents in detergents. It is necessary to

obtain a permit from the Health Authority to discharge liquid industrial wastes." (Ministry for Development of Infrastructure, 1991b, p.48).

Frequent permit inspections and greater control in their issue need to be introduced.

With regard to sewage overflows, it has been proposed that sewer flow capacities be increased with retention basins to eliminate the problem of stormwater in the sewers. A new and more powerful pump is to be installed in the Qawra area to prevent the drainage overflow problem there (*The Times*, 20/7/94, p.20).

"Although total prevention of groundwater pollution is not feasible, it is increasingly evident that water resources and quality management must involve improved waste-disposal management." (Edworthy, 1989, p.109).

Measures also need to be taken to ensure that the leaching of hydrocarbons, mostly from petrol stations and underground storage, is prevented.

To prevent the illegal disposal of toxic waste into the drainage system (and ultimately into groundwater by exfiltration and recycled irrigation effluent) by all sectors:

"The environment ministry has launched a public awareness campaign in preparation for the coming into force of the Environment Protection (Sewer Discharge Control) regulation next January 1 [1994].... Although the regulation were intended for industrial, agrarian and catering establishments, emphasis was also being placed on public awareness.... In the case of garages, it would be an offence for anyone to dump burnt oil directly into the sewer." (*The Times*, 5/7/93, p.48).

With regards to cesspits they should be,

".... inspected regularly by the Health Authority and a bowser service set up to empty these cesspits regularly. In order to improve sealing properties cesspits should be lined with reinforced fibre with a double bottom." (Institute of Water Technology unpublished report).

Finally, farmers need to be educated in the application of agrochemicals:

1. to apply only what is necessary for crop growth (SASTP source, 1995);

2. to apply as close as possible to the peak requirement of the crops (Zahra, 1991);

3. not to apply prior to heavy winter rains wherever possible (ibid);

4. and to use fertilisers with relatively few nitrogen components. Zahra (1991) recommends the use of coated granulated and slow-acting nitrogen fertilisers since these dissolve very slowly in the root zone without excessive leaching (ibid).

8.3.6. Environmental auditing and taxing of industrial pollution

In January 1994, the Drainage Department announced that the 'polluter pays principle' would be implemented that year to compensate for, or even prevent, the discharge of industrial waste that damages the environment. Commercial enterprises will have to pay large fees for a sewage discharge permit (*The Malta Independent*, 16/1/94, p.3).

It was perhaps this announcement that prompted the SGS-THOMSON factory at Kirkop, Malta's single largest employer, to adopt measures later that year. In September 1994 the factory (which was previously polluting a

disused quarry by using it as a discharge pool) unveiled a \$500,000 wastewater treatment plant. The factory was the first in Malta to set an example to polluting industries in Malta. Being one of the largest in Malta, the new plant represents a significant reduction in the amount of industrial pollution of the environment, including groundwater. The treated water is used for plants inside the factory and landscaping outside (*The Times*, 16/9/94, p.40). It is hoped that other industries will follow suit.

8.3.7. Bottled Water Quality

Bottled water needs to be continually monitored to ensure that there is no bacteriological contamination or dangerous levels of minerals given that some are derived from springs and boreholes which could be subject to contamination. The increasing levels of fertiliser and sewage effluent use could present an increasing risk to bottled as well as tap water.

8.3.8. Restricting tap water supply for non-potable uses only

It has been suggested in the past and again recently (see Buhagiar's comments in the radio transcript in Appendix 5), that ideally all households should have a dual supply system: a first class one for drinking and a second class one for non-potable uses. This would be acceptable if all homes had initially been built with such a system. The costs involved in retrofitting buildings would be great and unpopular with consumers.

It is surprising that the idea to supply consumers with drinking water only in bottles has never been considered. All but two of the consumers I interviewed

said that they purchased bottled water to drink and some cook with it. According to a NTOM source (1993), the majority of tourists prefer to drink bottled water.

"Consumption of bottled water in Malta stands at between 25 and 30 million litres a year when only two decades ago bottled water was virtually unheard of." (*The Times*, 29/9/93, p.21).

In addition to the salinity, people are beginning to realise that tap water is high in nitrates as environmental groups and academics increase their awareness. Hence, a further incentive to buy bottled water, especially for those families with babies.

Why the Government and the WSC invest so much of the taxpayer's money on the expensive and arduous task of bringing tap water up to potable standards, when drinking and cooking constitute only 3% of consumption is something that needs to be seriously questioned. It would be more equitable and cheaper to distribute drinking water in bottles. A Government produced bottled water would be cheaper than existing bottled water since profit making should not be a primary aim. Furthermore, the Government could subsidise the water so that it was practically free. Less money would be required to invest in making tap water potable, which would be used only for non-potable uses.

However, an obstacle to this is the powerful lobby of the bottled water companies who would strongly object. Since they are significant financial contributors to the Government (Anonymous source, 1993), it is likely that it is here that politics becomes an obstacle to this solution. The Government could pay the companies to reduce the cost of their bottled water. A benefit of this is that the Government would not have to invest in the capital and running costs of its own bottled water plants. Supplies to the elderly and disabled could be

provided by delivery. One company, that produces H2Only bottled water, already provides this service.

It could be argued that supplying bottled water so cheaply would encourage wasteful and lavish use. But most liberal and wasteful water use presently is not done through drinking or cooking. People do not drink copious amounts of water simply because it is cheap. With the money saved, investment could be directed more into the distribution system and blending facilities to ensure that everyone receives a supply of second class water to wash and flush with that is not salty and discoloured. It would mean that the large amounts of recycled wastewater that will be available by 2010 could be treated to a non-potable but safe level and put to use for domestic use.

Some industries may object but many do not require water to be potable and many of those that demand high standards are already treating tap water further themselves. Those industries and others that would be disadvantaged by the change could be helped by the Government for the purchase and use of equipment to treat the water.

The burden on the national electricity grid would be reduced as RO plants would not need to produce as much water or to the present standard, especially if recycled wastewater is used. Of course the public will have to be made aware of the change well in advance via a national awareness campaign which would be relatively cheap.

It is recommended that the WSC undertake a survey of all households to see exactly how many purchase bottled water. This survey need not be expensive and can be in the form of one simple 'yes' or 'no' answer question on domestic water bills, that can be detached and returned with the payment.

8.4. IMPROVING INSTITUTIONAL WATER RESOURCES MANAGEMENT

The establishment of the WSC as a commercially run private body, as opposed to the Government body the WWD was, was the beginning of a change to improve water management (WSC source, 1995). Plate 8.1. shows the WSC headquarters at Luqa with the new WSC logo and Plate 8.2. shows the noticeboard that reminds employees of the WSC's goals as they walk into work everyday.

This section discusses how the WSC has encompassed efforts to introduce new forms of professional training, improving worker output and motivation, technical developments and scientific support, and improved customer-Corporation relations. Recommendations for a comprehensive policy and sub-policies for the WSC are made.

"Water resources planning must take a long-term view, balancing the sometimes conflicting interests of customer needs (for quantity, quality and reliability), environmental protection and cost-effectiveness." (McIntosh, 1993, p.415).

8.4.1. Worker attitude and motivation at the WSC

A WSC source (1993) informed me that one of the most important changes that need to occur at the WSC is in the attitude of the workers. They need to no longer feel that they are Government dependent and need to have some sense of accountability and pride in their work: "There is tendency for workers to feel that once their job is secure that they can get away with anything. The change over partly involves reducing this attitude and getting more accountability from the workers." (ibid). However, it can be argued that workers cannot give their full commitment in the absence of assurance of job



Plate 8.1. The WSC Luga headquarters with a new look logo.

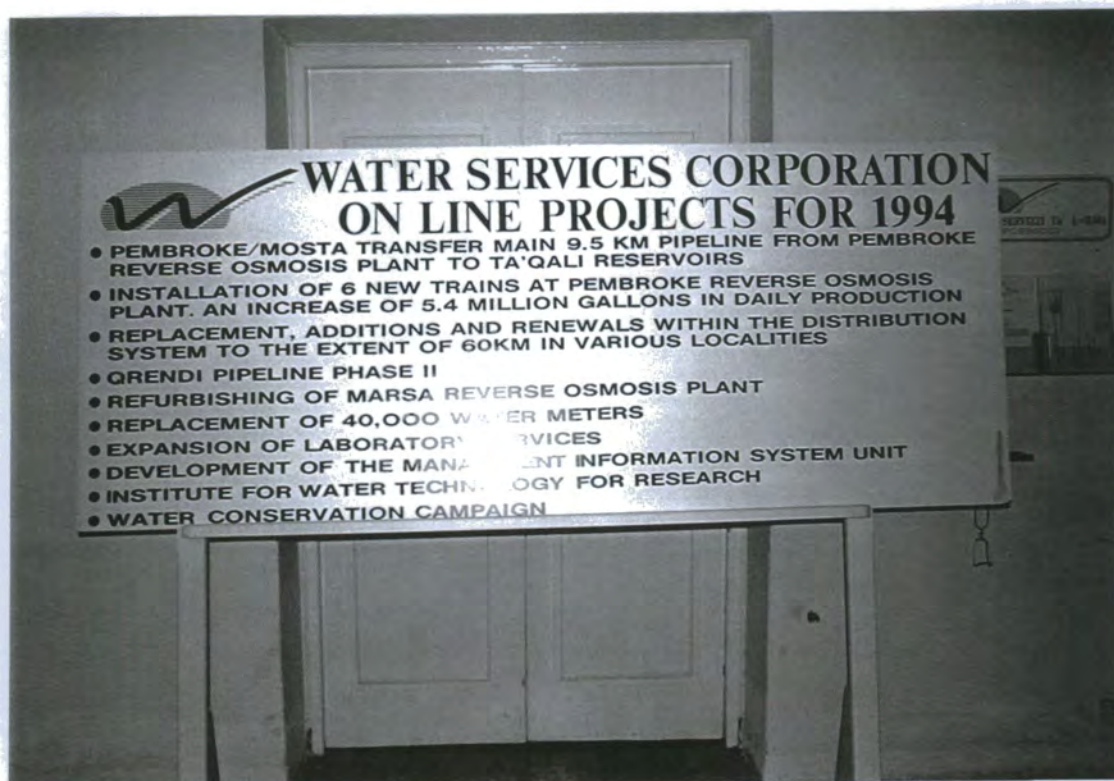


Plate 8.2. A notice board in the WSC foyer is a daily reminder of the Corporation's targets.

security, especially since many Labour supporting workers were made redundant after the change in Government in 1987 (ibid). Nevertheless,

"Government is trying to establish a semi-autonomous corporation run on commercial lines. Every effort is being made to change the civil service mentality prevalent in the former government department. While this will certainly take time, it is also important for the politicians to adopt a 'hands off' attitude where the day-to-day running is concerned." (*The Times*, 28/5/93, p.4).

In 1994 and 1995, recruitment for specialist positions at the WSC was undertaken. Figures App.3.8.3. to App.3.8.5. show some of the vacancies advertised in the national press.

8.4.2. Professional training for water management

The WSC presently employs approximately 1,600 people. The new posts of the WSC were filled by those that were seen as being most competent for those positions. Most of the present staff were employed under the WWD. Whereas the WWD had very few clerical staff, the WSC is employing many new staff in this department, especially those that are computer literate (WSC source, 1993).

The WSC has also employed more professional staff than previously, and a few are graduates or undertaking University courses, part-time or by leave. At the start of 1994 the WSC was still in a state of transition. By April 1995 it saw itself coming out of this, to being a professionally run corporation (WSC sources, 1995).

POLICY PUT 3 of the *Malta Structure Plan* (Ministry for Development of Infrastructure, 1990c) states that,

"A major strategy of public utilities planning will be the efficient management and conservation of resources.... The water cycle from supply through distribution, use, disposal, treatment, and reuse will be planned and managed comprehensively." (Ministry for Development of Infrastructure, 1990c, p.108).

The WSC is trying to adopt modern management techniques that have been proved successful elsewhere, such as California, to achieve this strategy.

Professional training and management courses to cater for the WSC's needs are provided by the Institute of Water Technology. Appendix 7 is a portfolio of the Institute, including a summary of the main courses it runs.

By 1995 this autonomous body was fully operating with two main objectives:

(a) to train the WSC workforce through their own programme and by acting as a forum for technical people and professionals (for information and innovation exchange); and

(b) to conduct research into water related problems (WSC source, 1995).

This is a contrast to the *ad hoc* in-house training in the days of the WWD. Workers were simply learning on the job through the experience of others (ibid).

Two main courses are currently run by the Institute:

(a) a Level 1 course in supervisory management for first time managers/foremen (120 hours part-time over two years). It is geared towards providing technical skills with a low level of management training (ibid);

(b) and a Level 2 supervisory course for operations managers/foremen that occupy a higher grade of management, i.e. the first line of management (240 hours part-time over one year). This is a more management orientated course than the Level 1 course and involves a high degree of teaching of technical skills and some training in management. It is run in conjunction with the University of Malta and certificates are issued by them. In 1994/5 eight people out of thirty qualified for this course, while five dropped out. Promotion is not possible without passing the course, hence the incentive to pass (ibid).

At the same time a number of short courses are conducted of approximately ten hours duration each. These include induction courses for new staff, literary courses in English and Maltese, first aid and health and safety courses and a water accounting course for meter readers. Demonstrations are run for the introduction of new equipment, for example, tools for trenching and compacting roads, involving approximately three to four days training. Attendance at short courses in Malta and abroad is organised for top management. Two new courses in desalination and water re-use, awaiting commencement, will be acknowledged by the University as professional qualifications (ibid).

With regards to research and development the Institute is conducting energy audits (reducing pumping costs, for example), water accounts and investigations into water re-use. Maintenance procedures and metering and leakage detection problems are also being investigated. Management audits will be undertaken to assess the top management level (ibid).

In the future, the Institute will be more involved with the recycling of water via training and reserch. They are awaiting the construction of their own laboratory which will be autonomous from the WSC's

(ibid).

The WSC's recent experience in tackling the water problem is proving valuable for information exchange with other countries which have, or have experienced and solved, similar problems:

"The WSC will also be joining the European Union APAS programme where they will pass on their experience of membranes and reverse osmosis to other participating organisations. In return these other organisations will give the WSC advice and help in other fields. This programme is a European network to integrate renewable energy into water production. It includes organisations from the UK, France and Greece." (*The Times*, 15/12/94, p.8).

8.4.3. WSC Engineering Services Branch developments

The Engineering Services Branch has developed rapidly in the year from April 1994 to April 1995. They had progressed so that management teams that previously only existed on paper had materialised and undertaken some training (WSC source, 1995).

They are currently in the process of refurbishing their workshops and stores in better locations. The computerisation of the WSC will allow better management of maintenance tasks and inventories. Improved standards, they hope, will entitle them to an International Standards Organisation (ISO) 9000 certificate (p.650) (ibid).

8.4.4. WSC Distribution Branch developments

The Distribution Branch of the WSC has also rapidly developed since 1991. Sources (1995) informed me that in April 1995, they were in the process of recruiting to expand their personnel structure and running training programmes for staff. They are also purchasing new equipment, instruments, and vehicles for pipe rehabilitation and leakage detection (ibid).

Furthermore,

"Currently the distribution system is being modelled by computer for analysis, understanding and improvements. Once completed and calibrated, the responses of this model to different conditions of the system configuration and demand patterns will be tested, and when ready it will be an excellent tool to establish such parameters as conditions of mains, evaluation of design alternatives, etc." (Ministry for Development of Infrastructure, 1991b, p.40).

8.4.5. The new WSC laboratory

In 1994 the WSC established its own laboratory for the chemical analysis of water quality at the Luqa headquarters. This has allowed them to undertake precise bacteriological tests, previously conducted solely by the Department of Health.

Although the WWD had a laboratory, it was never capable of the level of testing that the new laboratory will undertake once it is fully equipped (WSC source, 1995).

With respect to chemical testing, the laboratory has been adding to the number of tests it is capable of, which numbered 26 in April 1995. The aim is to not just acquire EU standards of water quality but be able to

undertake the necessary testing to EU standards (ibid).

Presently, the laboratory abides by WHO standards. They try to abide by the EU upper limit for nitrates (50ppm). With the current political climate surrounding Malta's application for EU membership, the laboratory along with the rest of the WSC are trying to achieve EU standards of water quality. Like the Engineering Branch, the laboratory is striving to obtain ISO 9000 accreditation (ibid).

By April 1995 there were seven employees, including two scientists, two laboratory technicians, two laboratory attendants, and clerical support from one clerk. The WSC was still awaiting responses to a tender issued for the purchase of new laboratory equipment funded by the EU. The equipment will allow the WSC to conduct further tests such as improved bacteriological analyses and tests that could never be done at all, like those for heavy metals. The Health Department will continue to be a watchdog of water quality (ibid).

8.4.6. Customer services and WSC-consumer relations

Since the complaints and conflicts over the water problem in 1993, the WSC's Customer Services section has made a large effort in trying to improve customer relations. They have regularly placed advertisements in the newspapers to inform the public of their activities and their progress. Figures App.3.8.6. to 3.8.8. are examples of such advertisements.

March 15 1994 was World Consumers Day and this added to the pressure on the WSC to offer a better service for the consumer. There was much talk in the newspapers (Figures App.3.8.9. and 3.8.10) about the need for better consumer services (*The Times*, 15/3/94, p.5&6) and this applied to the WSC as much as any other service in Malta. By regularly placing advertisements in the national press

(Figure App.3.8.11 and App.3.8.12.) the WSC have kept the public informed of changes, including disruptions and improvements to their customer services, so as to reduce customer frustration.

With regard to the problems with the present billing system under the new domestic tariff, the WSC have done their utmost to try and explain the problem and to try and remedy it. Through the press they have tried to inform customers of the reasons behind the inaccurate water bills and how customers can help the WSC in correcting them. For example, Figure 8.3. is an explanation of the water bill (presented at an editors forum and subsequently published in *The Times* and distributed at the WSC office in Valletta) drawn up to help customers understand what they should be paying after the WSC discovered that,

"Customers are working out bills according to the leaflet distributed with the bill and finding a discrepancy in the calculations" (WSC, 1995a, p.9).

In addition, the WSC are to introduce a new computerised billing system to do away with the errors and slowness of the present system:

"A new system, 'one-stop shop' is being developed. All Water Services Corporation offices which handle customer services will be networked to allow immediate updating and access to information. The basic principle behind the development is to ensure that clients will be offered the most services on the spot without the need to report to any other Water Services Corporation office.... all this will be implemented by October 1995. At the same time, errors originating from arrears and which lead to incorrect bills and suspensions of supply will be totally eliminated." (WSC, 1995a, p.13).

EXPLANATION OF WATER AND ELECTRICITY BILL



WATER SERVICES CORPORATION
 Corni Road, Luqa LQA 05
 Enquiries: Tel: 2143301
 Fax: 2143301

ACCOUNT No. 919 9199 TO 280094
FROM 12/05/94 **TO** 28/09/94

SERIAL No. 352 003
LAST PAYMENT ON

	WATER	ELECTRICITY
Code (see reverse)	0	
Last reading	148	
Previous reading	121	
Consumption	27	
Rent	1.00	
Due	20.25	
Government subsidy	21.34	
Total	16.85	4.49

Statement
 Credit: 55
 Arrears: 66
 Claim No.: 77
 Claim No.: 01
 Claim No.: 02
 Claim No.: 03
 Claim No.: 04
 Other Charges: 05

WSC 3594
 No. of persons: 3
 Claim No.: 3
 This bill may be paid between
 WSC VAT No. 1261-5416
 Enemalta VAT No. 1273-4807
 and
 at the local police station.

TOTAL 19.74

Now you can pay your bills on a Saturday morning at our Valletta Branch, 229 Merchant Street.
 At our Valletta Branch you can also:
 Check or pay your water & electricity bill.
 Change your residential address.
 Apply for a water / electricity meter test.

This number is to be quoted whenever dealing with WSC.

Determines the period covered by bill.

Code 0 indicates that the meter reader actually read 148m on 28th August 1994. An explanation of 'codes' is found at the back of the bill.

KEY TO READINGS CODE

0	O.K.	6	premises closed
1	meter stopped	7	meter recommenced
2	previous reading high	8	premises empty
3	meter broken	9	meter changed/new services
4	meter faulty	A	glass broken
5	meter blocked		

Meter reading on 12/05/94 for this bill
 Meter reading on 28/08/94 for this bill
 148 cu. m - 121 cu. m = 27 cu. m is the consumption between 12th May 1994 and 28th August 1994, a period of 109 days for this consumer.

The meter rent is 1 cent per day : Lm 1.09 for 109 days in this bill.

Unsubsidized water consumption is charged at 75c per cu. m : 75c x 27 cu. m = Lm 20.25.

Government subsidises two blocks of consumption each of 5.5 cu. m per person every 4 months. For this example, each block size is:

12 months x 109 days x 5.5 cu. m x 3 persons = 14.8 cu. m
 4 months 365 days

This consumer uses the first block of 14.8 cu. m fully and only (27 cu. m - 14.8 cu. m =) 12.2 of the second block.

i.e First block subsidy = 14.8 x 67c5 = Lm 9.99
 Second block subsidy = 12.2 x 50c2 = Lm 6.86
 Total subsidy Lm 16.85

Amount to be paid by the consumer for water is :

Lm21.34 - Lm 16.85 = Lm4.49

This total includes electricity and water bills.

This is the third bill sent in 1994.

This is the number of persons in this particular household.

A consumer may apply to change the number of persons in his household on an appropriate form obtainable from the local council offices or WSC offices.

No VAT is charged on water

VAT on electricity is wholly absorbed by Enemalta at no change of electricity rates to the consumer.

* Legend : cu. m = cubic metre

Explanation : 1 cubic metre is equivalent to 220 gallons.

Figure 8.3. Explanation of the water component of the water and electricity bill.
Source: WSC, 1995a.

These improvements in customer services will help to reduce the conflict between consumers and the WSC and improve the WSC's image and customer relations (*The Sunday Times*, 16/10/94, p.16).

By 1995, the fact that the level of conflict, social and political, had subsided was an indication that the water problem had also subsided to a certain degree. This shows some sign of progress in that there was at least no longer the need for demonstrations over shortages.

8.4.7. WSC management policy

Information exchange between the branches is required, since most overlap in jurisdiction, and also a general understanding of all the activities of the WSC by everyone. It would be beneficial for the WSC to adopt corporate policies that govern the Corporation as a whole.

In 1994 the WSC were intending to adopt the ISO 9000 as a model to develop a better level of service (*The Times*, 15/12/94, p.8). The ISO 9000 is a set of quality management systems standards. Malta is one of the few countries in Europe which has not yet adopted ISO 9000 as a national standard. A few industries and companies have attained ISO 9000 and others, like the WSC, are intending to follow suit (*The Sunday Times*, 2/4/95, Industry Supplement, p.V):

"The ISO 9000 fever which is sweeping across Europe, America and Japan has also reached our island. It will become increasingly difficult, in the next couple of years, for any organisation to do business unless it forms part of the ISO 9000 Club." (ibid, p.V)

The WSC is pleased with the progress they have made and at the end of 1994, its Chief Executive felt that,

"The highlights of the year, as far as Mr. Riolo is concerned, includes the Qrendi pipeline, 75 kilometres of mains changes, intensified training and the meter introduction." (*The Times*, 15/12/94, p.8).

8.4.8. Management of SASTP irrigation water

The technical, financial and institutional capabilities and incapacibilities of the authorities responsible for the supply and distribution of SASTP water, the conflict over responsibility between them, and the lack of worker commitment and motivation, has led the Drainage Department to suggest a reorganisation of the management structure for the SASTP and future treatment plants as is best practical and operational. The main parties involved should be the Drainage Department, the Department of Agriculture and the farmers supplied:

"The Drainage department should be responsible for the production of irrigation water and for the supply to the main reservoirs. The location of the reservoirs should be decided jointly by all parties." (Ministry for the Environment, 1992, p.10.6).

This will be without interference in the farmers' everyday use of the water. The reservoirs will each be fitted with a water meter to determine water charges and,

"The (gravity) distribution from the reservoirs, usage and payment for the water shall be the responsibility of user associations." (*ibid*, p.10.6).

The DA should have the responsibility of organising these user associations which will be linked to one or more reservoirs. They shall also provide technical help on the distribution and application of the water and

ensure that the water is paid for to the Drainage Department.

With regard to the distribution system,

"It is envisaged that the users will apply channels, piped systems and even bowsers in combination with individual storage tanks on the farms. For piped systems (possibly involving pumping) the expertise of the Water Services Corporation should be explored." (ibid, p.10.7).

8.5. REDUCING THE UNACCOUNTED FOR WATER FIGURE

In 1994, the WSC's Water Audit Section aimed to precisely itemise and reduce unaccounted for water components. This is to be done for each of the eight master zones in Malta.

By comparing the value on a zone's master meter (measuring flow into the zone) with the billed consumption of all consumers within the zone, the WSC has been able to determine the amount of unaccounted for water. According to WSC sources and unpublished data, the amount of unaccounted water varied from 20% to 70% of water supplied for different zones (WSC, 1994a).

This exercise was first done in the St. Lucia zone in 1992, where it was found that the unaccounted for figure was 54.7%: approximately 30.7% due to meter under-registration; 8.3% due to leakages; 7.7% due to low billing estimation; leaving 8.0% due to theft and undetected leakages (Rizzo and Muscat, 1992). In 1995 the WSC had about 40 people working on this task and intended to increase this to 100. Many of them have already completed professional courses at the Institute for Water Technology (WSC source, 1995).

A WSC source (1993) also informed me that, "Socially, if this section functions effectively and efficiently it will save a lot of water and politically,

the politician will be happier to at least see figures which will confirm that water is not being wasted and so, will readily be happy to invest more in production. At the moment they are reluctant to invest. They say that they are ready to as long as it [water] is not wasted through leaks." (ibid).

The rehabilitation and replacement of pipes, particularly those within towns and villages, is being undertaken. This reticulation project is discussed in greater detail on p.680 in the context of distribution system renewals to cater for increasing water volumes and pressures. This project also aims to reduce leakages when discovered (WSC source, 1995).

8.5.1. Improved meter accuracy

The WSC is in the process of installing a number of new accurate meters (Plates 8.3. to 8.6.) (*The Times*, 24/9/93, p.22; *The Malta Independent*, 30/10/94, p.33). This has been an ongoing process since 1993. Within a fortnight of my first stay in Malta, during Research Period 1, WSC workers had come to the flats where I was staying to replace the old class 'C' meter with a new class 'D' meter (Plates 8.3. and 8.4.). These are better at monitoring low flows. As stated in Chapter 5, 20% of water consumption is via low flows, due to low water pressure, which is not read by the old class 'C' meters:

"While class 'D' are reasonably accurate at 170 litres/day, class 'C' are not accurate below 400 litres/day" (WSC, 1993a, p.3).

Figure 8.4. illustrates this. Furthermore, unlike some of the old meters, the new class 'D' meters will not log air flow when water supply is suspended, leading to false registration of consumption (*The Malta Independent*,



Plate 8.3.
Meter
replacement
at the Sunny
Isle Aparthotel
(Msida).

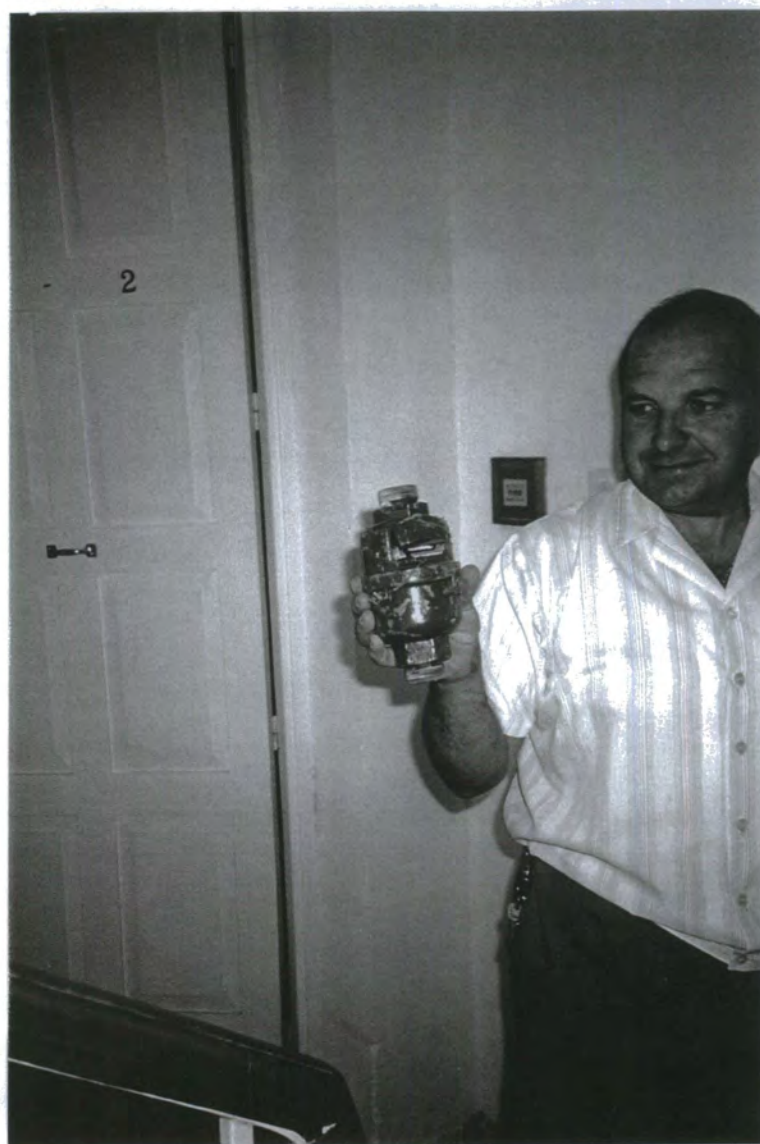


Plate 8.4.
The old class
'C' meter.

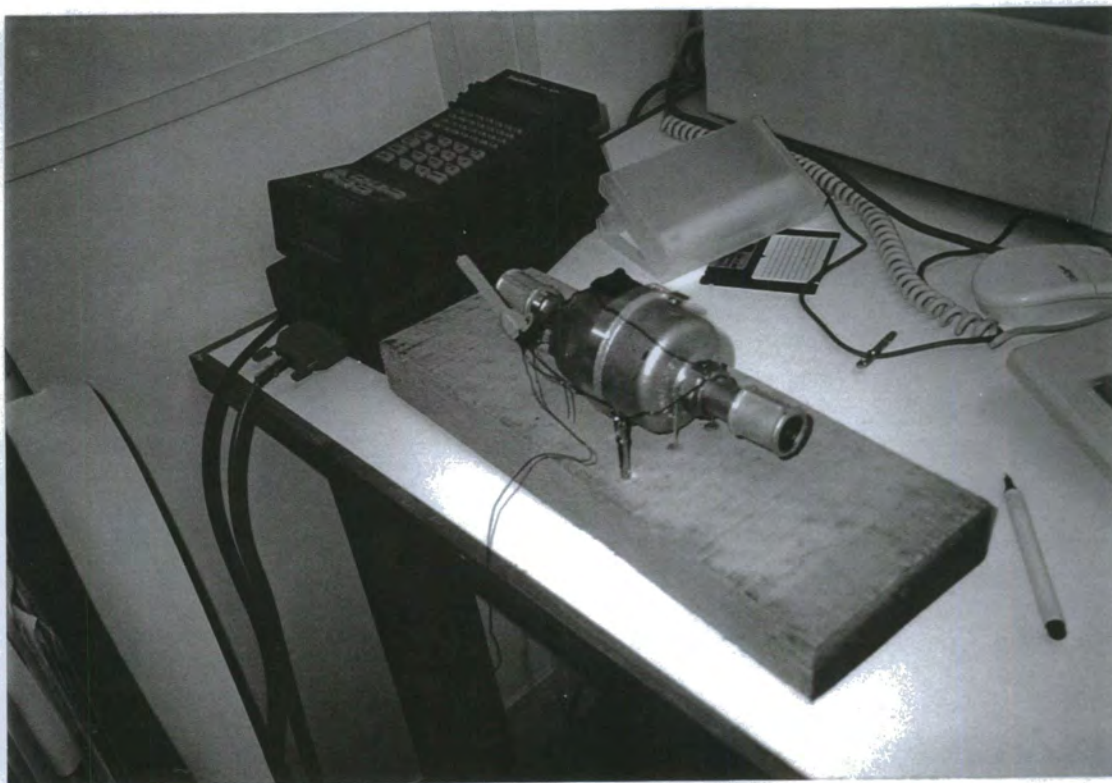
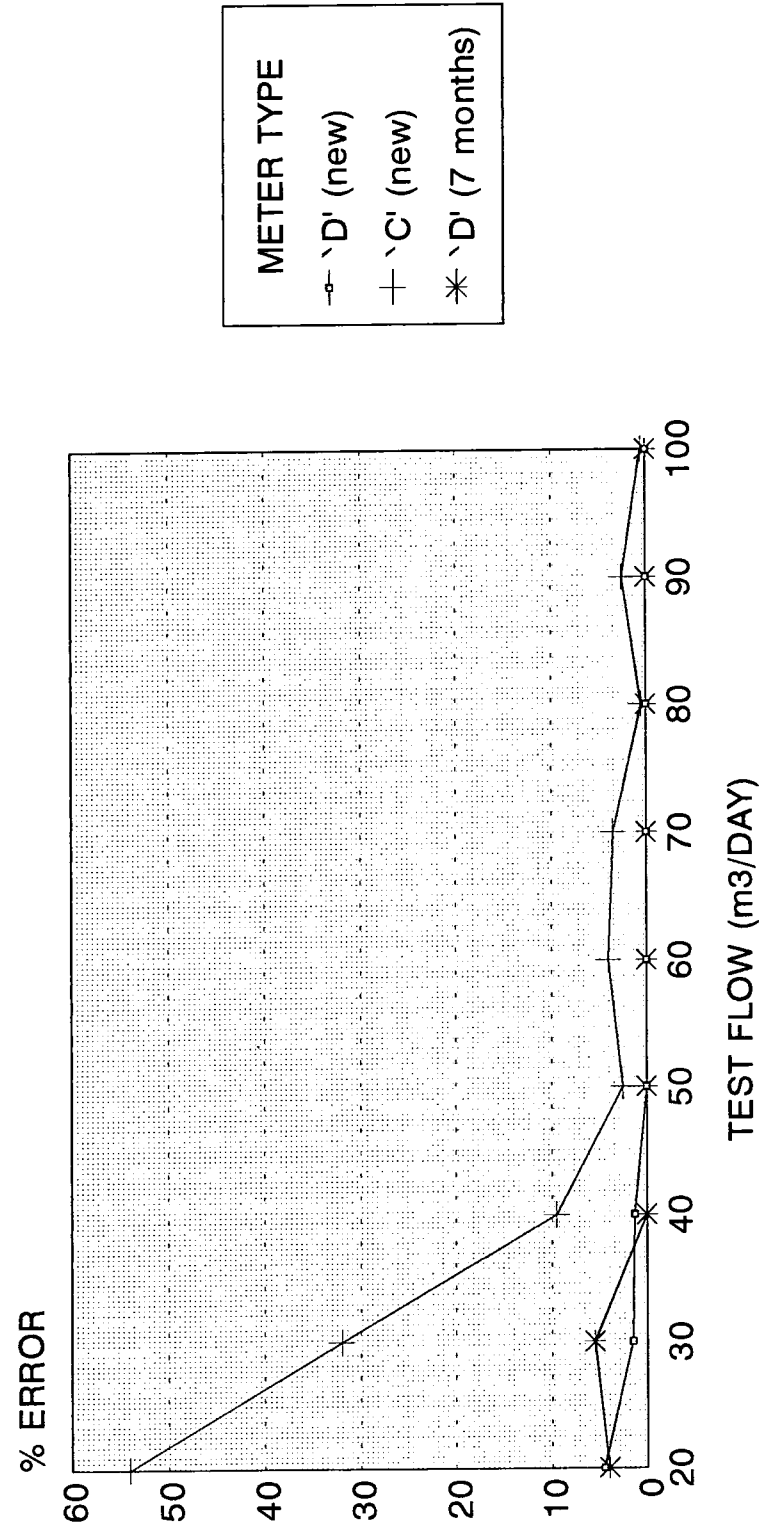


Plate 8.5. The new class 'D' meter.



Plate 8.6. The new class 'D' meter being installed.

Figure 8.4. Meter error for new class 'C' type, new class 'D' type and class 'D' after 7 months use



Derived from WSC, 1993a.

5/6/94, p.3). Whereas the old class 'C' meters have a life span of eight years during which time their accuracy drops, the new meters have a life span of ten years with accuracy remaining consistent throughout (*The Malta Independent*, 24/4/94, p.7)

The WSC expected to replace 40,000 meters in 1994 (*The Times*, 13/4/94, p.1) and 50,000 per annum thereafter (*The Malta Independent*, 26/6/94, p.7). As already mentioned, by April 1995 almost all the meters in the north of the island had been replaced with new meters. This area includes Mellieha and St. Paul's Bay which amounted to 2,000 meters changed (*ibid*, 24/4/94, p.7). This is a four year plan to replace all the old meters on the island and sources at the WSC (1995) were confident that it could be done in three since they were using contractors to change the some 180,000 meters in Malta and Gozo, which would have taken the Corporation 20 years to do themselves (*ibid*).

Industrial areas will also be fitted with a new tamper proof water metering system to help reduce the high level of unaccounted for water in this sector. For example, factories at San Gwann, where the unaccounted for figure is 75%, will have external touch pads whereby the meter reading is obtained electronically without having to enter a building. If the wire linking the touch pad and the meter is tampered with or broken, the meter still stores all the data, which can be retrieved when a new pad is installed (*The Malta Independent*, 26/6/94, p.7). In 1995 the WSC announced that these externalised computerised meters would be introduced in domestic premises in a pilot study. This would solve the problem of obtaining readings when people are out or not opening doors' (*The Sunday Times*, 16/4/95, p.16).

8.5.2. Eliminating billing errors

The first stage of the billing process is meter reading. Hence, the new touch pad meters should help to reduce error at this stage. The WSC states that the,

"Meter reading process is being reviewed and techniques and equipment which should help meter readers and/or automate the process investigated." (WSC, 1995a, p.14).

It is hoped that these methods will eliminate the need to retype data and so remove a potential source of error in the billing system. In addition, the new computerised billing system discussed earlier will also help to eliminate error (ibid).

"All Water Services Corporation offices which handle customer services would be networked to allow immediate access and updating of information. Customers' complaints would thus be dealt with promptly." (*The Times*, 30/3/95, p.56).

8.5.3. Leakage detection

One aspect of water management that students at the Institute of Water Technology are taught is leakage detection. In 1993, leakage detection was undertaken haphazardly, mostly at night (WSC source, 1994). The most commonly used method is the 'minimum night flow concept', (Labadie, 1994) which monitors the minimum night flow at night to determine a value considered to be a leakage (WSC, 1995a), normally an unusually high minimum night flow in a particular street.

The WSC conducted its first study into leakages in 1993 in the Marsaxlokk zone. They found that,

"Significant leakage [approximately 12% of water supplied to the zone] can and does occur with no visible indication of its presence", (WSC, 1993a, p.2).

This makes the work of detection more difficult. The next water account study, of the St. Lucia zone in 1993, found leakage to be a relatively low 8.3% of water supplied (Rizzo and Muscat, 1992, p.1).

By the spring of 1994, the leak detection unit had been strengthened in terms of personnel and training. A course in leak detection was also established for those who apply to the WSC as leak detectors.

8.5.3.1. Local detectors

By April 1995 there were 20 principal night time detectors based at the Luqa headquarters. Another 10 were dispersed for evaluative studies, pinpointing leaks and heading maintenance teams to repair the leaks on a local and independent scale (Plate 8.7.) (WSC source, 1995).

The other 20 detectors undertake repetitive systematic detection of the mains, night by night, to pinpoint leaks on a national scale. Each is allocated to head a section of workers that takes them to various locations around the island once every four months. The WSC is displeased with this structure and is to revise it to the following:

These 20 detectors are to be decentralised to district offices. There will be 10 offices and each will have 4 local detectors (more will be employed). Each district office will have one detector working during the day and the other three will work as a team at night. The former will determine the layout of the district while also conducting daytime leakage detection, street by street. The latter will do the same but focus on



Plate 8.7.
Daytime leakage
detection.



Plate 8.8.
The Pembroke-
Mosta pipeline
being laid.

problems that could not be solved during the day (ibid).

This is not very different from the present system, except that the detectors shall remain in one place instead of moving around the island, the advantage being that they will familiarise themselves better with their district (ibid).

8.5.3.2. The Zone Investigations Branch

A Zone Investigations Branch (ZIB), consisting of 14 additional detectors, will work as an intelligent leakage control team to direct the local detectors to specific zones that have a high level of leakage as specified by data logging and night flow analyses (ibid).

Most leaks cannot be exactly pinpointed so the local detectors will work by systematically checking each street by night. In contrast, the ZIB's method of leakage detection is not as systematic. For them to thoroughly cover a zone entails a great deal of time. So they may spend a whole week patiently and repetitively investigating and step testing water flows and water pressures. This may involve 10 to 15 tests on the same area in a week. Their task is more complex and intelligent (ibid).

With the addition of the 14 ZIB members and a further 10 local detectors, the total number of detectors will be 54.

8.5.3.3. Master zone water flow monitoring

WSC is planning to finalise six out of eight zones in Malta for the metering and monitoring of water flow, from the supply reservoirs to the end of the distribution lines, so as to determine the percentage of water leaking. This is done by comparing a zone's billed

consumption with the master zone's meter, as described earlier. Except in this case, to determine the exact leakage figure, a zone must be completely fitted with the new class 'D' meters in order to eliminate the theft and meter under-registration figures (ibid).

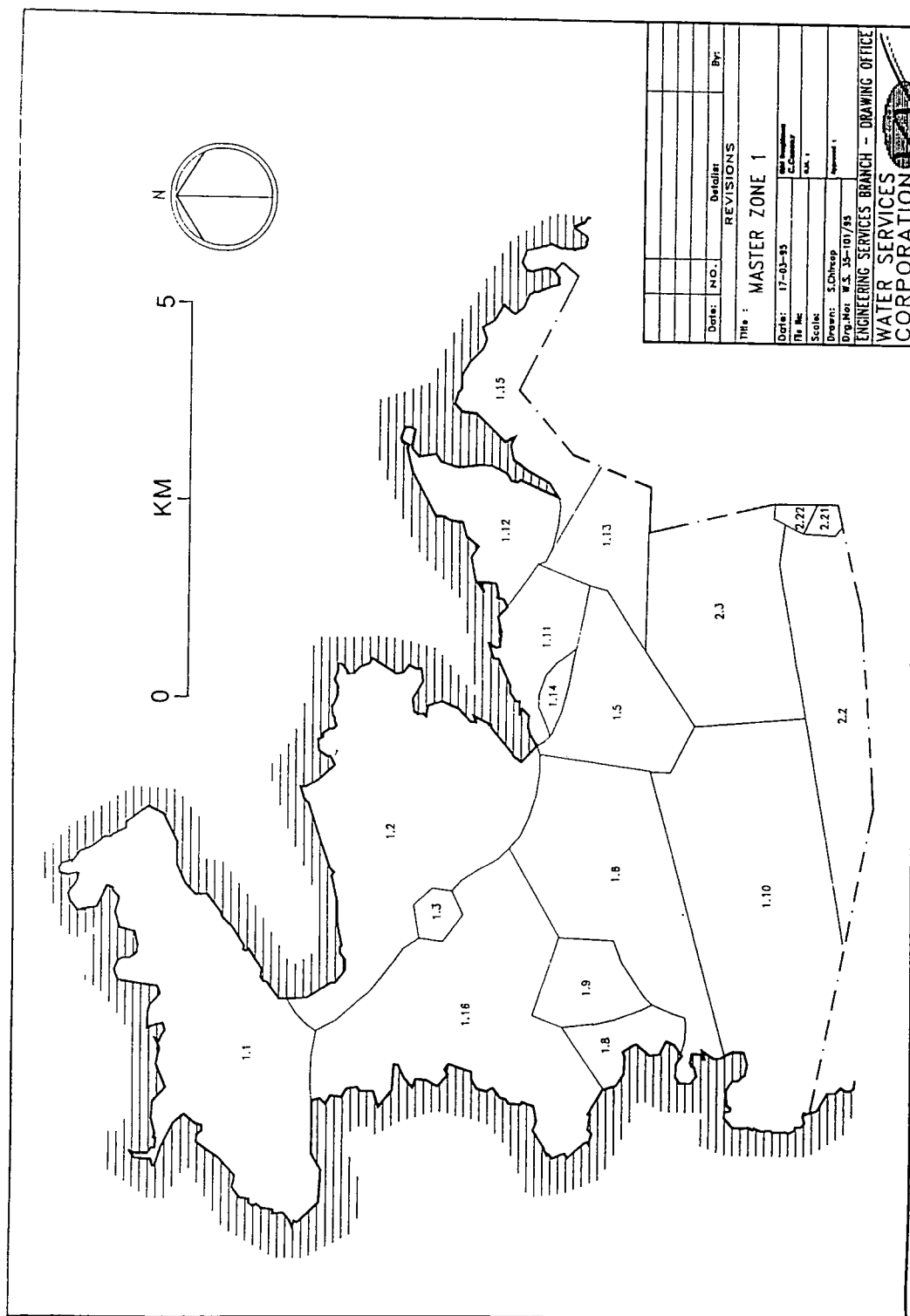
This has already occurred in master zone 1. Figure 8.5. shows that master zone 1 consists of most of northern Malta, covering fifteen sub-zones, ranging from Ghadira, Mellieha to Burmarrad and Salina. Leakages can be pinpointed mainly through the minimum night flow concept.

From this first investigation into a master zone, the WSC was able to successfully conclude that the trunk mains (major distribution pipelines) network is virtually leak free and that most leaks occur in the reticulation system, mostly within consumer premises (ibid).

"We know leakage in our systems is generally low level, that is small leakages exist in large numbers as distinct from few leakages of large magnitude" (WSC, 1995, p.17).

Approximately 80% of all leaks (number of leaks not volume of water leaked) are now known to occur in this part of the system (WSC source, 1995).

"This leakage, though low level, leads to waste of time and effort of the stand-by and repair gangs, (who can otherwise attend to more serious leakages) and leads to consumer frustration.... Logging for twenty-four hours per day has been done for some time and by educated guessing, based on 'minimum night flow' concept, it is considered that if all the leakages in Master Zone 1 were traced and repaired, about 3000m³/day would be saved. It is not practical or economic to reach this level of leakage control, but we now have a measure of the problem. 3000 cubic metres per day have an impact of 2%



on the total national unaccounted-for water" (WSC, 1995a, pp.15-16).

Given these discoveries, in 1995 an exercise had been undertaken using the 'minimum night flow concept' to,

".... determine whether an 'ad-hoc' project of large scale replacement is justified on the basis of water saved and reduced leakage detection effort" (ibid, p.17).

It was decided that a contract for a leakage detection project in master zone 1 would be awarded for the repair and replacement of damaged parts of the reticulation system (WSC source, 1995).

8.5.3.4 Master zone leakage detection

Master zone 1 leakage detection project is to begin by contract in 1995. Whereas with flow monitoring it was determined that most leaks occur in the smaller reticulation system and not the trunk mains, this project will pinpoint the exact location of the leaks in the system (ibid).

Eventually all the master zones will have been covered in this way. The WSC,

".... will insist on maximum technology transfer and the contract will be useful to determine levels and standards of performance comparable to best international practice" (WSC 1995a, p.16)

During April 1995, the WSC were finalising and accepting an application for tender from a contractor for this project. The contractor will only be paid per litre of water saved by reducing leakages, which the WSC hopes

will produce the necessary results (WSC source, 1995).

"This tender is intended to demonstrate to what level (in relation to cost) can leakage be brought down by contractors of international standard." (WSC, 1995a, p.15).

The contract is strict on the WSC too, for if once a leak is found and they do not repair it within 48 hours, they are required to forfeit a sum of money to the contractor. The same applies to the contractor: if more than 30% of detection by the contractor are false alarms then the contractor is liable to a financial penalty (WSC source, 1995).

8.5.4. Reducing water theft

The WSC are attempting to curb the illegal use of water. Up until the end of 1993, this could not be done on a national scale since there were only four people doing inspections over the whole of Malta and none in Gozo (ibid).

Inspection teams are to be increased and trained in the near future. To support theft detection and to try and deter the crime, a revision of legislation is planned. Higher penalties and better meter security associated with the new meters should also help prevent water theft (ibid).

8.5.4.1. Theft inspection teams

The WSC's Water Audit Section has an inspection team to increase the number of apprehensions for the theft of water. Much of their work involves surprise visits on large consumers. The WSC rely greatly on the police and

tip offs about possible theft cases (WSC source, 1994).

Once a person is caught stealing tap water the WSC inspection team reports the incident to the police who then see whether there is a case. Photographs are taken of the evidence (WSC source, 1995).

Although in 1992 and 1993 approximately 70 theft cases were awaiting trial, by the end of the summer in 1993 very few had gone to court. Taking action against small consumers was not considered worthwhile and many cases were dropped. However, the WSC was waiting to take a number of large consumers to court (WSC source, 1993).

By the spring of 1994 the WSC were in the process of undertaking approximately 200 inspections per week for water theft. On average they were discovering five cases of theft per week. By then there had still been no convictions, not even prosecutions. This was because of the relatively long time it takes for a case to go to court in Malta (WSC source, 1994).

Given the successful apprehension rate, if prosecutions are successful and the punishment effective, this in itself should act as a deterrent. The press and public gossip should ensure that would-be thieves are aware of the consequences (ibid).

The WSC are also investigating illegal drillings of boreholes. The WSC's main concerns are large consumers like private industries and private suppliers of water by bowser. The first case for illegal drillings was due to go to court in April 1994 (ibid).

Since January 1995, the WSC's apprehension rate has doubled due to a doubling of the number of theft investigation teams, from two to four. The investment and manpower appears to have been beneficial. By April 1995, ten to fifteen theft cases were being discovered each month (WSC source, 1995).

8.5.4.2. Legislative control

By 1993 the WSC had realised that,

"It is not sufficient to have proper regulations if there is no efficient control and enforcement for compliance with them. Therefore, the organization of the enforcement of the laws is one of the activities which have to be carried out in parallel to the development of the regulations." (Riolo et al, 1993, p.52).

In 1994, to help deal with these tasks, the WSC appointed a legal advisor. To provide a deterrent and effective punishment, the Branch Head of the Water Audit Section was in the process of modifying illegal notices. The Section reported in 1994 that:

"The legal instruments to punish and discourage theft are not adequate. Even cases brought to court have not been concluded to the satisfaction of the Corporation. Recently the Corporation's legal advisor has been given an assignment as follows:-

Control of theft of water

Objectives: To develop the proper legal tools and instruments to control water theft.

Activities: 1. To define what constitutes theft, as distinct from misuse.
2. To survey existing legislation and provisions of relevance to water theft control.
3. To investigate and discuss with the Water Services Corporation and EneMalta staff type of cases encountered.
4. To draw up proposals for

modifications to the legislation and regulations as in (1) above, where considered necessary.

It is hoped that when this is concluded, suitable regulations can be drawn up and enforced. Once legal tools are available, the deterrent value of random inspections - suitably publicised - will be greatly enhanced." (WSC, 1994a, pp.7-8).

With regards to groundwater theft, Parliamentary Secretary for Water and Energy, Ninu Zammit, announced in 1993 that,

".... stiff regulations and penalties were being drawn up for people who were caught stealing or pumping water out of illegal boreholes." (*The Times*, 24/9/93, p.36).

"And for those Water Services Corporation employees who were found to be involved in water theft, prison terms were being contemplated." (*The Sunday Times*, 19/9/93, p.68).

By the end of 1994 the WSC stated,

"Environment police are now co-operating more closely with the Corporation to curb specific activities which are illegal. In addition, the preparation of revised water supply regulations is at an advanced stage. This year private extraction was closely monitored in order to curb illicit extraction of the aquifers by third parties. Twenty-two cases of illegal drillings have been discovered and reported. Legal action is now in process." (WSC, 1994b).

By 1995 new legislation, with "harsher fines", were

in force and publicised in the national press (Figure App.3.8.13).

8.5.4.3. Meter security

A further measure against the theft of water is the installation of new meters. The old class 'C' meters are relatively easy to remove since they were installed with a seal through the capstan. The new meters will have a special bolt as well as the seal through the capstan. The bolt expands as one tries to remove it making it extremely difficult to remove the meter without damaging it (WSC source, 1994).

Further security measures are to be taken for large consumers in the agricultural, industrial and tourist sectors,

".... by placing water meters in agricultural areas and in boxes outside industrial buildings and hotels to prevent anyone tampering with the equipment." (*The Times*, 24/9/93, p.36).

8.6. THE REHABILITATION AND REPLACEMENT OF THE DISTRIBUTION SYSTEM

During 1993, the WSC was undertaking cost-benefit analyses to see whether, in the long run, it would be better to replace the whole distribution system evenly or to just replace parts of it that need immediate attention (WSC source, 1993).

Pipe replacement would involve greater inconvenience in the short term than rehabilitation due to the suspension of water supply and digging up of roads. Rehabilitation would involve fewer water suspensions for shorter periods and only disturb small sections of roads.

As a general rule, rehabilitation is more costly than replacing the whole distribution system. Given this, the WSC is both replacing and rehabilitating pipes depending upon each situation (ibid).

After pressure jetting pipes with water to remove encrustations and finding that this method blocked pipes at the household end, the WSC is attempting to use an improved version of the method in a pilot project on all pipes including trunk mains. To avoid the problem of dislodged debris blocking household connections, the WSC blow the debris back through each connection. As soon as the pipes are cleaned they are lined (ibid).

Old pipes are made from cast iron and where they are beyond rehabilitation, they are replaced with new ones made of cast iron with a bitumen coating on the outside and a cement or an epoxy resin lining on the inside (ibid).

8.6.1. Increasing distribution capacity and equity by long distance water transfers via trunk mains

In 1993 the WSC had begun laying new trunk mains to facilitate the transfer of water, from various sources, across Malta. In 1993 and 1994 they were preoccupied with solving the distribution problem in the south. The first of these new mains was Phase 1 of the Qrendi pipeline (*The Times*, 7/9/92, p.16) which was constructed in 1993. The second was the Mosta pipeline, completed in 1994. Other projects are awaiting completion and work on some has yet to begin. The projects are discussed in expected order of construction.

"The existing systems is grossly undersized and it will be a relatively minor component of the new system. Parts of it will be relegated to other functions such as collecting borehole water and transfer between

reservoirs." (Riolo et al, 1993, p.23).

The new pipelines will provide RO water, or a satisfactory blend, to settlements that are presently fed solely by boreholes. This borehole water will be collected at reservoirs for blending with RO water and for polishing (WSC source, 1995). It is hoped that the restructuring of the distribution system will allow Malta to at least conform with WHO recommendations for tap water quality (*The Times*, 1/10/93, p.15).

8.6.1.1. Qrendi pipeline Phase 1

The commissioning of Phase 1 of the Qrendi pipeline in Autumn 1993, replacing the old undersized main from the Qrendi reservoir, significantly improved water supply to consumers in Xghajra, Zabbar, Bulebel, Zejtun, Marsaxlokk and Birzebbuga (WSC source, 1993; WSC, 1993d). Figure 8.6. shows the route of the new pipeline.

It was so succesful in boosting the water supply that branching pipes and smaller reticulation pipes in many southern settlements burst under the pressure (*The Times*, 18/9/93, p.1) or became choked with encrustations inside the pipes (that had become dislodged with the increase in flow rate) (WSC source, 1994). The Drainage Department has employed contractors for their renewal (p.680) (WSC source, 1994).

8.6.1.2. Mosta pipeline

To coincide with the upgrading to maximum production at the Pembroke RO plant between May and August 1994, a new, larger transfer trunk main, called the Mosta pipeline, was constructed between February and July of 1994 (Plate 8.8. (it is a dual pipeine main until it

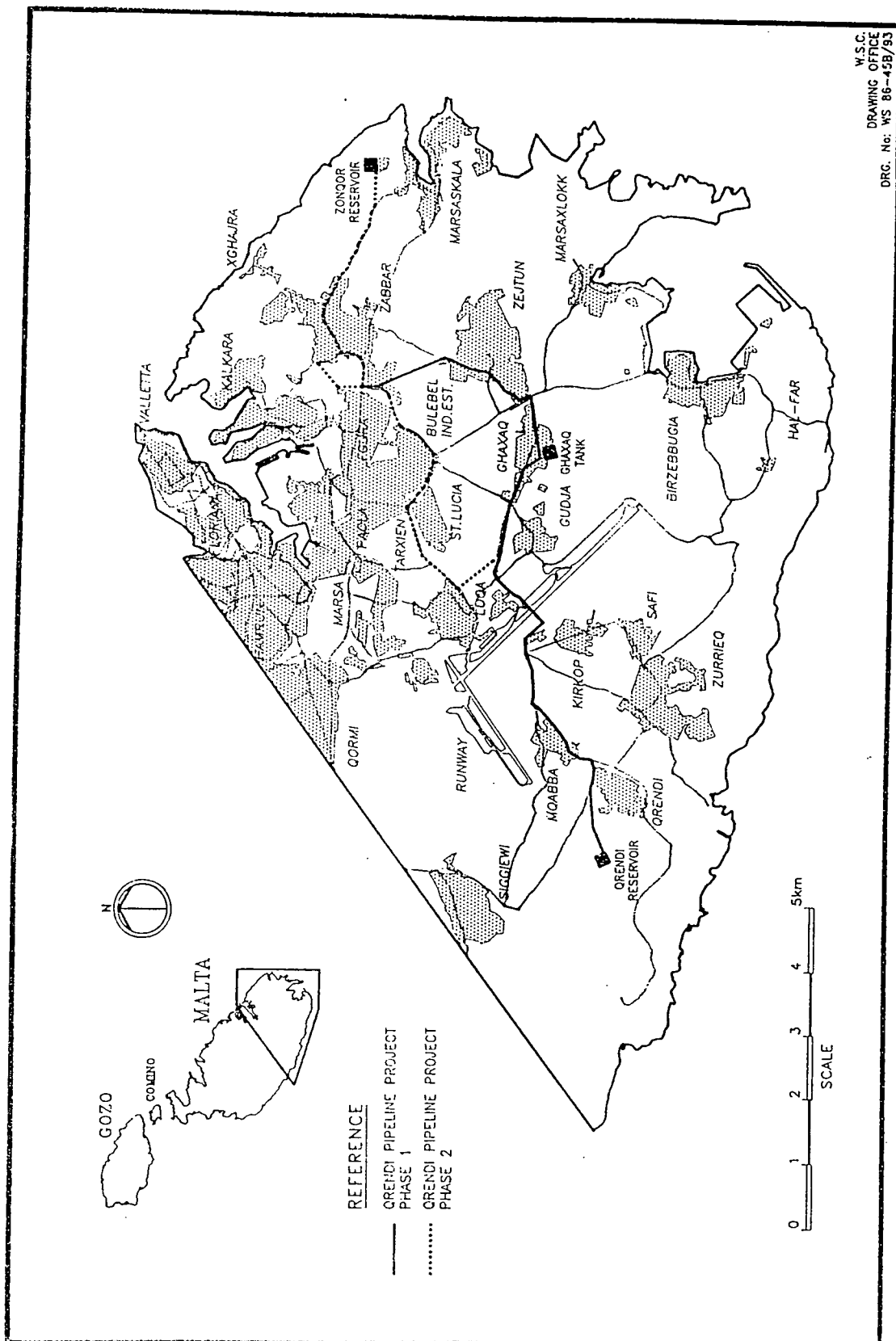


Figure 8.6. Qrendi pipeline project Phases 1 and 2.
Source: WSC.

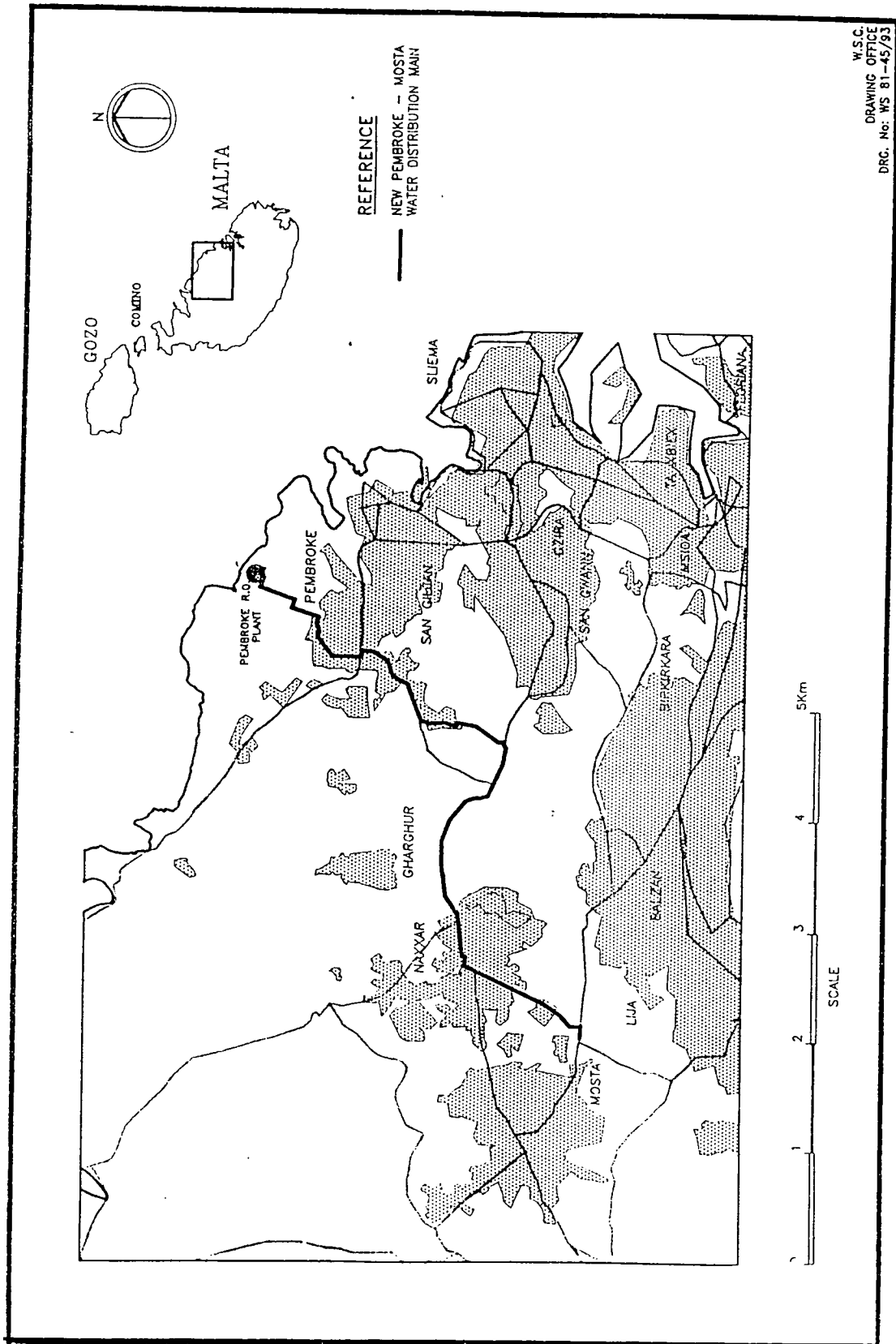


Figure 8.7. Pembroke-Mosta pipeline project.
Source: WSC.

reaches Naxxar)) (WSC source, 1995). Figure 8.7. shows the route of the trunk mains.

When Pembroke RO plant was upgraded from 8 to 10 trains in May 1994, the old pipeline from Pembroke to the Ta' Qali reservoir could not accommodate more water than that produced by 8 trains. At the end of August 1994, Pembroke was upgraded to 12 trains, reaching maximum production. The new pipeline is able to accommodate the transfer of this water (*The Times*, 15/9/94, p.21), via the Naxxar reservoir (and the Swieqi reservoir once it has been constructed) (WSC source, 1995).

Construction was due for completion by the end of April 1994 but was delayed and the pipeline was not commissioned until the beginning of July 1994 (ibid).

This pipeline allows the opportunity to blend increased amounts of RO water produced by the new Pembroke trains with water in the Naxxar, Ta' Qali and Fiddien reservoirs. From there it supplies Rabat and Luqa, lessening the demand on the Qrendi reservoir (*The Times*, 15/9/94, p.21). The RO water should significantly reduce the nitrate levels in water supplied to the central settlements and provide a surplus of water to blend with highly saline water in the south, once new distribution pipelines are constructed.

8.6.1.3. Qrendi pipeline Phase 2

Figure 8.6. shows where Phase 2 of the Qrendi pipeline links in with Phase 1. Together they form one large main to serve all the settlements in the south.

Qrendi Phase 2 will carry water from Gudja to Tarxien and on to Marsascala via Zabbar. Construction began in early 1994, due for completion in July 1994. Delays meant that by April 1995 only the section between Zabbar and Marsascala was complete, improving the service only there. Reticulation mains that burst under pressure

are being replaced (WSC source, 1995).

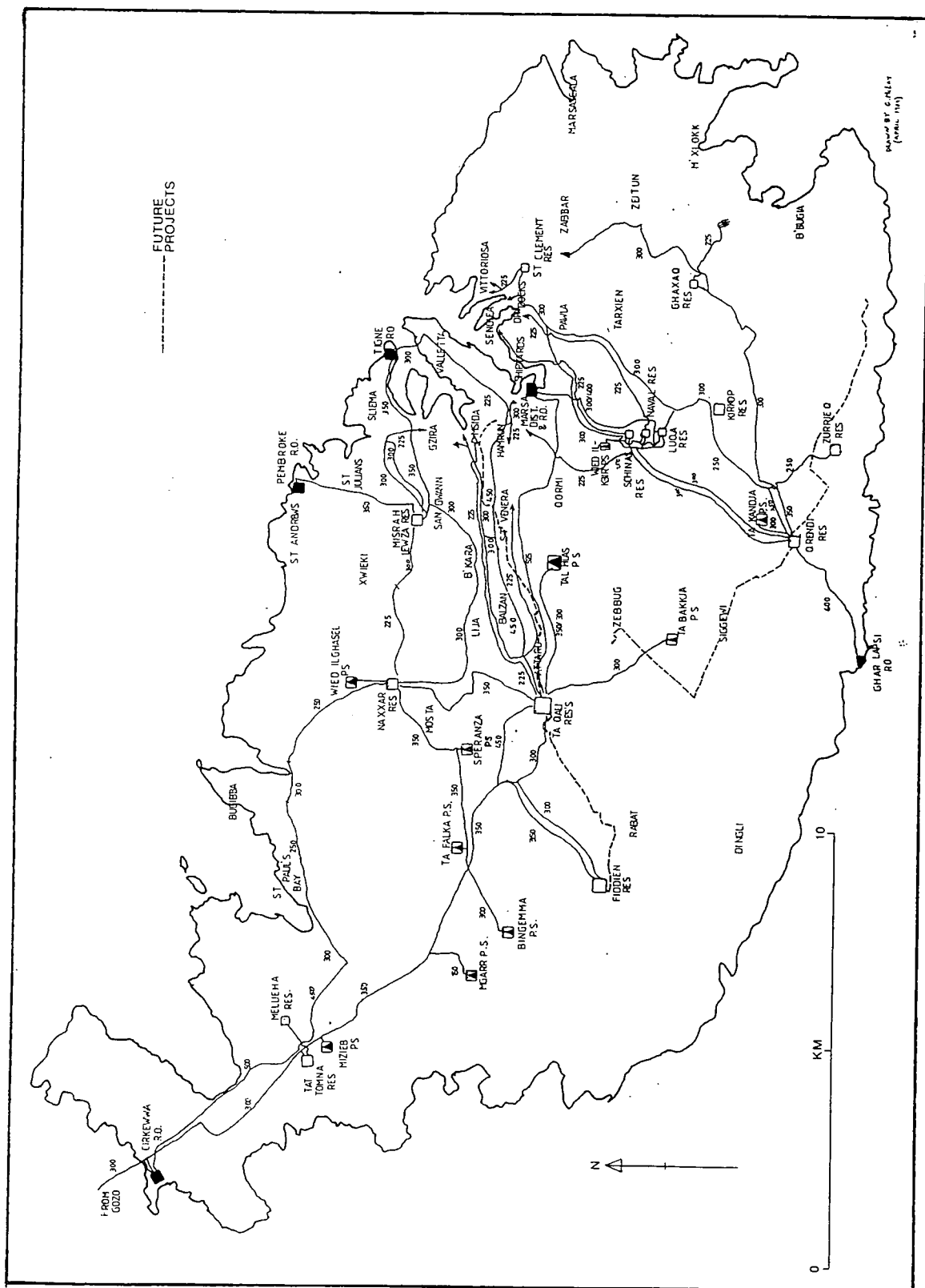
The incomplete section of Phase 2 will eventually improve the supply in Tarxien, Fgura, Paola, St. Lucia and Luga. Pumping costs of booster pumps to these settlements, presently required due to low water pressure, will be significantly reduced (ibid).

At the Marsascala reservoir at Zonqor, where the pipeline terminates, provisions for a connection to the pipeline have been made for a 600mm branch to the new RO plant. Any water produced at the RO plant that is excess to the region's needs will go back to the Qrendi reservoir for blending, via the old Qrendi pipeline (ibid).

It would appear that the water access problems in the south have been almost completely resolved due to the success of the Qrendi project. A task that remains to be undertaken is to supplement the south, via the Qrendi reservoir, with water from the Pembroke and Cirkewwa RO plants. The following pending pipeline projects (as well as the Mosta pipeline) have the principal aim of redistributing RO water from the north to the south via the central reservoirs. The route of all these projects are shown in Figure 8.8., except for the Pwales-Ta' Qali pipeline and the Qrendi-Negret link, which had not been determined at the time of research.

8.6.1.4. Pwales-Ta' Qali pipeline

A new pipeline will be constructed from the Pwales region to the Ta' Qali reservoir to convey RO water from the main that feeds the Pwales and St. Paul's area with water from the Cirkewwa RO plant (the old cast iron main from Cirkewwa to Ta' Qali cannot accommodate large transfers of RO water). Several branching pipes along its length will feed villages along the way, which are



presently fed with groundwater alone (ibid).

This pipeline and the Mosta pipeline will redistribute RO water from the northern RO plants to the central reservoirs and then further south through the Qrendi pipeline. However, a large trunk mains is required from the the Ta' Qali reservoir to the Qrendi reservoir to accommodate the transfer. The Qrendi-Zebbug pipeline will make this possible (ibid).

8.6.1.5. Qrendi-Zebbug pipeline

Work was due to begin at the end of April 1995 on the construction of a new 500mm transfer main called the Qrendi-Zebbug pipeline. It will connect the Qrendi reservoir with the Ta' Qali reservoir and is so termed because there is an existing 12 inch main from Ta' Qali to Zebbug and the new main will complete the link from Zebbug to Qrendi (Figure 8.8.). It is hoped that this existing 12 inch main will be able to cope with the water pressure. Otherwise it will have to be renewed very quickly (ibid).

Presently, the only means of transferring water from the north to the south is the link via the power station at Marsa to the Qrendi reservoir via Luqa reservoir. However, this link does not have the capacity to transfer the amounts of water required from Pembroke (ibid).

Siggiewi will receive water directly from this new pipeline via a branching main, which should see an end to its highly nitrate rich tap water (ibid).

8.6.1.6. Ta' Qali-Valletta pipeline

The existing pipeline from Ta' Qali to Valletta (which supplies central settlements like Birkirkara and Hamrun) is to be replaced because it is in need of urgent

repair. This pipeline, laid in 1950, is a 24 and 18 inch main consisting of unlined cast iron. It cannot cope with the hydraulic pressure of the Ta' Qali reservoir and is only able to function because of a pressure reduction valve that has been installed. However, any variation in the pressure could cause a burst. It is so fragile that the complete length of the pipe is to be replaced.

The new larger main (Figure 8.8.) will terminate at Valletta but will be connected to the submarine pipeline between Tigne RO plant and Valletta. In this way Sliema can be supplied via Valletta by the new pipe, especially since the Tigne RO plant will be decommissioned (ibid). Sliema will also be supplied by the new Swieqi reservoir when it is built. Valletta may access this water via the submarine pipe if need be. Thus, both Valletta and Sliema will have two alternative sources (ibid).

8.6.1.7. Qrendi-Hal Far pipeline

Plans to connect the industrial estate at Hal Far to the Qrendi reservoir via a new 350mm pipeline to increase supply depend on whether or not the MDC locates more industries there. Even if demand does not increase at the estate, the WSC will construct a smaller pipe (250mm or 300mm) to cater for present demands (ibid).

Water will travel from Qrendi to Hal Far (Figure 8.8.) by gravity and the pipeline will continue to supply Birzebbuga (which is presently supplied solely by boreholes) (ibid).

8.6.1.8. Ta' Qali-Fiddien pipeline

The WSC is to construct a new trunk main between the Ta' Qali reservoir and the Fiddien reservoir (Figure 8.8.). It is needed to increase the carrying capacity of

the existing pipes between the two reservoirs. Work was due to begin in summer 1995 (ibid). The increased volume and rate of transfer will allow for a greater capacity to blend water (ibid).

8.6.1.9. Qrendi-Negret pipeline

A pipeline from the Qrendi reservoir to the Negret reservoir at Zurrieq is to be constructed to supply Zurrieq. An outlet from Zurrieq will continue to take the water to Safi, on to Qrendi (village) and finally on to Mqabba, reducing dependence on local boreholes (ibid).

8.6.1.10. Further major distribution works

The WSC's Distribution Branch's aim is to create a whole new distribution network (including the above works). By doing this they will increase hydraulic pressure and so remove or reduce the need for excessive pumping to settlements at the end of the distribution line and on higher ground. This will also eliminate or reduce the number of areas supplied directly from boreholes and allow the WSC to collect groundwater in reservoirs for blending and polishing (ibid).

There is a whole network to be constructed in the south, including the connection of remote settlements and rural areas that include the Fiddien Valley, Rabat, Mtarfa, Mdina, Dingli and the high rural parts of Ghar Lapsi, Siggiewi and Zebbug. After this, the WSC will concentrate on restoring and updating the distribution network in the north (ibid).

The improvement of water distribution, which permits the blending of different sources across the island, is expected to continue for several years with the ultimate aim of eliminating the inequity that presently exists in

water supply, in terms of both quantity and quality. At the launch of the WSC's 'Save Water' campaign in May 1994, Chief Executive Antoine Riolo proclaimed that:

"The south of Malta will have the best distribution system on the island when the second phase of the Qrendi-Zejtun pipeline is finished...." (*The Times*, 7/5/94, p.52).

8.6.2. Reticulation mains in settlements

By April 1994, the WSC were carrying out work on and replacing pipes inside several settlements in the south, particularly in Marsascala and Zejtun, to cater for the increased volume and pressure in flow after the commissioning of the Qrendi pipeline.

Eighty kilometres of new smaller mains were laid in 1994. By April 1995, approximately 10km of renewals were undertaken in Marsascala and approximately 15km in Zejtun (*The Malta Independent*, 30/1/94, p.22; WSC source, 1995).

A total of Lm60,000 had been spent on works within towns and villages. The expense was due to the hiring of a private contractor to do the work. Qormi (*The Times*, 5/11/94, p.11), Gudja, Cospicua and Sliema had been earmarked for the same reticulation work in 1995 (WSC source, 1995). Work is also planned for Valletta (where some pipes are more than 100 years old), Xghajra, Ta' Xbiex, St. Andrews, Zurrieq and Paceville (WSC source, 1994).

Most of the reticulation mains within settlements is made up of lined ductile cast iron pipes. New smaller pipes (100 to 150mm) will be made from polyethelene, eliminating corrosion. All house connections will be with plastic pipes, which have a life span five times longer than metal pipes (Riolo, 1992; *The Malta Independent*,

26/6/94, p.7).

8.7. WATER CONSERVATION

"The one benefit we may have derived from the water problem is that it has brought us face to face with the constraints of sustainable development. Present rates of consumption of water, electrical power and land are unsustainable. We need a change of lifestyle." (*The Sunday Times*, 12/9/94, p.16).

Now that the WSC has significantly increased water production, it plans to concentrate on improving the efficiency of consumption and overall water conservation (WSC source, 1994; University source, 1993).

The WSC Act 1991 states that one of the WSC's objectives is,

".... to promote the reasonable use of water and encourage the conservation and appropriate reuse of water resources." (House of Representatives, 1991, p.11).

The WSC's Public Relations Officer, Joseph Mercieca, stated in 1994 that,

"In 1993 it became clear, that even though we can increase the supply and distribution of water, we cannot provide a limitless quantity of it. Therefore, we have to look at ways in which we can inform and educate everyone who uses water on how they can make sure that what is produced is sufficient for their everyday needs if they use it wisely." (Mercieca, 1994, p.1).

The WSC has realised that conservation must be holistic to include effective tariffs, the enforcement of the laws governing water use and the introduction of conservation and efficiency measures (WSC source, 1994).

Discussed here are the efforts being undertaken and proposed by the WSC to encourage water conservation in each sector. Recommendations are also made. Most effort has been made in the domestic sector but the potential for saving water in the tourist, industrial and agricultural sectors is also high. Plans are slowly being implemented in several different ways to help with tourist consumption, while the WSC Water Re-use Section is studying the potential for saving water in industry through water re-use and recycling. Water saving measures on agricultural land and in commercial premises are also discussed.

Much of the discussion is about the WSC's national water conservation campaign. The campaign was divided into a number of phases in order to get the message to key target groups. These are homes, schools, businesses and tourists. Each audience has its own activity regarding water use so specific messages were allocated to each (ibid).

8.7.1. Conservation in the domestic sector

Changing consumer mentality is important in trying to reduce waste and inefficiency. There is a need to increase awareness of water scarcity and the true value of water. Making consumers pay the true cost of water production means increasing the domestic water tariff by nine times the old rate which is socially and politically unacceptable (University source, 1993). The alternative has been to raise the tariff to a socially acceptable level and to try and educate people to save water.

"Today, it has become imperative that people realise that though it may be technically possible, it is not economically sustainable to proceed along this path of satisfying unlimited demand through desalination. Some

form of demand control must be introduced. In the type of democracy that is practiced in Malta such restraint, to be effective must be voluntary, arising from an inner conviction of the individual of the benefits, both to oneself and to one's country of the correct usage of water. The potential benefits of such behaviour are great. This has prompted the Malta Government to embark on a serious all-embracing water conservation program, which aims to bring about in the people an attitude change - from one of liberal use and even wastage of water, to one of cautious use in the knowledge and appreciation of the facts, i.e. water in Malta is naturally scarce and expensive to produce artificially." (Riolo et al, 1993, p.2).

By 1993, the WSC had undertaken a conservation study with the UNEP and had considered quotations from various Public Relations firms since the programme required media and public education programmes (WSC source, 1993). There have been education campaigns in the past (Buttigieg, 1974), however in 1994 this conservation programme, together with the new water tariff, was the first concerted attempt at demand management in a long time.

8.7.1.1. The effect of the new domestic water tariff

The WSC hopes that apart from generating greater revenue, the new tariff will heighten consumer perception of the real value of water and so encourage its careful use.

It is considered (WSC source, 1994) that the general willingness to spend in Malta is low and hence the tariff will be effective. Since people do not like to change their washing habits or frequency of water use, it is envisaged (ibid) that they will begin to purchase more efficient appliances. However, this may not occur until

the lives of their present appliances are over.

In terms of equity it has been unwise for the Government to have increased the price of water without first having efficient billing, metering and theft and leakage detection. For example, since most leakages occur within the household, these will add to the billed consumption and may even push billed consumption into the upper range of the tariff. Small and low income households will be most severely affected. With regards to faulty meters and cases of water theft:

"The implication is that if some consumers do actually consume (and pay for) 'large' volumes of water, and hence find themselves in the high price range, they are to some extent or other cross-subsidizing low water consumers and consumers of a high but unbilled volume of water [including water thieves], a situation which is not only inefficient but also unfair." (Briguglio, 1994, p.49).

Furthermore, it has been argued that the price increases would lead to an increase in water theft to avoid higher bills (see Buhagiar's comments in Appendix 5). However, when the new rates were announced, the then Water and Energy Parliamentary Secretary, Ninu Zammit, reassured critics that stiffer penalties for theft would be introduced (*The Sunday Times*, 19/9/93, p.8).

It has been argued that, generally, people do not like to pay high amounts and simply stating the subsidy on the bill is not enough to make them fully understand the consequences of their water consumption (University source, 1994). People should be made to pay the full amount and then possibly sent back the subsidy in the form of a cheque (ibid).

This has also been suggested by Briguglio (1994) in relation to the equity issue:

"...it would be more efficient to price all consumption at marginal cost and provide lump sum subsidies through a social security system to compensate those consumers disadvantaged by the policy. Subsidizing the price of water and levying a charge on some consumers higher than the costs they impose on the system in order to assist others, is not generally considered to be the most efficient way of redistributing income" (ibid, p.49).

A WSC source (1993) envisaged that consumption would be reduced but that it would be for a very short period, making comparisons with the fuel price increases following the 1973 oil crisis: At first there was a marked decrease in consumption. But when consumers became accustomed to the new prices, consumption increased again because, "A good portion of the population seems to be very much well off than it was a few years back.... People seem to have spare money." (WSC source, 1993; *The Times*, 27/10/94, p.3).

Finally, if most consumption eventually falls within the subsidised price bracket the aim of taking revenue from consumption charges from the upper bracket to subsidise the lower, has failed. Although water conservation has still been achieved.

By April 1995 the WSC were compiling a database to determine whether or not consumption had decreased due to the new tariff. As stated previously, people did not receive their first bills with the new tariff until late 1994. Since then registered consumption had increased marginally in 1995 which was attributed to the increased accuracy of the new meters that were being installed (WSC source, 1995).

However, Figure 4.3. (p.269) shows that water consumption significantly decreased in 1994, but this was most probably due to the intensive water conservation

campaign during that year than any anticipated increase in water bills. Whatever the outcome, the Government is in a position to be able to revise the tariff again to achieve their aims.

Now that water is considered to be effectively priced to deter large consumption, the WSC considers itself to have little reason to prevent people from using tap water for any use as long as it registers on the meter. This includes the watering of gardens, the hosing of cars and boats, and, as previously discussed, the filling of swimming pools (ibid). This is an unwise decision since it contradicts the WSC's conservation policy and in the case of water being stolen, the problem remains and needs to be policed.

8.7.1.2. Educating the Maltese public that 'Every Drop Counts'

Education (including making people aware of efficient appliances) supports and reinforces the effects of legislation and the new tariff at a relatively low cost (Riolo et al, 1993). For 1994 the corporation voted Lm42,400 for its save water campaign, compared to Lm6.5 million on expanding water production and Lm3.1 million on improving distribution (*The Malta Independent*, 19/12/93, p.5; *The Times*, 7/5/94, p.52; *The Times* 10/6/94, p.27).

As stated previously, the law in many cases is rarely a deterrent in Malta and Gozo:

"The introduction of legislation to manage the country's natural resources, to protect the environment, and to guide sustainable development will not by itself be sufficient to attain policies unless the Maltese public becomes aware of the necessity for this legislation and the need for observing it. A positive

attitude towards the environment can be best achieved through education." (Ministry for Development of Infrastructure, 1990c, p.101).

There is a chance that the new tariff, on its own, may prove to be ineffective in reducing consumption:

".... if a reduction in consumption of water is required, measures will need to be aimed at producing a shift of the demand curve rather than a movement along it (for example increasing education and facilitating availability of technology which economises on the use of water)." (Briguglio, 1994, p.52).

The importance of education is reflected in Government policies RCO 39 and RCO 40:

"POLICY RCO 39: Educational programmes aimed at creating positive patterns of behaviour of individuals, groups, and of society as a whole, towards the environment will be promoted.

POLICY RCO 40: In conjunction with the Department of Education and the Government's environment agency, the Planning Authority will establish a resource centre for environmental education whose functions will be:

1. Keep the Maltese public adequately informed about environmental matters

2. Increase awareness of the necessity for environmental protection and the wise management of natural resources

3. Provide the mass media with good quality information and educational material on the environment." (Ministry for Development of Infrastructure, 1990c,

p.101).

The WSC employs a Public Relations Officer whose responsibilities include conducting a new water conservation campaign. The campaign began with the WSC stand at the 1993 Trade Fair at Naxxar, where a thought provoking questionnaire on water was distributed to the public (Appendix 8), and continues with a national awareness campaign called the 'Every Drop Counts' campaign (*The Sunday Times*, 8/5/94, p.13).

The campaign was run intensively throughout 1994 emphasising the precious nature of water and the need to not waste it. The "Every Drop Counts" logo in Figure App.3.8.14. is the official symbol for the campaign and has been displayed in newspapers, television and on everyday household products (p.692) (Mercieca, 1994).

To date the campaign has been directed mostly towards reducing consumption in the domestic sector because this is the sector to which it is most relevant and applicable and also because the domestic sector is the greatest consumer of water. The campaign addresses individuals and community groups, mainly children, through media and schooling.

8.7.1.2.1. Education via the household

Most Maltese households were targeted by two means: through the media via advertisements in newspapers and on television, and through the distribution of information leaflets.

As with all forms of advertising the media serves as an effective means of reaching a large captive audience and ironically, has, according to Sultana (1994b), proved to be extremely influential and impressionable in the rise of consumerism in the Maltese Islands. The campaign used radio programmes and editor's forums to provide the

media with up to date information, as well as newspaper and television advertisements.

"Public information campaigns are designed to promote understanding and dialogue in the community on water conservation topics, as well as to motivate customers to conserve water.... by:

- Motivating customers to purchase and install water-saving devices, or to participate in agency programs such as installation of retrofit kit.

- Motivating customers to use water more wisely" (Riolo et al, 1993, p.29).

8.7.1.2.1.1. Newspapers

The WSC regularly placed advertisements in the national press from May to December 1994. The advertisements were easy to understand, depicting the everyday use and waste of water and how it could be saved through simple measures. Figures App.3.8.15. to 3.8.19. illustrate some of these (Mercieca, 1994).

After the problems in 1993, newspapers also began to increasingly carry articles and advice on water conservation and other measures on tackling the water problem, as well as coverage of water shortages in other parts of the world. Figures App.3.8.20. and 3.8.21. illustrate a few of these.

8.7.1.2.1.2. Television

Through television advertisements the WSC has graphically presented strong messages to try and create a collective social conscience that does not waste water

(ibid).

For example, one television advertisement parodies the image of God touching Adam to give life to mankind from Michelangelo's painting in the Sistine chapel. After giving life to Adam the hand of God then moves to a running tap and turns it off. The advertisement plays on the Maltese Christian duty as well as upon an environmental conscience.

8.7.1.2.1.3. Radio

Radio stations have also been used as an effective media to capture the public's attention. In the second half of 1994 at least 33 programmes, each lasting at least 30 minutes, were broadcast on the stations *RM1*, *RM2*, *Radio 1 Live*, *Radio Calypso*, *Island Sound* and *Smash Radio*. It was important to identify the niche audience of each station. For example, *RM1* and *RM2* have an audience largely comprised of children especially during the summer vacation. Hence, prize winning competitions related to water issues were staged, while regular conservation messages were transmitted (ibid).

Radio 1 Live organised discussion programmes on water production, distribution and customer services with phone-ins for audience participation (ibid). Even as early as 1993, at the height of the water problem, *Radio Calypso* had held a discussion on the water issue. *Island Sound* also did the same with politicians and a phone-in discussion for listeners (see Appendix 5 for edited transcript).

8.7.1.2.1.4. Editors' forums

Editor's forums have been organised by the WSC to provide the media with direct access to WSC information

about areas of the WSC's operations, especially those which may be of concern to the public or not properly understood. In return the Corporation has benefited by being in the public eye with its campaign and by helping to resolve conflicts arising from misunderstandings (WSC, 1995a).

8.7.1.2.1.5. The 'Hints and Tips' leaflet

In contrast to the advertisements, which cannot convey even modest amounts of specific information or advice, the "Hints and Tips" leaflet in Figures App.3.8.22. and App.3.8.23. gives comprehensive information on all the main ways water can be conserved within and around the home, with little or no inconvenience. It points out how much water is wasted through things such as leaking taps and taps left running while shaving or brushing teeth (*The Sunday Times*, 4/9/94, p.2). In addition to the practical advice in the leaflet, it gives useful telephone numbers for reporting water supply problems and emergency numbers for out-of-hours calls or for assistance in water use (*The Times*, 8/16/94, p.21). Approximately 160,000 households in Malta and Gozo received this leaflet which, as an incentive to read the leaflet, offered everyone the chance to enter a WSC competition by answering a number of questions on the contents of the leaflet and water conservation in general (*The Times*, 5/11/94, p.11).

"Mother-of-two Mary Scicluna of Mosta was the lucky winner of the ticket for two offered to any one of Air Malta's 40 destinations." (ibid, p.11).

8.7.1.2.1.6. Advertising through household products

By pursuing links with manufacturers, the "Every Drop Counts" logo and conservation advice have been placed on a number of water related household products so that people can be constantly reminded while they use these products (Mercieca, 1994).

The WSC has received support from Sun Chemicals and Unilever for their *Hi-Gene*, *Hi-Foam* and *Lux Liquid* cleaning products and Karta Converters on the packaging for *Tana*, *Blue Bell* and *Sheen* toilet papers and their *Wipex* kitchen rolls, by carrying the logo (ibid; *The Sunday Times*, 11/9/94, p.56).

Manufacturers and distributors of other water related products such as soap, toothpaste, shampoo, bathroom utilities and bottled water have been approached. These should have a great impact since they remind the consumer at the exact moment of water use (Mercieca, 1994).

8.7.1.2.2. Education in schools

In 1994 the WSC has been working closely with the Department of Education to target school children as a part of their campaign. Its first phase was aimed at primary school children. The scheme covered 125 primary schools in Malta and Gozo (*The Times*, 3/5/94, p.23).

Children are viewed as being strong influencers of change. In this case, a change towards a conservation mentality. They are easily impressionable and in turn inform their families of what they have learnt and often try and impress their new values upon their parents. In the long term they pass on these values to their own children (DSS source, 1995). The campaign in education needs to continue indefinitely in order to have a lasting beneficial effect.

"Water education programs typically focus on motivating school children and their families, to use water wisely. These programmes may also encourage the adoption of water saving fixtures.... Savings resulting directly from water education programs are difficult to quantify. However, the cost of preparing programs and teacher workshops is negligible, and the expected direct and indirect results are high." (Riolo et al, 1993, p.28).

8.7.1.2.2.1. Water education in the syllabus

Water resource awareness and education is also incorporated into school syllabi. In the primary sector water education is included within environmental education, while in the secondary sector water is frequently referred to in geography, history and science education (DSS source, 1995).

The geography programme for Forms 1 and 2 in secondary schools includes the teaching of climate and weather, including the water cycle, the geology of Malta, and an understanding of the water table and permeable and impermeable layers (Mangani, 1993a; 1993c).

The geography Form 2 programme for all Junior Lyceums includes the teaching of environmental topics that relate environmental experiences of living on an island and living in a desert, including the study of water resources in the desert. Mediterranean weather and climate are taught in a unit entitled, "WET WINTERS.....DRY SUMMERS" (Mangani, 1993b, p.4). Under Unit 5 entitled, "WATER, A BASIC RESOURCE," the following topics are taught:

5.1 Water, Water.....Everywhere

- 5.2 Rainfall and Water Supply
- 5.3 Water in the Rocks
- 5.5 Surface Water (Lakes, Rivers...)
- 5.8 The Water Supply Problem
- 5.10 Water Management (Controls and Protection)

Also, under Unit 5, the following tasks are set:

- 5A(a) Water use in the Family
 - 5B(b) Locate Rivers in the Mediterranean
 - 5C(a) Fill in re: Water table [fill in the blanks exercise]
 - 5E(a) Rivers and their sources
 - 5H(a) Questions re: Rate of Evaporation
 - 5J(b) Water Pollution
- (ibid, p.3)

Unit 10, "CARING FOR THE MEDITERRANEAN" includes the topics: "Pollution in Mediterranean towns and cities"; "A Wasteful Society"; and "Awareness....at last!" (ibid, p.6).

Textbook learning includes understanding freshwater sources and the water cycle as a part of environmental studies in geography. Geography Forms 3 and 4, and Years 1 and 2 in Trade Schools use the Maltese environment as a basis of each lesson (Mangani, 1993d; 1993e; 1993f).

Special Projects also form a core part of teaching. For example, 'The Water Planet' special project for the Junior Lyceum for Girls institution includes the teaching of water in the environment and the relationship between water and health (Galea Scannura, 1983).

By including water issues in childrens' day-to-day learning it is hoped that their awareness and concern over these issues will increase.

8.7.1.2.2.2. Theatre in Education (TIE)

It is not enough to solely introduce the subject of water into school lessons. It was seen that learning about the importance of water should be creative and enjoyable and one that would create a dramatic and participatory situation (*The Times*, 3/5/94, p.23). As a result the first stage of the WSC's schools programme was for primary schools with the introduction of Theatre in Education (TIE) (WSC source, 1995).

The TIE project was introduced into the campaign in April 1994 and by the end of May 1994 a theatre workshop project called *Ix-Xmara Ta' Pietru* ('Peter's River') had visited every state, church and private school. Storytelling with theatre animation and audience participation were combined to make children aware of the misuse of water and the benefits of water conservation (ibid). An original story was told in Maltese about an eight year old's efforts to solve the water problem in his village (*The Times*, 3/5/94, p.23).

By 1995 the message of water conservation had been further incorporated into the activities of the Education Division's Drama Unit and the Social Sciences Unit with a play called *Il-Bir* (The Well). It tells the story of an elderly couple living in the country who draw water from a well, in contrast to their son and his wife, city dwellers who take for granted the convenience of tap water (*The Sunday Times*, 9/4/95, p.29).

"Convinced by his son, the elderly man installs an elaborate indoor plumbing system. The convenience distances the couple from the immediacy and consciousness of drawing water from the original source at the well. One day they turn on the tap and there is no more water." (ibid, p.29).

Il-Bir dealt with the importance of water

conservation and the consequences of wasting water. In addition, the programme served as the basis for a project competition and an inter-school quiz that led to a 'Top of the Form' TV competition (WSC source, 1995).

This TIE project had over 3,000 secondary school students participating in the play, staged twice daily in March 1995 at the Theatre of St. Vincent De Paule Residence in Luqa, with a special performance attended by Environment Minister Francis Zammit and WSC Chairman, Mr. Tancred Tabone (*The Sunday Times*, 9/4/95, p.29). It toured around the country playing to schools and an old peoples home (WSC source, 1995).

8.7.1.2.2.3. Teacher guidance and training

Teachers have been supplied by the WSC with a set of guidelines on the theatre production and ideas for follow-up activities. This included a home study project called, 'How Much Water Do I Use?' which made children more aware of the different water consuming activities in the home and how much each used. Discussions and essays around this project were also set (ibid).

Teachers also attend a compulsory core course once a year where water in education is one of the topics discussed. The Social Sciences Unit and the Sciences Unit are now participating in a programme, organised by the UNESCO, concerning environmental information where water is a recurring topic. There is also a 'Physical Aspects of the Mediterranean' seminar held from the 10 to 14 July 1995 which involved the attendance of approximately 40 teachers of all subjects from Malta and abroad (DSS source, 1995).

8.7.1.2.2.4. School competitions

Essay competitions and home study worksheets have been run by schools, while painting competitions for primary and secondary schools related to the topic of water are to be run.

In addition, a WSC booklet on water conservation published by the Associate news was distributed to all secondary schools and a nationwide competition is being held in which all schools are able to participate. The competition, targetted at 12 to 13 year olds, involves the creation of a special project on the theme of water and includes the entry of ten wall charts and models, including those of RO plants and water catchment areas illustrating processes such as run-off (ibid).

8.7.1.2.2.5. School visits to water supply facilities

Schools have been organising trips to RO plants, pumping stations and the Institute of Water Technology to increase childrens' knowledge of where water comes from and how it is managed (WSC source, 1994).

The WSC is also setting up a museum of artefacts, such as old pumps and new technology, including newly acquired meteorological equipment (WSC source, 1993).

8.7.1.2.2.6. Water conservation seminars

The WSC intends to run a seminar on water conservation for Sixth Form and University students. The intention is to educate this group of students on the water issue in global environmental terms while also highlighting the Maltese problem (WSC source, 1994).

8.7.1.2.3. Long term conservation aims

As previously stated, water consumption had decreased significantly in 1994 and this can almost certainly be attributed to the extensive conservation campaign that year. Given its relatively low costs and success in other countries (United Nations, 1981), the campaign should continue indefinitely so that people do not become complacent again in their water use. Although the new domestic tariff should provide an incentive not to do so, those who can afford to, might do so. To stop asking people to save water may make many believe that there is no longer a problem. There still will be problems on such a small and densely populated semi-arid island and water supply will always be expensive. As should be the case in any place:

"Water conservation can no longer be just a response to drought." (Maclean, 1993, p.197).

The emphasis should be on sustainability (RO production is hardly sustainable considering it uses 18% of Malta's power) (*The Malta Independent*, 19/9/93, p.30), not complacency. The switch from a mentality that wastes to one that conserves without being constantly asked to, could take a generation or two.

".... nothing will work better than a change of heart. We could produce much more water if we wanted to, but it is costly. There is no cheap way. We must take care to make the best use possible of the water that we produce. We must never get to the point where we feel falsely secure that we have all the water we want." (*The Times*, 14/6/94, p.4).

8.7.1.3. Adoption of water saving appliances/devices

Persuasion of the public to adopt appliances and devices that save water in the home has not been a major part of the education campaign. It is hoped it will be the next step and may prove to be more difficult to communicate to the public due to the technical nature of some measures. However, if explained in layman's terms and the potential benefits made clear, adoption of such measures could prove to significantly contribute to reducing water consumption. The following measures have been proposed by the WSC for new and existing residential and commercial sectors (Riolo et al, 1993):

a) Dual action flushing systems:

Dual action cisterns save water by providing alternative flushing volumes, for example, 0.020m³ (4.5 litres) for liquids and 0.040m³ (9 litres) for solids, through two levers. Given that 38% of domestic consumption is for flushing, this represents a substantial reduction in consumption (and wastewater). Adoption can be encouraged through publicity and door to door delivery and installation (ibid).

b) Leak detection tablets for toilets:

Leak detection tablets can be used to detect toilet leaks, thought to be a significant contributor to total leakage. When placed in the tank the water turns a bright colour. If water is leaking from the cistern to the bowl, the water in the bowl will colour. The leak can be repaired by resealing the bell. Adoption can be encouraged by providing tablets free, door to door, followed by a repair/retrofitting campaign (ibid).

c) Water saving toilets:

By using only 0.027m^3 (6 litres) of water, these toilets save 15% to 20% of total domestic water use. It is proposed that owners and builders of new homes be targetted and toilets may be provided free to existing homes on request (ibid).

d) Low flow showerheads:

Low flow showerheads reduce the amount of water used by restricting the amount of water flowing out. The maximum flow rate is 0.040m^3 (9 litres)/minute compared 0.082 to 0.136m^3 (18 to 30 litres)/minute for non-conserving showerheads. The appliance only costs about Lm3.50, is easily installed and has a lifetime of about 15 years. However it is unsuitable where water pressure is below 1.5 bar, an obstacle which should be overcome by the new distribution works (ibid).

e) Shower flow regulators:

These regulators are placed into a non-conserving showerhead to constrict the orifice to reduce the flow to 0.040m^3 (9 litres)/minute. These cost approximately Lm1.50, significantly less than low flow showerheads and are easier to distribute. They are also unsuitable below 1.5 bar (ibid).

f) Faucet flow regulators:

These devices save water by reducing water flow in the tap, through regulation, from 0.091m^3 (20

litres)/minute to about 0.045m³ (10 litres)/minute. If less water is coming out of the tap there is a tendency that less water is used overall especially where water pressure is high. It would not be necessary to install these devices where water pressure and flow is already low (ibid).

The adoption of faucet flow regulators, low flow showerheads and shower flow regulators can be encouraged through door to door delivery and follow up installation as part of a package (ibid).

This should not be limited to the domestic sector but encouraged wherever possible in the industrial and commercial sectors and especially in the tourist sector. The WSC conservation campaign should incorporate awareness of these appliances and their financial and environmental benefits.

The campaign in 1994 attracted entrepreneurial interest in the form of a device, called the Best Saver Norwegian 'turbulent' shower system, which saves 50% of water used in the average shower (*The Malta Independent*, 17/4/94, p.44; *The Times*, 2/6/94, p.25; *The Times*, 14/5/94, p.4).

Dane Munro, the Australian Manager of 'C. Cauci', the importers of the device, brought it over to Malta in 1994 after apparently seeing his wife's hotel water bill. She owns the Meadowbank hotel in Sliema. The shower device costs Lm2.95, saves 20,000 litres of water per person per year and allegedly saves hotels 100 litres per person per night. Adoption of the device, which is available from retail outlets across the island, should be encouraged in the home as well as in hotels (*The Times*, 2/6/94, p.25; *The Times* 14/6/94, p.4).

Simple measures can be adopted immediately. For example, a decrease in the volume of flush can be easily obtained by placing a litre size plastic bottle inside

the toilet cistern (*The Sunday Times*, 12/9/94, p.16).

".... plus an appeal for one or two fewer flushes per person per day should have an instant effect.... In the longer term a return to low volume overhead flushes instead of the ruinously wasteful two-gallon flush at floor level should be encouraged ('a la California) or price differential.... The same policy of discrimination should be applied in favour of makes of household devices that use less water." (*The Times* 14/6/94, p.4).

There are a number of such devices available and their proliferation amongst households should be encouraged, especially where the incentive to adopt them does not seem immediately apparent, in low income households, for instance (Winpenny, 1994). Figures App.3.8.24 and App.3.8.25. show advertisements for some products.

8.7.2. Water conservation in the tourist sector

Given the relatively high level of the tourist sector's water consumption in the summer months, four ways are proposed to try and reduce it:

Firstly, a water conservation campaign similar to the one for the domestic sector by appealing to the tourist's conscience to try to be more careful when using water. This would involve the participation of the WSC, hotel establishments and of course, tourists;

Secondly, encouraging hotel establishments to adopt water saving methods and appliances. The WSC would work together with hotels and private manufacturers of water saving appliances to make this successful.

Thirdly, by restricting further development in areas where tourist development has already placed a strain on the water supply infrastructure and the careful planning

of future development. This would primarily be the task of the PA;

Fourthly, by trying to attract more upmarket tourists, which, as a group, are considered to be less water consuming because they are fewer in number (but with greater spending capacities) than the mass tourist. Furthermore, it is hoped that tourists, especially the upmarket type, could be attracted to holiday in the shoulder and winter months, so reducing the pressure in the summer. This task is currently being undertaken by the NTOM.

Briguglio (1995) has argued that,

"A balanced view is called for in order to reach an optimal solution between the evils of environmental degradation and the benefits of economic growth and development." (Briguglio, 1995, p.2).

It is envisaged by the participatory bodies concerned (the Government, the NTOM, the Malta Hotels and Restaurants Association, the WSC and the PA) that these measures will help to reduce the tourist consumption of water resources. A discussion and evaluation of the likely success of each follows.

8.7.2.1. Conservation awareness campaign in the tourist sector

In 1994 the NTOM and the WSC had teamed up to apply the 'Every Drop Counts' campaign to the tourist sector. The NTOM distributed information stickers, free of charge, to self-catering flats and hotels to place in bathrooms to remind tourists that water is a scarce resource and requesting them to use water wisely (NTOM source, 1995). More importantly:

"The campaign involves, among other steps, the printing of 100,000 leaflets explaining the water conservation campaign and advising people, when they are here, how they can do their bit to help." (*The Times*, 10/6/94, p.27).

The NTOM put these leaflets into all their tourist leaflets during the summer months. They produced tent cards bearing the conservation logo in English, French, German and Italian to be used in every hotel bedroom (Mercieca, 1994).

"It is crucial that the conservation campaign 'hits' this sector, but with witty messages which do not have a detrimental effect on the tourism market." (ibid, p.5).

The WSC have urged hoteliers to conserve water by asking them to remind their guests about the water problem. Every hotel, guest house and apartment block manager has been approached by the WSC and offered tent cards and other signs to display to encourage water economy (WSC source, 1994). However, Beel (1995) and Wood's (1995) survey of thirteen 4 and 5 star hotels in Bugibba/Qawra, Sliema and Mellieha found that,

"Some had leaflets in the rooms saying that towels/laundry would only be washed on request in order to reduce water consumption, but these are often just standard notices to let guests know that they are an environmentally aware company.... Six admitted to not having them [tent cards].... The five star Holiday Inn Crowne Plaza claimed never to have heard of them...." (Wood, 1995, pp.11-12).

"The Suncrest Hotel at Qawra tries to reduce unnecessary water consumption by only washing towels from the guests' rooms when required rather than washing

towels every day. Notices are displayed in bathrooms requesting this. In self catering apartments linen is generally washed weekly. The Suncrest is however, a major international, 4 star hotel with over 800 beds and the water conservation initiatives may well be company policy devised at head office overseas and not necessarily at the local level." (Beel, 1995, pp.6-7).

It appears that stickers and tent cards have not been effective enough, mainly because they have not been displayed or certain places have not received them.

The Government, the WSC, the NTOM and the Malta Hotels and Restaurants association need to work together to target conservation in three and four star hotels and flats. They are not only far greater in number than one, two and five star hotels, but accommodate the majority of tourists, with an 84% share of total available beds, and have the greatest occupancy rate (Briguglio, 1995). Furthermore, environmental considerations are less likely to be on their list of priorities.

".... the Planning Department believes that the Hotels and Restaurants Association should produce a booklet, rather like the one suggesting how to provide facilities for the disabled, but with tips on how the hotel can reduce water consumption. Such a scheme, aimed specifically at the hotels could prove more effective than the more general and wide ranging one presently in operation by the Water Services Corporation." (Wood, 1995, p.15).

Although the present WSC conservation effort is for both the domestic and tourist sectors, relative to the former, there has been little done to educate tourists. There are a number of reasons for this. Firstly there is relatively less media for reaching the tourist than for the domestic sector. Secondly, as a sector, tourism

consumes less water than the domestic sector and so the latter is of greater priority. Thirdly it is important not to alienate the tourist from returning to Malta. It is considered that tourists may perceive a water problem and this may be reported back to friends and family at home.

It is on this latter point that the authorities may be being over-cautious. Briguglio (1995) argues that,

"Tourists who often come to Malta are often more environmentally aware than the local resident.... littering the beaches is associated more with Maltese residents than with tourists.... Most tourists visiting Malta, come from Western European countries, where economic affluence and stronger civic awareness has enabled the local population to assign more importance to environmental protection than is the case in Malta" (Briguglio, 1995, p.9).

If tourists are not made sufficiently aware of the scarce and valuable nature of water, how are they supposed to have any inclination to try and save it? The tourists of today are not of the same mentality as those of previous decades. Environmental consciousness is greater now than ever before and it is in the developed countries that it is strongest.

Furthermore, given that most of Malta's tourists are British, their own recent drought experience due to shortages in the summer of 1995 (*Independent*: 26/8/95, p.2, 18/9/95, p.1, 19/9/95, p.2, 20/9/95, p.2; *The Daily Telegraph*, 9/11/95, p.1; *The Observer*, 24/9/95, p.11), and the water cuts due to distributive failures in January 1996 (*Independent*, 3/1/96, p.1) should mean that they are sympathetic to the Maltese situation. Scenes of standpipes and emergency bowzers were common in many regions of the United Kingdom and many consumers were subject to conservation pleas by the water companies via

the media and so this experience should be utmost in their minds when visiting a semi-arid country.

The Maltese authorities should not be reluctant to direct their campaign towards the tourist with the same intensity they did to the domestic consumer. To ask tourists to save water will not drive them away but a lack of water or poor quality water is more likely to. The former will help to prevent the latter.

Tourist guide books can be an effective medium for conservation pleas. Two of the most popular guides could state more than:

"Water remains Malta's most precious resource."
(Severin, 1978, p.10).

"In summer supplies become short, and it is essential to observe the increasingly urgent regulations which are issued." (Kininmonth, 1967, p.29).

Finally, there is a strong incentive for hotels to encourage tourists to save water since it is the hotels that pay water bills at a rate which they have long been complaining is too high. They can take it upon themselves to reduce their bills through conservation and efficiency.

Furthermore, environmental degradation through water consumption could drive tourists away. The larger hotels are beginning to realise that the problem of sea pollution from sewage is related to water consumption, for the more water that is used the greater the amount of sewage produced and so the more that is disposed into coastal waters which is polluting bathing areas and having an adverse effect on tourism. This is a further incentive for the hotelier to self regulate water consumption (PA source, 1995).

".... it is in the interests of the tourism industry itself to protect the environment and therefore there exists an incentive for the tourist industry itself to prevent destruction of the environment. Moreover in some cases firms can make substantial financial savings by promoting good environmental practices, such as for example, laundering of linen on request only...." (Briguglio, 1995, p.11).

Finally, on a wider scale,

".... only through collective and sustained action and education - from government and environmental groups - will a strong enough case develop for travel agents to sell only 'green' or sustainable holidays...." (Sisman, 1995, p.15).

8.7.2.2. Water saving methods and appliances in hotels

Water efficient appliances and methods save hotels water and money and so it is again in their interest to adopt these. Some have introduced water saving shower heads, removed the plugs from baths (not necessarily an effective measure since some tourists will try to block the plughole with a piece of cloth and so waste more water) and installed taps which turn themselves off after a short period, once they have been pushed on. All the appliances suggested for use in the domestic sector should be used in the tourist sector.

In Beel (1995) and Wood's (1995) survey of 4 and 5 star hotels they found that,

"Most of the hotels had a dual flush sytem for the

toilets but most rooms had both a shower and bath except at the Danish Village [Mellieha] where only showers were provided. Taking a bath uses more than twice the volume of water that having a shower does but although the hoteliers expressed concern at past problems with water supply, they did not actively encourage water conservation." (Beel, 1995, p.10).

If such small initiatives were adopted on a national scale by all tourist establishments there would be a significant saving in water as well as a large reduction in their water bills (PA source, 1995)

It is also becoming increasingly common that any new large scale tourist development is obliged to own an RO plant to reduce the burden on the local infrastructure. This is likely to be the case with the forthcoming Manoel Island high class tourism development, incorporating a large five star hotel there and two associated hotel complexes at Tigne (ibid).

It is also important to encourage new hotels to instal flushing systems that use the minimum of water and a dual water system for the flushing of toilets with seawater, or better still, with second class water. To provide an incentive to adopt dual sytems, second class water could be supplied cheaply and given the relatively high cost of first class water for hotels and the large amount of water used for flushing, it would be beneficial for hotel accounts.

The Best Saver shower device discussed earlier has been proven to save hotels 100 litres per person per night and reduced water and electricity bills (*The Times*, 14/6/94, p.4). The importers, C. Cauchi, also imports similar attachments for kitchen taps (*The Times*, 2/6/94, p.25). These should also be adopted in hotels and restaurants.

Such measures are likely to be the most effective means of reducing tourist consumption of tap water if a

significant education campaign is not undertaken or is unsuccessful. It may require much investment for hotels but this would be rapidly recouped through lower water bills.

8.7.2.3. Hotel management and tourism conventions

Hotel conventions are held as a part of hotel management aims and include resource management. Several of the large international hotel operators have grouped together to form the International Hotels Environmental Program where water management and water saving are some of the topics of discussion. Members include such groups as the Holiday Inn and Thomson (Beel, 1995; Wood, 1995).

Malta is proposing to hold a conference in late 1996 on tourism in the Mediterranean under the organisation of the World Tourism Organisation (Busuttil, 1995). Environmental issues such as water resources will be an important part of the agenda (ibid).

8.7.2.4. Development control

Unfortunately there is still a great deal of pressure for new tourist development, especially in the existing main tourist areas, but by placing stringent development constraints the PA hopes to control development and the resulting pressure on water supply (PA source, 1995). A new approach in assessing a tourism development planning application involves,

"The use of Environmental Impact Analyses [EIA]: To be co-ordinated with other experts responsible for the environment, and the conservation and preservation of natural resources, to evaluate the problems arising from the development of infrastructure and public utility

services, and their implications on other sectors." (Ministry for Development of Infrastructure, 1991b, p.80).

The EIA's include the assessment of the impact of new hotels on water supply. Cumulative impacts such as swimming pools and restaurants are also considered (PA source, 1995).

By April 1995, six new hotels had been subjected to an EIA, including an impact assessment on water resources. However the extension of bed numbers in existing hotels is not subjected to an EIA, a problem that the PA is addressing. They are looking to adopt what is called a Rapid Assessment Project of the impact of such development extensions (ibid).

This is all a part of what the PA terms 'Integrated Resource Management' which involves assessing all the 'knock-on' effects of development. A management team has already been assembled with specialists looking at different aspects of development problems. The first study is to look at the water industry and attempts will be made to model all the demands that are generated including those resources that are related to water, sewage and electricity, for example. At the time of Research Period 3 the PA were unable to give further information about this case study (ibid).

Before rigorous planning measures and restrictions can be put into practice the question of enforcement needs to be addressed. As has been discussed in this study and noted by Briguglio:

"Certain directives are difficult to enforce, either because of lack of policing personnel or non-availability of technical tools for proper assessment and monitoring. There may also be lack of will to enforce certain standards due to the negative impacts on business," (Briguglio, 1995, p.12)

This is particularly true where political interests and influences are concerned.

The PA's links with the NTOM are well established and it recognises the NTOM's needs, while at the same it time realises that one of the main ways of preventing increasing pressures on resources is to restrict development or place certain conditions.

Unfortunately, the PA still allows development to continue in the Bugibba and St. Julians areas because it is trying to contain all development within the areas and prevent sprawl (ibid).

The World Wide Fund for Nature and Tourism Concern recommend that,

"The tourism industry should:

- Take responsibility for maintaining and improving the environment where this is a direct resource.

- Ensure that environmental costs are taken into account in all tourism projects.

- Integrate environmental considerations into all economic decisions.

- Operate within the limits set by local appropriate infrastructure and carrying-capacity.

- Undertake full and regular environmental audits of every tourism project....

- Prevent over-exploitation of individual locations....

- Invest in environmental protection technologies and in restoration of existing damage to the environment in relation to tourism." (Eber, 1992, p.21).

8.7.2.5. Changing from 'mass tourism' to
'quality tourism'

A drive towards 'quality tourism' which, as previously stated, is considered to be sustainable and less damaging to the environment and resources is the main aim of the NTOM:

"In 1987 the National Tourism Organisation of Malta, which is responsible for marketing Malta, decided that we had to diversify from our mainly British market, and to upgrade our product so that we could attract the high income visitor, the more so as Malta's resources were not infinite and we simply could not afford a repeat of the situation which we had in the early eighties.... we had to abandon notions of marketing Malta as a cheap place for a holiday" (Pace, 1995, p.3).

The aim is to halt the increase in numbers in the summer months but at the same time attract higher spending tourists by offering alternatives to the traditional 'sun, sea, sand tourism', such as 'cultural tourism' and increasing the attractiveness of such holidays and high expenditure conferences in the shoulder and winter months (ibid).

".... going for increased numbers during the high season would not enable us to sustain our efforts to attract upmarket tourists and in fact would be counter productive as we would end up destroying our own environment." (ibid, p.11).

Callus (1993) argues that the cultural tourist is expected to be more ecologically sensitive than the mass tourist. (Callus, 1993). She states:

"This means that during their stay in Malta, most of the cultural visitors would continue living their environmentally-friendly way of life. Moreover, if these visitors realise that Malta has a water and energy scarcity, for example, they would tend to be careful not to waste any of these limited and scarce resources. This would render not only environmental and social benefits, but also economic ones." (Callus, 1993, p.52).

There are two main ways in which the Government can restrict the number of visitors: placing limits on the number of tourist beds and, if possible, limiting the seating capacity on incoming flights (PA source, 1995).

PA regulations no longer allow the development of hotels of 1 and 2 star rating which are seen as the most water consuming in terms of economic return, i.e. the money that is generated from tourists staying in these hotels does not justify the amount of resources used (ibid).

"....the National Tourism Organisation of Malta doubts that a reduction will occur in reality. For both the seat capacity of Air Malta and the bed capacity of hotels and other forms of tourist accommodation on the islands are increasing, so this is almost bound to have a knock on effect." (Wood, 1995, p.5).

In additon, it has been argued that moving towards quality tourism and 'big spenders' may increase pressures on water resources if they are not conservation orientated or not encouraged to conserve water. The PA have found that the high class tourist, although spending more money, will use more resources, including water, through luxuries such as swimming pools, saunas,

jacuzzies, etc. Therefore an effort must be made to try and encourage conservation and efficiency (PA source, 1995). Beel and Wood found that,

"....although these visitors are likely to leave more foreign exchange, they are also likely to use more water (and electricity) as they will expect a higher level of service provisions." (Wood, 1995, p.5.)

"Dr. Joe Psaila Savona, the Parliamentary Secretary for Tourism is committed to promoting more up-market tourism, meaning fewer tourists with more money to spend attracted by the history and culture of the islands rather than the sun-and-sand.... However these up-market tourists are also likely to use more water as the higher rated hotels they stay in such as the five star Corinthia Palace in San Anton provide for their every whim with baths, showers, whirlpools, jacuzzis and many indoor and outdoor swimming pools. These hotels are often beautifully landscaped and the grounds may be watered...." (Beel, 1995, p.4).

Busuttil (1995) has stated that,

"The much-revered 'upmarket tourist', often defined simply in economic terms as the big spender, may be no more sensitive to the culture of a host nation than his sun-seeking pleasure compatriot." (Busuttil, 1995, p.16).

Despite the NTOM's efforts, change has been slow. Since 1987 (when the NTOM implemented its new policy) there has been no decrease in tourist arrivals in the peak months, but an increase. Although numbers in the shoulder months have increased in the last few years,

during the first four months of 1995 an estimated 19% of the year's tourists came to Malta illustrating the scope still remaining for increasing numbers during that time (NTOM source, 1995). It should be noted that the change could take several years.

Briguglio argues that the change is not appropriate to Malta's situation. He states that given that Malta is sold as a 'sun, sea and sand' destination in all overseas tourist brochures and appeals to 'mainstream' tourists, it is conducive to mass tourism and always will be. In addition the drive to 'quality' tourism (or 'alternative' tourism as Briguglio calls it), which is likely to double the share of beds amongst five star hotels, may not work because the type of tourist attracted is related to the existing accommodation and tourist facilities structure which is geared towards 'mainstream' tourism. It would be non-sensical to force four and three star category accommodation (84% of total beds) to lower occupancy rates. Finally, he states, that it does not make political sense to reduce tourism numbers given the small, yet positive, net contribution from each tourist (Briguglio, 1995).

"These realities by no means contradict the argument that mass tourism is associated with certain environmental dangers and negative social impacts. The trust of the argument here is that given the attraction of mass and "mainstream" tourism on economic grounds, preemptive and corrective measures to reduce its negative impacts may be more meaningful and operationally useful than policies to reduce the inflows" (ibid, p.10).

Only in time it will be known whether the move from 'mass' to 'quality' tourism will be beneficial or a disadvantage.

8.7.2.6. Tourism in Gozo

Although the impact of tourism on water resources in Gozo is not as significant as it is in Malta, precautions need to be taken to ensure that the same problems do not occur. A carrying capacity for Gozo needs to be established and not exceeded. The proposed construction of a new airstrip and terminal on Gozo is likely to increase the influx of tourists to the island.

"The carrying capacity with regards to tourism is that level beyond which visitor satisfaction starts to drop and which will bring unacceptable changes and impacts to both the host community and the cultural and natural resources.... There is also a physical carrying capacity and this will depend on the infrastructure available and its limitations, particularly supply of water and electricity. It is important to identify the limitations of Gozo, space is one, so that from the start a level of development can be set." (Ellul, 1994, pp.85-86).

New developments will benefit from adopting water saving measures. There is evidence that this is already happening with some of the 4 and 5 star hotels. One new hotel in Gozo has dual flushing toilets, low flow showerheads and a dual water system using second class groundwater for the flushing of toilets. Given Gozo's tranquil and cleaner environment and the higher level of quality tourism it offers, it would be a shame to have it ruined by overloading the island's infrastructure and natural resources.

"Unplanned development can bring a shortage or over supply of certain resources. This may reflect negatively on the tourist product." (ibid, p.85).

Every measure should be taken to prevent this.

8.7.3. Commercial/business task forces

Extending its water conservation campaign to the commercial sector and agricultural sectors, the WSC planned in 1994 to establish two 'business taskforces' to work with 'businesses' seen as a problem in terms of water consumption. These problematic 'businesses' are farming, and hotels and restaurants (Mercieca, 1994).

The WSC wants to work amicably with individuals in these two areas to produce solutions to their problems. For example, for hotels and restaurants the WSC, in association with the Hotels and Restaurants Association, would like to stage a series of seminars and forums to discuss how managers and even kitchen and housekeeping staff can help to conserve water (ibid).

With regard to farming, the WSC would like to resolve any conflicts between themselves and the farming community and discuss ways to help them while they can help the WSC with the water problem (ibid).

"The WSC's Farming for Business Taskforce wants to visit the farms and meet the farmers to find ways we can come up with a solution to their problems with water. Our obvious port of call will be the Farmers' Central Co-operative Society and hopefully we will be able to address their members to look at their areas of concern from both sides." (Mercieca, 1994, p.11).

The use of incentives, particularly financial ones, would help to encourage specific water conservation measures in agriculture (pp.721-723).

8.7.4. Industrial water use efficiency

Despite promises in 1993 by then Environment Minister, Michael Falzon, that industrial water rates would increase in 1995 (*The Times*, 23/11/93, p.1), no such rise materialised in 1995, by the end of Research Period 3 (WSC source, 1995). Until realistic prices are charged to the industrial sector then the adoption of water saving, water re-use and recycling techniques will be slow.

Water that is re-used is that which is used more than once before being discarded or recycled. For example, it may be used for cooling after it has been used in the production process. Also, the reject water from the RO plants owned by many industries has a large residual pressure and so it may be used for generating electricity. The WSC already re-use the reject in this way at their own RO plants. Recycling is the use of the same water after it has been treated to reach a necessary standard of quality (ibid).

Simonds Farsons Cisk is one of few industries that has adopted such techniques. They commissioned the WSC to undertake a Lm5000 water audit of their whole manufacturing process. The WSC were impressed by the extent of Farson's water saving methods. Although tap water is cheap for them they still have to treat a lot of it by RO to achieve a certain quality, which pushes its real value up. They re-use their water for things such as cooling, firefighting and for boilers. All used water is recouped except that which is used for pre-rinsing in the washing of bottles (ibid).

The WSC aims to encourage industry to re-use and recycle water as much as possible, even though they do not intend to increase the relatively low industrial water tariff (ibid). The WSC's Chief Executive, Antoine Riolo, has recommended that the following measures can be

carried out in order to conserve water in the industrial sector: the recycling of cooling water; the recycling of condensed water from steam and heating systems; the installation of water-saving accessories, such as pressure regulators, automatic valves and rinsing spray nozzles; the reuse of water (where possible); the reuse of water (where possible) by passing the water from one process to another; the treatment of wastewater for reuse; the use of air cooling systems instead of water cooling systems; and the use of seawater, brackish water or treated sewage water where possible (Riolo *et al*, 1993, pp.46-47).

These recommendations would not only save water but would involve lower water and energy costs for industries and would mean that their dependence on the mains supply is effectively reduced since by recycling and re-using water they would require less of it initially. However, a more obvious incentive, such as a higher water tariff, may be necessary for industries to adopt these measures.

8.7.5. Efficient water use in agriculture

Water conservation measures in agriculture are best achieved through technological measures and education to discourage wasteful irrigation practices.

"The policy of the Ministry of Agriculture is to increase to the greatest extent possible, the irrigated areas.... [by the] full use of sewage effluents" (Riolo *et al*, 1993, p.39)

Given this, it is important that this water is not used inefficiently, wastefully and inequitably, as it

presently is, and that it is not taken for granted by those that have access to it, once it becomes more abundant, as has been the case in the domestic sector and in the SASTP farming area. It is crucial that the recycled effluent be appropriately priced so as to not encourage theft, while encouraging conservation and efficiency.

Most importantly, physical and social scientists must work together with farmers to identify problems and solve them (Skogerboe *et al*, 1982).

8.7.5.1. Drip irrigation

Drip irrigation was introduced to the Maltese Islands during the early 1970's but was only begun to be adopted more recently in the 1980's. It has been rapidly adopted especially in areas where water is scarce. Water can be used more often and more efficiently and so farmers can grow a greater number of crops and with greater yields (DA source, 1994).

Since many farmers are less willing to adopt drip irrigation systems, because they cannot afford to do so or may have a plentiful supply of water, financial incentives are available in order to make the water that is available last longer and more accessible to other farmers (ibid). A source at the University (1993) informed me that the introduction of drip irrigation in the area served by the SASTP had helped to lessen the conflict to a certain degree. Now that the DA understand the importance of drip irrigation they are subsidising 40% of the cost of installing a drip irrigation system. They are also offering a 40% subsidy for the construction of an underground or above ground reservoir (ibid).

"For agriculture, other than the realisation of the

solid wastes recycling project, the Government intends to [and since has done] provide incentives and assistance for the introduction of economic methods of irrigation, such as drip irrigation...." (Ministry for Development of Infrastructure, 1991b, p.40).

WSC reports state that:

"Up to recently, drip irrigation was applied mainly in hot houses. It appears that the advantages of drip irrigation for field crops are more widely recognized and practiced at the present with significant support of the Ministry of Agriculture. However, improvement of the methods used is called for, if their advantages are to be exploited.... Drip irrigation is recommended as the most suitable method of application for Water Conservation, higher crops, better control of runoff, control of groundwater contamination from fertilizers and the incorporation of marginal lots." (Riolo et al, 1993, p.39)

What may be discouraging is that where irrigation water is saline, salts may build up in the drip holes of irrigation pipes and also in small and concentrated patches on the soil surface. The build up of salts has a deleterious effect upon soil structure and fertility as well as causing toxicity in plants. Soils may become impermeable due to the blocking of pores (Agnew and Anderson, 1992). Although winter rains may be able to wash away salts before they become a problem, the problem of holes in irrigation pipes becoming clogged is more difficult to overcome.

To prevent this the salinity of the water must be lowered. It is hoped that the increased recycling of sewage effluent for agriculture and the reduction in the salinity of the raw sewage (and hence the recycled product) due to increased RO production, reduced

groundwater extraction, replacement of seawater flushing systems with collected run-off and the exclusion of RO brine reject and inadvertent seawater intrusion from the drainage network, should ensure this.

8.7.5.2. Irrigation practices and schedules

The WSC has recommended the set up of a system to advise farmers on irrigation schedules around rainfall and evaporation. They state that data about irrigation practices is lacking and that,

"The establishment of an adequate data base is highly recommended." (Riolo et al, 1993, p.39).

They emphasise the need for irrigating at night when there is little wind and minimum evaporation and the proper spacing of irrigation appliances. This is particularly important where sprinklers are used (ibid).

To further conserve water it is recommended that the use of self-shutting volumetric valves, part-circle sprinklers and devices to improve discharge/pressure uniformity, be encouraged (ibid).

As well as the frequency of irrigation, Agnew and Anderson (1992) have stressed that the rate at which water enters the soil is also an important consideration to prevent ponding and evaporation losses.

The use of simple metal frames and plastic sheeting (Plate 8.9.), rather than expensive glasshouses, should be encouraged since they help to reduce evaporative losses. More unorthodox methods include the covering of fields under drip irrigation with plastic sheets (Plate 8.10.).



Plate 8.9. Irrigation under metal frame and plastic houses.



Plate 8.10. Drip irrigation under plastic sheeting

8.7.5.3. Metering of groundwater extraction

It is known that the WSC considers that,

"Delivery of water through canals should be replaced by pipelines" (Riolo *et al*, 1993, p.39).

If this is successful, it will allow the metering of this water. However, my investigations inadvertantly discovered that the WSC also has plans to look into the possibility of the metering of private wells. If they are successful with this then it should reduce the consumption of groundwater and lead to the adoption of drip irrigation, as farmers realise that they can no longer afford to continue wasteful practices. However, the negative consequence is likely to be a conflict between the farmers and the authorities, with the farmers having to pay for what thay have freely drawn for centuries.

8.7.5.4. Crop water use analysis

It is hoped that the WSC will adopt the,

"Implementation of research trials on optimum crop water application and irrigation practices in all the country's irrigated crops." (ibid, p.40)

Pearce (1994) states that,

"A basic economic principle is that water should be allocated to those activities that have the highest values-in use, or, to use economist's jargon, the use where the marginal value product of water is highest." (Pearce, 1994, p.3).

By doing this, crops suitable for local conditions, that give the greatest return with the minimum amount of water used can be identified and if necessary introduced, while those that do not could be eliminated.

8.8 COMMUNITY PARTICIPATION IN WATER MANAGEMENT

A more holistic form of planning is required in order to develop a conscious effort to protect and manage water resources. It is in the people's interest to do so for they are the ones affected by issues of 'physical supply scarcity', 'access scarcity' and 'quality scarcity' (Pearce, 1994; Macelli, 1990).

"It is important to establish some mechanism, whereby ordinary persons - residents and workers - participate in environmental management, and carry out some of the functions that we have seen to be necessary: monitoring of environmental conditions; identifying problems; proposing solutions; evaluating solutions proposed by others (including officially-proposed solutions, which would have to be defended, for example at local public hearings); monitoring the implementation of solutions and policy; and evaluating past actions." (Macelli, 1990, p.179).

Local participation is necessary for four main reasons:

Firstly, there is a significant amount of local variation in environmental matters. In the case of water problems, Marsascala, for example, is an extreme case where some parts have been water scarce for several years. Local interests, pressures and actions would be far more effective at solving the problem than action at a national level (ibid):

"A large number of local persons, rather than a small number of central government civil servants, are more likely to find the time and commitment to report and do something about factors unique to their place." (ibid, p.180)

Secondly, another reason concerns the subjective and unquantifiable nature of some of the parameters involved (ibid). For example, residents in settlements without water will often have to travel to other places on the island to wash at friends' and relatives' homes. Inconveniences such as these are often not realised as a part of the water problem by the Government and is unheard of for some people where water is available.

Thirdly, local participation is required to control and report on abuses of the law regarding water supply (ibid). Confidentiality would have to be assured given the smallness of the Islands and its gossip network. Abuse of water resources could be controlled to some extent through social and official pressure at the local level.

"Fourth, the people need to feel that the environment is their environment (as distinct from nobody's or the government's): this would greatly enhance commitment to environmental protection policy. As practitioners in social development work have found in recent decades, the way to enhance commitment is to enable citizens to have increasing decision-making power. This, in turn, is achieved through non-paternalistic and sincere programs that include full information sharing, official encouragement, utilization of the information given by local groups, action upon their complaints and decisions, local participation in official decision-making, training in environmental affairs and in committee work, and so on.

Finally, another reason for incorporating ordinary persons in environmental management is that the environment does, in fact, belong to them." (ibid, p.180).

This task will be difficult given the polarisation of the Maltese into opposing supporters of the two major political parties.

"This breeds party-based conflicts, monopoly of a local group or public hearing by supporters of one party, decisions and actions inspired by political vendettas, suspicion of motives, and the interference of politicians looking for personal publicity or for a political reform." (ibid, p.180).

The emergence of the Local Councils in 1993 is a step in the right direction for increasing local public participation with meetings held regularly, including open discussions. However, although they are supposedly apolitical, this is rarely the case, with local councillors having allegiances either to the left or the right. Furthermore, a Government source (1995) informed me that the voices of Local Councils are largely ignored by central government. Safeguarding against these obstacles will be a long and difficult task. Politicians and their supporters need to be made aware that politics, and political party opposition and antagonism are counter-productive to the development and protection of water resources in the Maltese Islands (ibid).

8.9. CONCLUSION

Given the tenor of what has been discussed above, it is both impressive and pleasing, and perhaps surprising,

that the water situation is rapidly changing towards a better one where many of the problems of the very recent past are being effectively tackled and those that remain seem to be being addressed. Water supply is to be increased to meet increasing and potential demands. Supplies will be produced and secured through: increased RO production, including a new RO plant; the security of RO plants to protect them from sabotage and seaborne pollution; a new distillation plant to produce high grade distillate; increased water storage; managing and harvesting run-off; and increasing the production of recycled sewage effluent, the use of which will have to be carefully managed and monitored to ensure it poses no risk to groundwater and public health. However, none of these measures will be fully effective without an efficient and equitable means of distribution.

To ensure the efficient and equitable distribution of first class water, distributive works are being undertaken at every scale. Large scale transfers are being undertaken to distribute RO water from the north to the south and trunk mains and reticulation pipes are being replaced to accommodate this. Leakage detection, water theft legislation and detection, metering and billing methods are being upgraded. These measures are long overdue and thankfully something is finally being done to implement them. Along with the promotion of water conservation and reducing consumption, improving water distribution is the most important step to alleviating water scarcity in the south.

The distribution of all future second class water in agriculture should be undertaken through piped and metered supplies to ensure water equity and conservation. Although this may be met with protests by some farmers (mainly those in 'core' or 'comfortable' positions) the number that would welcome such measures (mostly those presently deprived) should outnumber those that object. Eventually, all parties will realise that such changes

are to the benefit of everyone. Those that complain can either settle for the change, buy water, expand their water storage capacity, or change to cropping patterns and irrigation methods that require less water. The adoption of RO technology is not economically feasible for most farmers.

The production and harvesting of relatively good quality water will reduce the burden on the saline and nitrate rich groundwater component of tap water. This will help correct the natural equilibrium of the MSLA as groundwater extraction is gradually reduced, as well as improve tap water quality. Given the health risks presently associated with tap water, such measures will be welcomed by the public and environmental watchdogs, so reducing the level of conflict that presently exists between them and the WSC/Government, as well as reducing the public health risk.

Artificial aquifer recharge, if feasible, will help to improve the salinity of the MSLA. The possibility of groundwater contamination must be monitored and dealt with if necessary. The increased capacity for distribution will allow the blending of sources of different water quality, and polishing plants will be set up to improve the quality of water. This should result in greater equity in the quality of water supplied to consumers: a major achievement in the development of water resources in Malta and one that, at the early stages of planning and initial implementation, appears to be transcending politics.

Although in-home water filters and mini-RO systems will help improve tap water quality, ideally tap water should consist of chlorinated second class water for non-potable uses, while drinking water is provided by bottle. This will reduce the burden on the nation's power supply and on the WSC to provide tap water that is relatively low in chlorides, nitrates, etc. Such a radical change will require a massive overhaul in the psychology of

water supply and use, but can quite easily be done through training and education, respectively. There is no obvious reason as to why this should not occur but plenty of reasons why it should.

Groundwater protection by reducing pollution will help tackle the problem at source. This requires the effective enforcement of legislation that prevents pollution, including unauthorised dumping in the countryside and the sewers. The introduction of the 'polluter pays principle' will encourage environmentally friendly practices. Effective enforcement will require a radical change in the present attitudes of law enforcers and in the public perception of the law, which may be difficult in a society where corruption and a blase' attitude to the law are the norm.

Most of the above are not effective without efficiency, commitment and professional training in water management. Thankfully, this is improving given that the transformation from the WWD to the WSC is considered to be complete and the Institute for Water Technology and the WSC laboratory can cater for the WSC's needs.

Customer relations have improved considerably since 1993 and a successful water conservation campaign is seeing positive results in the management of water demand and is encouraging efficiency in water use in the domestic sector. The effect of the new domestic water tariff is not clear yet and long term effects are even more debatable. However, through constant revision of the tariff an ideal set of charges can be reached and revised according to the changing cost of water production. The tariff should not be allowed to stagnate again.

Water conservation needs to also be encouraged in the tourist, industrial and agricultural sectors by encouraging efficient methods and appliances. The tourist sector can also benefit through development control and EIA's, while the drive towards 'quality tourism' will have an uncertain effect on water demands. In Gozo, where

tourism is relatively young, much can be learned through Malta's mistakes to avoid them.

Finally, increasing community participation should see more rapid and tangible results to water problems, since it is the community that is most directly affected by them. Suggestions and decisions made by the public must be taken seriously by central government and acted upon, not simply brushed aside or dismissed with half-empty promises so typical of politicians everywhere.

On the whole, the future water situation of the Maltese Islands seems to be under control given the current and future planned activity. There seems to be a new air of planning, learning, organisation, efficiency and professionalism surrounding both water supply and consumption that never existed before which, it is to be hoped, will last. There are many places in the world where for a number of reasons (the economic and political interests of powerful groups, for example) such efforts (if allowed and unhindered in the first place) would not work. Thankfully, Malta is not one of them. A concerted effort to improve all aspects of water related activities, most notably to provide a mean level of potable water for all Maltese residents, is occurring and should be successful given that it appears to rise above the politics of water supply and is using education: a valuable and effective tool.

CHAPTER 9

CONCLUSIONS

9.1. CONCLUSIONS AND SUMMARY

Since the Maltese Islands are semi-arid, small, isolated and with few perennial streams, supplying good quality water is a difficult task. Whereas in the past consumers relied only on wells and spring water, increased demands from all sectors, especially the domestic and tourist, has necessitated that the Government provide water, first and second class water, in increasing amounts and from a variety of sources. In the domestic sector this growth in demand has come about due to increased standards of living and changing water use habits. In the tourist sector demand has increased due to the rapid increase in tourist arrivals in the last three decades. There is a shortage of good quality second class water in the agricultural sector and the water demands of many farmers have yet to be satisfied.

First class water supply is the task of the WSC. However, over-reliance on groundwater sources (by farmers and other private borehole owners as well as the Government), the poor design and enforcement of laws for the protection of water resources, and the erosion of conservation values (mainly due to better standards of living and very cheap water tariffs) has meant that the quantity and quality of all groundwater reserves has declined. Even with increased levels of groundwater extraction, water demands could not be satisfied. As a result the Government has resorted to desalination and recycling technology on a large scale. Although this has, unfortunately, had the effect of creating an illusion of

plenty (water is used lavishly and wasted, mainly by those with access to it in plentiful amounts) and consumption has always expanded to absorb any increases in water production. Ominously, future demands are set to increase and only just recently has water production been able to keep pace with consumption.

Both natural and artificial sources of water are not adequately secured, a major shortcoming. Water plants are vulnerable to unexpected shutdowns, mainly due to electricity cuts and breakdowns, and damage, mainly from the risk posed by potential oil spills and sabotage. Significant amounts of rainwater is, regrettably, lost to the sea. This loss has increased with the growth of the urban fabric (rendering the surface more and more impermeable to aquifer recharge) and the illegal and irresponsible decline in the construction and use of cisterns designed to collect winter rainfall.

Sadly, the unsustainable exploitation of groundwater resources due to poor water planning, management and funding, has led the MSLA to become very saline and all aquifers to become polluted from a variety of sources with a variety of pollutants. Many settlements receive water which is high in levels of sodium chloride and discoloured due to the build up and dislodgement of rust in pipes. Nitrates from fertilisers have polluted all aquifers, especially the perched aquifer, and ultimately tap water. This poses serious threats to public health and standards of living. This is a very unfair situation and for those adversely affected, a constant source of complaint and conflict.

Although reservoirs exist to blend groundwater and RO water (which is relatively low in chlorides and virtually nitrate and pollutant free) to achieve a mean level of tap water quality before distribution, this blending rarely happens. This is the inequity in terms of the distribution of water quality, since some settlements receive mostly RO water and others mostly groundwater.

Generally, the central and southern settlements receive the poorest water (i.e. mostly groundwater with very high nitrate and chloride concentrations, respectively) and the north, the best (i.e. RO water).

A second inequity is one of water access. Due to the haphazardly assembled and undersized distribution system in the south of Malta, some settlements there are without water for long periods. These settlements are at the tail end of the major distribution system in the south and hence experience insufficient water pressures and volumes. The only way to supply them is from local boreholes which are some of the most saline on the island (and more of an insult than a help), or by WSC water bowsers, which are few and unreliable. Water cuts also occur in almost all settlements when groundwater supplies are low, the effects of which depend on the coping measures of consumers, which are usually dependent on income (economic ability to purchase large roof tanks, bowsers, bottled water, etc.)

The distribution system is also prone to a significant amount of water leakage and water theft. Many meters are faulty and are under-registering or have completely stopped registering. Billing mistakes on the part of the WSC also mean that customers are not accurately charged for their water consumption. These components constitute 'unaccounted for water' which accounts for approximately 54% of water production.

Many argue that the inequity in water supply, which is mostly between the north and the south of Malta, is due to politics, where the Nationalist Government has looked favourably upon their supporters, mostly in the north, while neglecting the Labour (Opposition) Party's supporters, mostly in the south. In addition to the conflict between angry consumers and the WSC/Government, these suggestions have led to just one of many conflicts between the two main parties and their relative supporters. The water problem itself has been politicised

by parties for their propaganda needs and political gains, so much so that it is a sensitive topic of discussion for anyone. Water policies of the two main parties differ significantly. The fact that they work against each other, rather than together, sadly exacerbates the water problem and conflicts.

Other conflicts over water occur wherever and whenever a source is shared by two or more parties, there is no regulation of consumption levels and use, there is a shortage in supply, and/or one or more of the parties is taking more than is considered to be their fair share, while another gets less. These conflicts occur on every scale, from between consumers and the WSC, to farmers sharing a borehole. Other conflicts include those over large scale water projects (objected to by local residents), water tariffs and what could be said to be the 'cut-throat' competition, to win over consumers, within the bottled water industry.

Reassuringly, solutions are being adopted. Water supply, first and second class, is being increased and secured, the former mainly by RO plants (a new RO plant will be built in the south) and the latter by increased recycling and run-off harvesting in the future, with which artificial aquifer recharge, to improve the condition of the MSLA, is a possibility. The Maltese Islands are compelled by EU regulations to treat all wastewater before disposal in the sea by 2010, which, if successful, will produce large volumes of recycled water for agricultural and industrial use, as well as other uses. Care needs to be taken to ensure that the treated wastewater will not contaminate groundwater bacteriologically and will not cause an increase in groundwater nitrate and chloride concentrations, especially if it is used for aquifer recharge. This can be done by improving, monitoring and controlling wastewater quality, if necessary, by improvements in untreated wastewater quality (mainly in terms of salinity

and nitrates by improvements in tap water quality and stopping seawater infiltration and brine rejection into the sewers), treated wastewater quality (by polishing and blending) and by further studies into subterranean water filtering and movement. Associated increases in fertiliser use also need to be controlled by enforcing import legislation and/or introducing new pricing policies as a disincentive to restrict fertiliser use.

Measures are also being taken to reduce the 'unaccounted for water' figure by installing new meters (which are more accurate and secure) and a new and accurate computerised billing system, and introducing improved leakage and water theft detection and harsher penalties to deter water theft.

Much needed new distribution trunk mains are being laid with the primary aim of increasing water volumes and pressures, and redistributing RO water from the north to the south, providing a greater capacity to blend RO and groundwater. The use of a lower energy cost RO plant to remove nitrate concentrations in extracted groundwater has also been suggested, as has the installation of dual water systems (for separate first and second class water supply) in all buildings. Although ideally a system which provides potable water by bottle only and bacteriologically treated second class water in the taps, is most desirable.

These solutions will help improve groundwater and tap water quality. In addition, new legislation based on the polluter pays principle for industries and repairs to the drainage network should decrease the present level of groundwater pollution. Control and enforcement needs to be taken against the illegal dumping of waste, the unrestricted use of fertilisers and toxins and other potentially harmful groundwater pollutants. Testing facilities to detect many pollutants are to be introduced.

Much of the above has come about with the improved

efficiency, training and equipping of the WSC, with the result that their once poor customer relations are now improving: an important consideration given that the WSC is asking the public to conserve water. To date only the domestic sector has been significantly targetted by the WSC's water conservation campaign with relative success. Water conservation and efficiency needs to be encouraged in all sectors, while more indirect measures, such as tourist development control, can have beneficial effects in reducing water demands. Education is the key tool here to try and curb and even possibly reduce, water demands.

Decentralised decision making and greater community participation should, in future, ensure the rapid identification and resolution of water problems at all scales, especially unique problems at the local scale.

Water is a scarce resource and it has been shown conclusively that water supply is subject to resource geopolitics, which has resulted in an inequity in water supply, giving rise to further resource geopolitics and even water conflicts. The link between geopolitics and resources, particularly the misappropriation of resources, is often made tenuously in many studies. This study has proved this link for the Maltese Islands at several scales and sets an example for other studies to approach water resource problems with a geopolitical perspective.

The Maltese Islands have gone from water crisis to a situation where almost all water problems are being addressed, with some positive results, in an incredibly short space of time (1 to 2 years). This is a lesson from which other places with similar problems could learn but, as previously discussed, one issue not relevant to most other Mediterranean islands is the fact that Malta, as an independent state, has not been able to rely on a 'domestic' mainland for water transfers and, as a result, has had to try to cope on its own.

9.2. PROSPECTS FOR FUTURE RESEARCH

The thesis has covered all aspects of water scarcity, water geopolitics and water management issues in Malta. Water problems are not as many and pronounced in Gozo as they are in Malta and that is the main reason that the thesis deals mainly with Malta and to a lesser extent, Gozo. The roots of water problems on the scale experienced in Malta can be seen in Gozo. Future research may concentrate on the development of these. Gozo is still relatively underdeveloped compared to Malta and it can be seen that modernity is taking hold of the island with increasing standards of living and the growth of tourism as the main indicators. This may place stress on the water supply system, exacerbate existing water conflicts and create new ones.

Future research could also concentrate on discovering whether or not the solutions being taken presently and future planned developments for tackling the water problem in Malta are effectively alleviating water scarcity and reducing water conflicts. It would be of particular interest to investigate the short to long term effects of the new domestic water tariff and the water conservation campaign, on water consumption and demand. The short term effect has been investigated by Mawer (1995) and a long term study would recognise any change in the Maltese psyche towards water consumption, which is still generally non-conservative. It would also be valuable to study changes in the water quantity and quality in groundwater supplies, especially to see if the MSLA ever returns to its original state.

Geopolitically, the large scale conflict between consumers and the Government is declining, however it would be interesting to see if the change in Government leadership, which occurred after the election in late 1996, will see a significant change in water policy and water conflicts. The relatively young environmental

movement could pave the way for a new environmentalism amongst new generations, the likes of which has been seen in Western Europe. Future research could investigate whether or not this is occurring and see the effect it has on environmental policies, water management and attitudes to water supply and conservation on the part of the Government and consumers, respectively.

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15/8/93, p.9, "Daphne Caruana Galizia.... National dehydration," by D. Caruana Galizia.

22/8/93, p.5, "I cannot understand...." by J. Scerri.

22/8/93, p.5, "Tackling the water problem"

22/8/93, p.27, "The water situation. Problems and solutions," by M. Falzon.

29/8/93 p.1. "Ninu Zammit rebuts call for his dismissal."

29/8/93, p.4, "Power cuts explained."

29/8/93, p.4, "Expensive repairs."

29/8/93, p.16, "The water problem," by C. Buhagiar.

5/9/93, p.5, "Jobs blown and boomerangs," by L. Spiteri.

12/9/93, p.4, "Government hiding reality - Sant."

19/9/93, p.17, "Still leaking!" by G. Demartino.

19/9/93, p.68, "New water rates from January 1."

3/10/93, p.8, "Xghajra water supply."

28/11/93, p.16, "Tourists' water consumption," by J. Bonnici.

5/12/93, p.16, "Higher water rates."

19/12/93, p.16, "Waste transfer from Gozo," by P. Bezzina.

19/12/93, p.16, "Water meter readers."

16/1/94, p.21, "Rusty water," by M. Xureb.

6/2/94, p.3, "Swimming pools," by M.A. Falzon.

13/2/94, p.13, "Who is hurting who?" by Pamela Hansen.

27/3/94, p.15, "The wind of change," by V. Farrugia.

10/4/94, p.1, "Water cuts to continue Dr Sant.

10/4/94, p.16, "Freshwater swimming pools," by J. Mercieca.

17/4/94, p.8, "The dry deason."

8/5/94, p.13, "Every drop counts," by P. Hansen.

26/6/94, p.16, "Weekend without water," by P. Fenech.

31/7/94, p.8, "Sewage outflow at Wied Ghammieg," by A.R. Valvo.

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11/9/94, p.56, "Water saving logo on the shelf."

12/9/94, p.16, "Water - in search of a solution," by E.A. Mallia.

9/10/94, p.15, "Water cisterns," by J. Zammit Ciantar.

16/10/94, p.16, "Water leakage report," by J. Mercieca.

30/10/94, p.6, "61% of water production unaccounted for."

20/11/94, p.16, "Action on water leaks," by J.M. Wismayer.

4/12/94, p.16, "Water leaks," by G. Cauchi.

4/12/94, p.16, "Msida reservoir," by A. Tabone.

5/2/95, p.16, "New water rates," by J. Micallef.

2/4/95, industry supplement, p.V, "Malta needs ISO 9000 as a national standard," by F.E. Farrugia.

9/4/95, p.29, "Water resources awareness play."

9/4/95, p.59, "Water services corporation."

16/4/95, p.16, "Computerised utility meters."

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4/8/95, p.1, "720 million gallons a day 'leaking from water mains'," by N. Nuttal.

24/8/95, p.2, "Ofwat backs payments for garden hose bans," by M. Hornsby.

13/11/95, p.1, "Water firms 'are cheating customers'," by N. Nuttall.

13/11/95, p.10, "A deluge of criticism over water," by N. Nuttal.

The Times (Malta):

9/7/81, p.14, "Water supply problem."

5/8/81, p.3, "Water supply imbalance."

5/8/81, p.3, "Household hardship," by A. Micallef.

5/8/81, p.3, "Call for emergency water supplies."

11/8/81, p.9, "Another waterless day for Sliema residents."

12/8/81, p.10, "Water supply shut-offs."

12/8/81, p.10, "Serious problem."

12/8/81, p.10, "No water."

12/8/81, p.11, "No water for washing - chars sent back home."

13/8/81, p.11, "Water problem and airport discussed."

13/8/81, p.11, "Housewives at Ta' Xbiex hold water protest."

13/8/81, p.16, "Water shortage," by E. Pace.

18/8/81, p.10, "Water production figures," by R. La Ferla.

19/8/81, p.10, "Water emergency."

20/8/81, p.18, "Government's water policy criticized."

22/8/81, p.11, "Marsascala hotel to run its own desalination plant."

17/8/84, p.7, "Call for Government statement on persistent water cuts."

17/5/86, p.4, "Water to be imported from Sicily."

20/5/86, p.3, "More water shipped in. Digging for new plant in progress."

23/5/86, p.3, "Water gift from Italy."

10/6/86, p.24, "Water plant expansion."

18/6/86, p.12, "Persistent shortage."

3/7/86, p.4, "Nationalist MP on water situation."

3/7/86, p.14, "Water shortage problem," by A.P. Farrugia.

4/7/86, p.3, "Reverse osmosis plant at Sliema to start operating this month."

5/7/86, p.28, "Government not sufficiently aware of people's hardships - Dr. Refalo."

7/7/86, p.12, "Waterless days."

7/7/86, p.12, "No courage."

9/7/86, p.15, "Housewives plan Valetta protest demonstration over water shortage."

10/7/86, p.9, "Water crisis threatens to dry up China's future."

12/7/86, p.15, "Women beaten up in Valetta water protest."

15/7/86, p.6, "Water: a crisis threatening the world."

2/8/86, p.3, "Watery tribulations."

2/8/86, p.11, "New \$2m contract signed for water plants expansion."

4/8/86, p.7, "India tries to get to grips with its water problem," by S. Muthia.

2/8/86, p.24, "Leakages rate above 'tolerable' level."

4/8/86, p.10, "Desperate for water," by J.J. Portelli.

14/7/86, p.10, "Public protest."

16/7/86, p.13, "Police deny beatings at Valetta water protest."

16/7/86, p.13, "'We marched in good faith' - Housewives' committee."

11/8/86, p.14, "Water from the tap," by G.H. Ferro.

3/8/87, p.1, "Equipment arrives to raise Tigne water production."

4/8/87, p.2, "Minister explains water situation."

13/4/92, p.20, "Problems identified in 1527 water resources report remain unsolved."

7/9/92, p.16, "New waterpipes for Qrendi-Marsascala supply line."

6/4/93, p.3, "Protecting groundwater from contamination," by I. Fenech.

12/4/93, p.10, "Drop dead."

16/4/93, p.18, "Drinking water in the south of Malta too salty," by J. Cocks.

26/4/93, p.40, "South of Malta 'in a state of neglect'."

1/5/93, p.22, "Well water generally excellent but..."

4/5/93, p.5, "Minister on new water rates."

4/5/93, p.40, "MLP to monitor water situation."

5/5/93, p.5, "Government accused of bad planning in water distribution."

28/5/93, p.4, "Water supply - 'period of transistion'."

5/7/93, p.48, "Drive to stop discharge of toxic waste into drainage system," by M. Testa.

9/7/93, p.1, "Talk on EIB loan for sewage treatment plants," by I. Fenech.

26/7/93, p.4, "Waterless Senglea," by L. Napier.

28/7/93, p.23, "Boiling of bowser water."

29/7/93, p.4, "Water cuts," by G. Mercieca.

30/7/93, p.22, "Water supply policies ineffective - MLP."

2/8/93, p.20, "Irrigated land hit by water shortage."

3/8/93, p.22, "Man critical after axe attack."

6/8/93, p.4, "Waterless days," by H. Grech.

7/8/93, p.4, "Gzira floods," by V. Rodenes.

9/8/93, p.20, "Water problem still far from being solved - AD."

11/8/93, p.4, "Water supply cuts in San Gwann," by J.L. Portanier.

12/8/93, p.4, "Water shortage: The problem persists."

13/8/93, p.20, "Bowser service - free of charge."

16/8/93, p.2, "Oil slick at Kalkara."

16/8/93, p.21, "Inefficiency."

23/8/93, p.1, "Repairs to water distribution system will now cost Lm100m - Sant," by I. Fenech.

25/8/93, p.40, "Vittoriosa residents protest over water supply," by J. Calvert.

26/8/93, p.1, "Power failure hits water plant."

27/8/93, p.36, "Ninu Zammit explains power faults."

28/8/93, p.32, "MLP calls for resignation of Ninu Zammit."

1/9/93, p.19, "On tap."

4/9/93, p.32, "Plans to move water plant to new site."

18/9/93, p.1, "Water pressure problems."

18/9/93, p.4, "Water cuts and noise at Pembroke," by N. Farrugia.

23/9/93, p.5, "Judging facts, rationally and objectively," by M. Falzon.

24/9/93, p.22, "More accurate water meters being installed."

29/9/93, p.1, "Power failure hits water plants."

29/9/93, p.21, "Consumption of bottled water soars," by J. Calvert and I. Fenech.

30/9/93, p.1, "Faults at three water plants."

1/10/93, p.15, "Tap water quality."

5/10/93, p.4, "Wied Mexju being turned into rubbish dump."

14/10/93, p.1, "15 pools found to have drinking

water."

22/10/93, p.40, "Reverse osmosis plants supply 60% of total production."

26/10/93, p.1, "Noise reduction plans for Pembroke."

8/11/93, p.1, "Water plant expansion. Widespread cuts, today, tomorrow."

11/11/93, p.4, "Marsascala water problems," by P. Mizzi.

11/11/93, p.6 "Minister rebuts criticism on sewage overflows."

23/11/93, p.1, "Higher water rates announced," by R. Zammit.

23/11/93, p.3, "New water mains at Kirkop."

24/11/93, p.52, "MLP finds rise in water rate 'unacceptable'."

4/12/93, p.1, "Water - at a just price."

7/12/93, p.4, "Marsascala water situation," by A. Ellul.

7/12/93, p.4, "Gzira floods," by V. Rodenes.

13/12/93, p.17, "Recycling plant to take all of Malta's waste."

13/1/94, p.1, "Cuts in several areas."

19/1/94, p.16, "'Crucial year' for Water Services Corporation."

10/2/94, p.1, "Explosion at Ghar Lapsi water plant."

11/2/94, p.2, "Sabotage at Lapsi plant. Pipes repaired less than [than] 11 hours after explosion," by J. Calvert.

23/2/94, p.4, "Waterless in winter," by L. Causon.

15/3/94, p.5, "Going back to basics," by B.B. Bonello.

15/3/94, p.6, "World Consumer Rights Day."

24/3/94, p.48, "Sant forecasts worse water crisis."

7/4/94, p.48, "'Tap water' warning."

9/4/94, p.1, "Water production set to rise by 5.5m gallons by summer," by I. Fenech.

11/4/94, p.1, "New purification plant planned."

13/4/94, p.1, "40,000 water meters to be replaced this year."

21/4/94, p.4, "Drainage overflow at St Paul's Bay," M. Testa.

27/4/94, p.1, "Strong winds, rough seas break up oil slick."

27/4/94, p.2, "Water problems in 1993."

28/4/94, p.48, "AFM cleaning patches of oil."

2/5/94, p.3, "Anti-pollution unit to buy new equipment," by J. Cocks.

3/5/94, p.23, "Save water campaign in schools."

5/5/94, p.25, "Trenching works at Ta' l-Ibrag spark off complaints," by J. Cocks.

6/5/94, p.1, "Cost of power to water plants."

7/5/94, p.52, "Save water campaign launched."

24/5/94, p.22, "St Paul's Bay sewage pipe bursts again," by J. Calvert.

25/5/94, p.27, "Ta' l-Ibrag Road residents say roadworks making life a misery," by R. Zammit.

2/6/94, p.25, "New device saves up to 50% of water used in average shower," by J. Calvert.

9/6/94, p.2, "Every drop counts..." by A.R. Grech.

10/6/94, p.2, "Conserving water," by T.C. Cutajar.

10/6/94, p.27, "Water saving campaign."

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25/6/94, p.21, "Water rationing in the land of plenty," by J. Richardson.

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15/9/94, p.21, "Malta now has spare production capacity," R. Zammit.

16/9/94, p.40, "Kirkop firm unveils new waste water treatment plant," by P. Pistorio.

18/9/94, p.4, "A mini-waterfall in Floriana," by M.R. Zammit.

14/10/94, p.17, "Side effects of irrigation."

27/10/94, p.3, "Saving water," by R. Buttigieg.

31/10/94, p.25, "Noise from water plant."

5/11/94, p.11, "Work starts on new water pipe network at Qormi."

8/11/94, p.16, "Gozo water production up by half."

11/11/94, p.27, "Water pumping stations, boreholes to have electronic equipment."

21/11/94, p.56, "Water quality, conservation, on water corporation's priority list."

24/11/94, p.6, "Minister outlines challenges ahead."

15/12/94, p.8, "More than 43,000 new water meters installed," by J. Calvert.

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11/2/95, p.4, "Water rate subsidy," by G. Magro.

17/2/95, p.4, "Water, electricity meters in garages," by S. Cassar.

20/2/95, p.4, "WSC's goals - just the norms," by T. Agius.

22/2/95, p.4, "Water rate subsidy," by J.M. Cristina.

28/2/95, p.4, "Water rates," by A.M. Galea.

3/3/95, p.4, "Water quality," by A.R. Grech.

13/3/95, p.27, "Wind swept."

14/3/95, p.5, "Water- the real challenge," by A. Mifsud.

15/3/95, p.4, "Customer care," by G. Cardona Schranz.

22/3/95, p.4, "Water rate subsidy," by R. Pace.

29/3/95, p.9, "Sant receives Lm2,285 water and electricity bill."

30/3/95, p.9, "Ninu Zammit also receives wrong water bill."

30/3/95, p.10, "Sant on water, electricity bills."

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APPENDIX 1

RESEARCH QUESTIONNAIRES AND TOPICS

Questionnaire for domestic consumers

1. Do you have enough water to satisfy your needs?
2. Do you drink tapwater?
3. Is it good quality?
4. What do you do if supplies are low or water gets cut off?
5. Do some areas have more or less water?
6. Do some people use more water than others? Is this fair?
7. Are there many disputes over water?

Questionnaire for farmers

1. Do you have enough water to satisfy your needs?
2. Where do you get your water from?
3. Do you share your water?
4. How do you store and use your water?
5. Is the water good quality?
6. What do you do if supplies are low?
7. Do some farmers use more water or take more water than others?
8. Do other sectors/people use more water than others?
9. Are there many disputes over water?
10. Part-time or full-time?
11. Area of land farmed?

Questionnaire for industrialists

1. Does your firm have enough water to satisfy its needs?
2. Where do you obtain water from?
3. Is this shared with other industries?
4. How do you store and use your water?
5. Is it good quality?
6. What do you do if supplies are low or water gets cut off?
8. How does this affect your production?
9. Do some areas have more or less water?
10. Do other sectors receive a better supply? Is this fair?
11. Are there many disputes over water?
12. Do you have any complaints?

Questionnaire for tourist accommadation managers/owners

1. Does your hotel have enough water to satisfy its needs?
2. Where do you obtain water from?
3. How do you store and use your water?
4. Is it good quality?
5. What do you do if supplies are low or water gets cut off?
6. How does this affect you and your guests?
7. Do you get any complaints from guests about the water supply?
8. Do any use water lavishly?
9. Do other hotels/areas have a better supply? Is this fair?
7. Do other sectors receive a better supply? Is this fair?
8. Are there many disputes over water?
9. Do you have any complaints?
10. Are you happy with the rates you pay?

Topics discussed with academics, officials,
professionals and members of NGO's

1. Water supply:

Water management - including the changeover from the Water Works Department to the Water Services Corporation.

Water sources - including RO plant locational factors.

Water distribution.

Water recycling.

Water supply priorities - sectoral.

The minimum level of water provision.

Water legislation.

Water production figures and costs - including power consumption.

Water tariffs.

2. Water supply problems:

Water planning and policies

Water cuts - including factors determining water cuts and their location and duration.

Water shortages.

Restricted access to water.

Breaching of water laws - including theft.

Water waste.

Remedial delays.

Unaccounted for water.

3. Water quality problems:

Groundwater pollution and vulnerability.

Sodium chloride levels in tapwater.

Nitrogenous compounds in tapwater.

Nitrate levels in bottled waters.

4. Geopolitics:

Water inequities - mainly within the domestic and agricultural sectors in terms of water quantity, quality and access.

Water conflicts - within and between sectors of the economy, and between consumers and the authorities.

Water politics - water as a means of propaganda and conflict between the two main political parties and their supporters.

5. Water management and future planned developments:

Plans to increase production through RO and recycling technology.

Reducing pollution and the deterioration of groundwater.

Measures to reduce unaccounted for water.

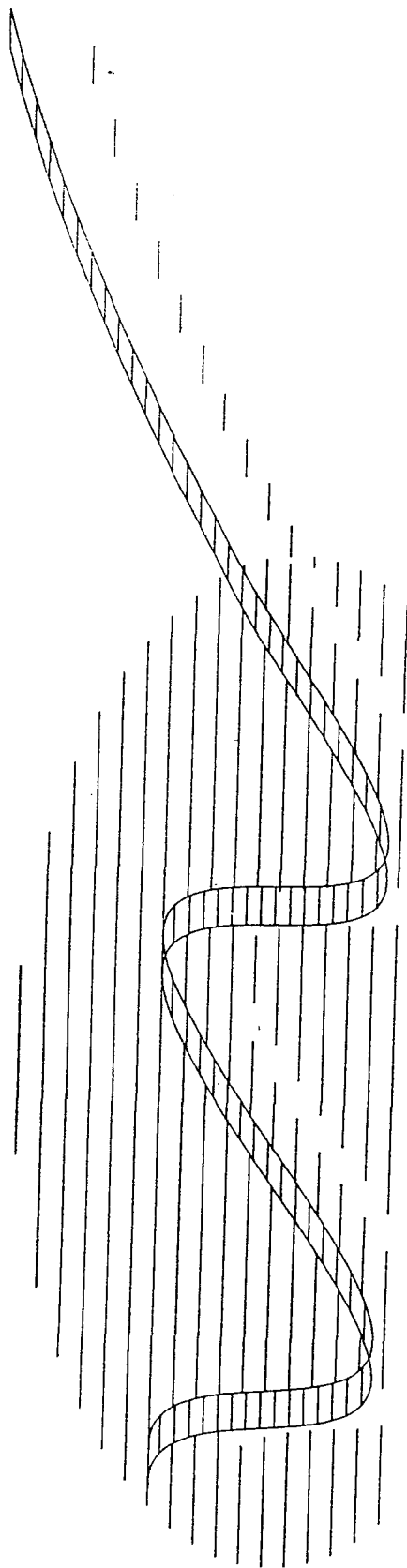
Upgrading and expansion of the distribution system.

Water conservation.

Improved water legislation.

APPENDIX 2

WATER SERVICES CORPORATION PORTFOLIO



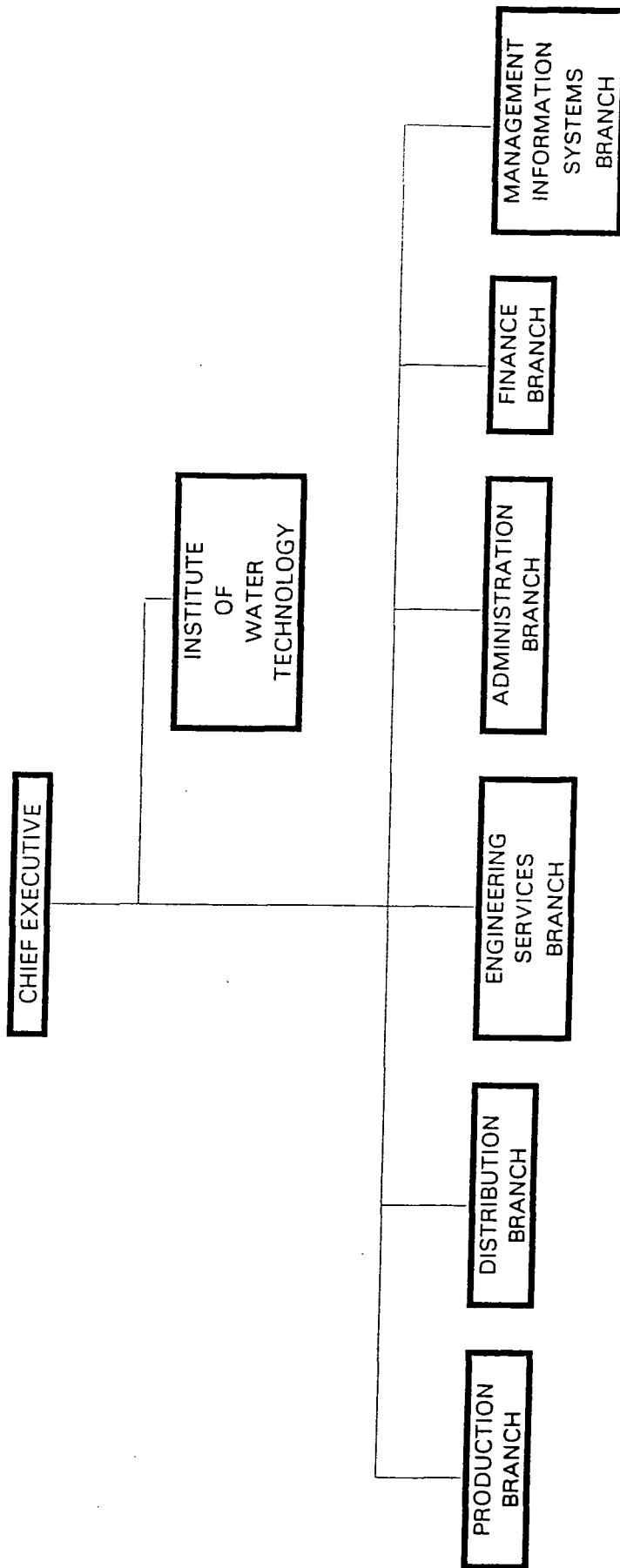
THE WATER SERVICES CORPORATION

The Water Services Corporation is a public utility corporate body set up as provided for in the Water Services Act XXIII 1991 to take over the functions of what was the Water Works Department. Those parts of the act dealing with potable water were put into effect on the 20 January 1992.

The Water Services Corporation is responsible for the supply, production, acquisition, transfer and management of the water in the Maltese Islands.

MISSION STATEMENT

To achieve a more rational and economic use of water in the Maltese Islands through the maintenance of an equilibrium between supply and demand, and to support the general social and economic development effort while protection and preserving the environment.



PRODUCTION BRANCH

The production Branch is entrusted with the production of water to meet the demand of the Maltese Islands

GROUND WATER

Ground water is obtained through boreholes & underground galleries

HYDROLOGICAL MONITORING & CONTROL OF THE AQUIFERS

Monitoring & control of the aquifer, safeguarding the aquifer from pollution, optimising & control extraction

DRILLING SECTION

DATA GATHERING & PROCESSING

DISINFECTION & INSTRUMENTATION

DESALINATION

Increase in production can only be satisfied by sea water desalination. Reverse osmosis now became indispensable in this respect.

**RO PLANTS
OPERATION &
MAINTENANCE**

DISTRIBUTION BRANCH

The Distribution Branch is responsible for the provision of good quality, continuous water supply to consumers at adequate pressures & flows

WATER AUDIT

To minimise loss of revenue & decrease unaccounted for water

METERING

Collect meter readings, maintenance of meters

THEFT INVESTIGATION

Control & investigate water theft

ZONAL INVESTIGATION

Analyse water zones to reduce leakages

DISTRIBUTION WORKS

Laying, testing, disinfection & commissioning of pipelines

PIPELAYING SECTION

Laying of water mains, repair of large diameter pipes

MAINTENANCE SECTION

Routine maintenance of distribution system

DISTRIBUTION CONTROL

Manage the distribution network & design improvements

CENTRAL CONTROL ROOM

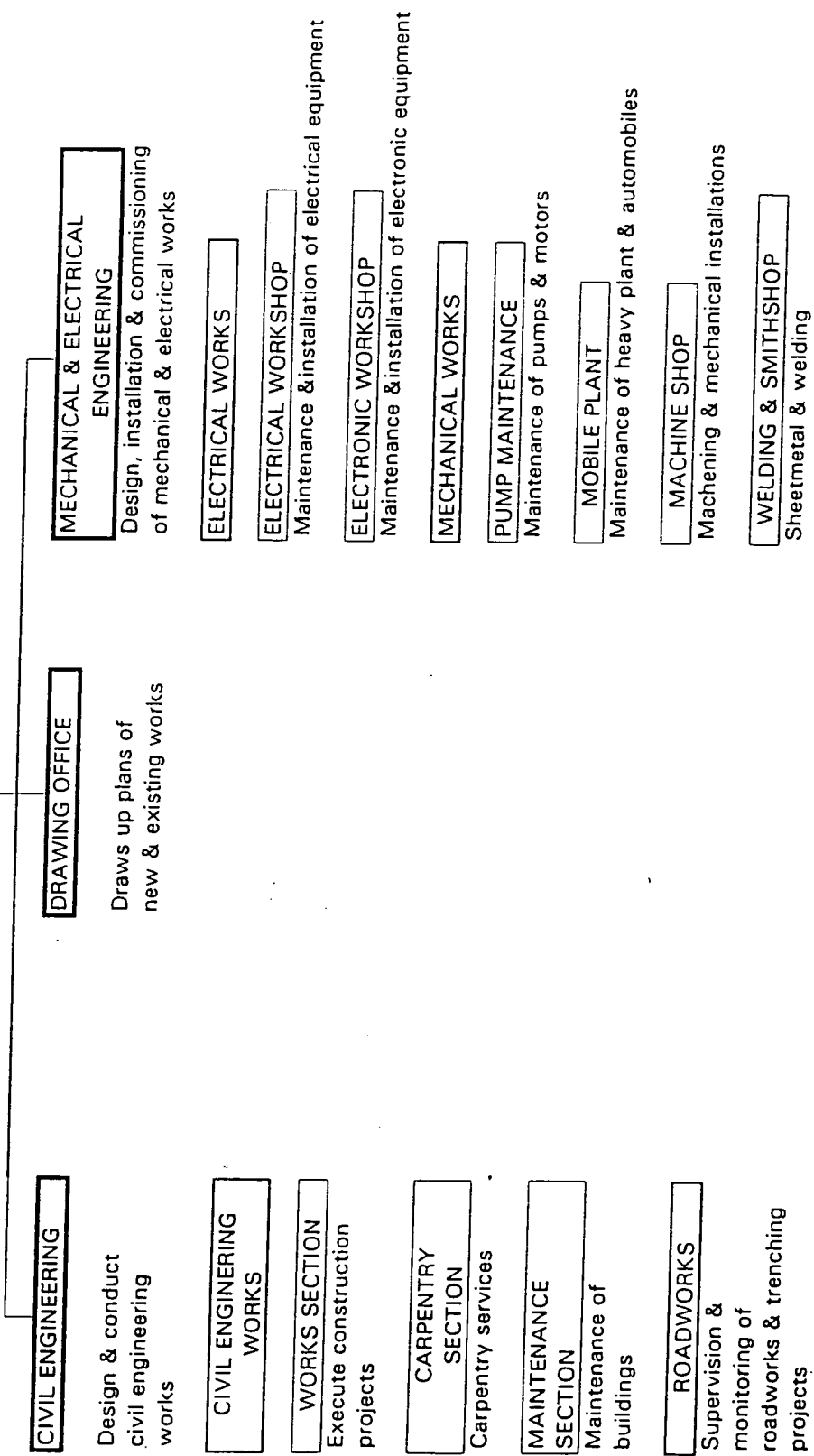
Monitoring of the production storage & distribution of water

DISTRICTS

Installation & repair of water services, extension of network, handling of customer applications, complaints & requirements

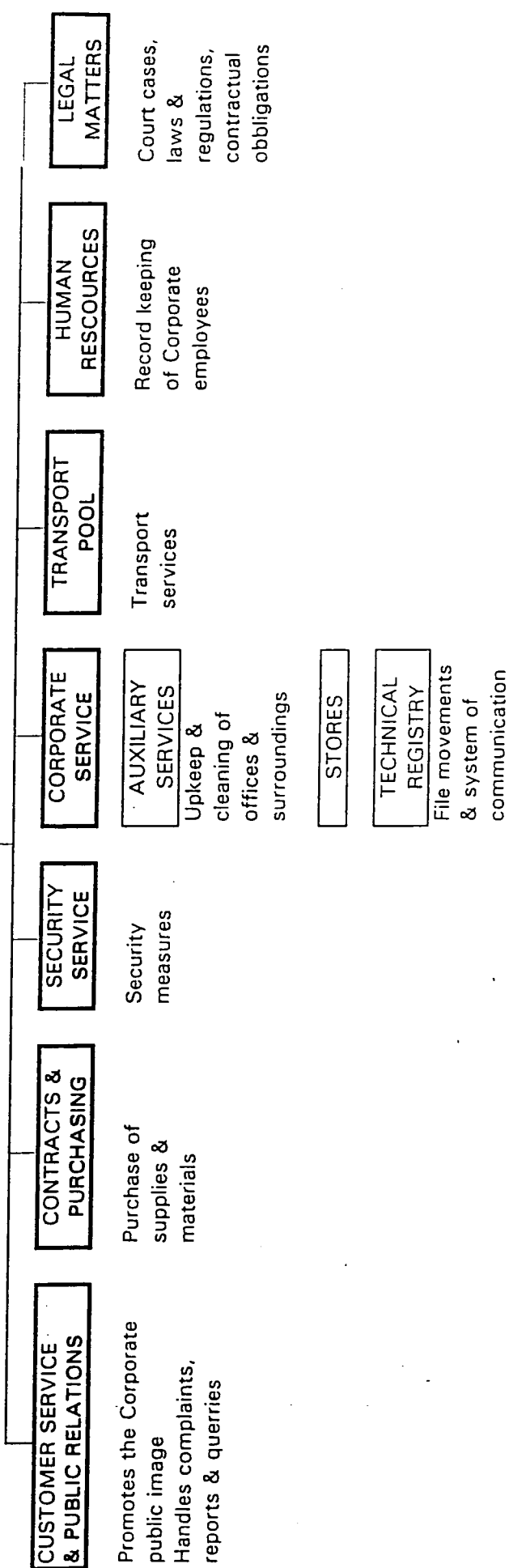
ENGINEERING SERVICES BRANCH

The Engineering Services Branch technical and engineering services
to the branches of the Corporation



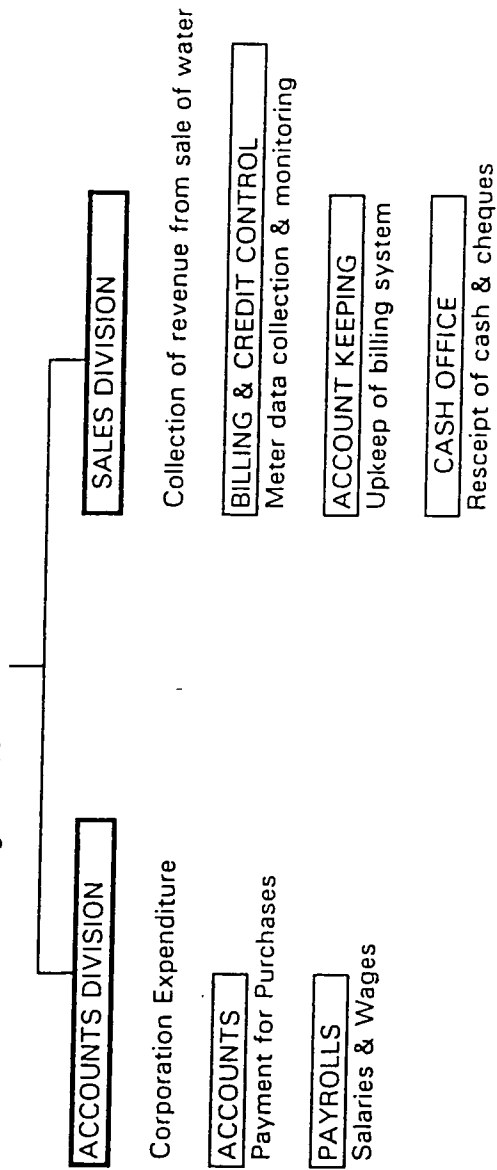
ADMINISTRATION BRANCH

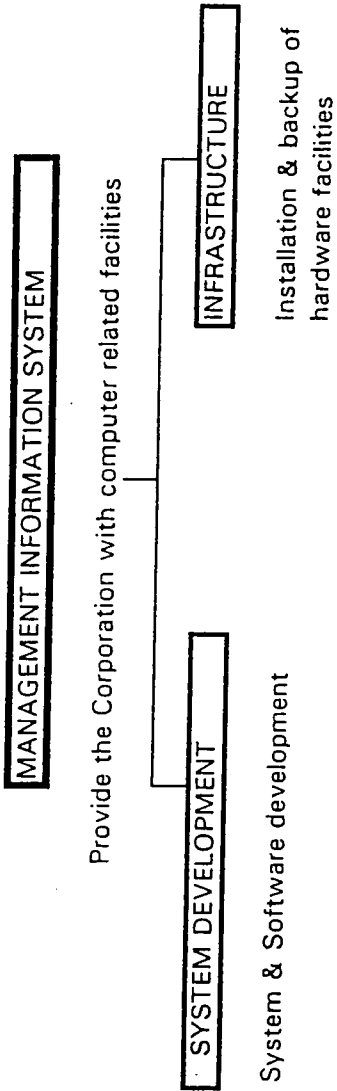
The Administration Branch provides on administration services to all branches



FINANCE BRANCH

The finance branch provides the Corporation with a financial and cost accounting service





THE PEOPLE WHO MAKE THE CORPORATION

TOP MANAGEMENT

Chairman
Board of Directors
Chief Executive

Responsibilities: establish goals, strategy, operating policies, represent the organisation

Characteristics: Discuss corporate matters and decisions

SENIOR MANAGEMENT

Branch Heads

Responsibilities: implementation of policies, long term planning, co-ordination of activities

Characteristics: complex and varied work, long hours of work, most of the time at meetings, or on the phones

MIDDLE MANAGEMENT

TECHNICAL

Group Manager
Senior Engineer
Engineer/Scientist
Operation Manager
Principal Foremen

ADMINISTRATIVE

Group Manager
Manager
Senior Administrator
Administrator
Officer

Responsibilities: implementation of policies and plans, supervision, co-ordination of activities.

Characteristics: source of innovation, productivity.

FIRST-LINE MANAGEMENT

TECHNICAL

Senior Foremen
Foreman
Senior Technician

ADMINISTRATIVE

Office Manager
Supervisor

Responsibilities: supervision of operators, co-ordination of activities, material, equipment and tools.

Characteristics: most of the time supervising the work of operators

STAFF

TECHNICAL

Technician
Fitter
Tradesman
Labourer

ADMINISTRATIVE

Clerk
Junior Clerk
Data Entry Operator
Handyman
Messenger
Driver
Cleaner

Responsibilities: proper use of equipment, tools, instruments and gear, efficient use of material.

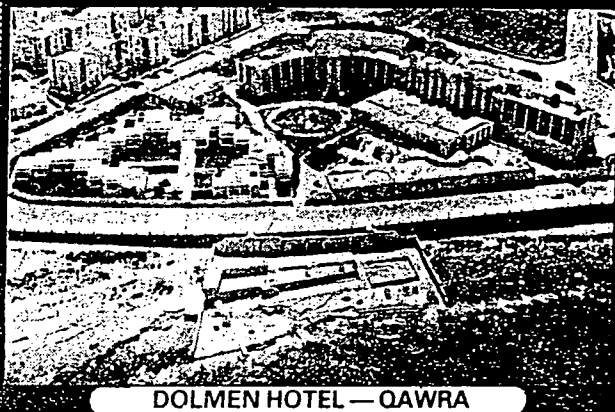
Characteristics: work to established operational standards.

GENERAL ANALOGOUS NOMENCLATURES

Mechanical Engineer, Electrical Engineer, Civil Engineer, Legal Advisor, Financial Controller, Accountant, System Analyst, Programmer, Secretary, Enforcement Officer, Technical Superintendent, Plant Senior Foreman, Chief Security Guard, Senior Security Guard, Security Guard, Chief Draughtsman, Draughtsman, Land Surveyor, Drawing Office Assistant, Quantity Surveyor, Mechanical Technician, Electrical Technician, Electronic Technician, Permeator Technician, Pump Technician, Pipe Technician, Monitoring Technician, Road Technician, Laboratory Technician, Laboratory Attendant, Mechanic, Leak Detector, Meter Reader, Store Keeper, Motor Mechanic, Welder Burner, Winder, Sheet Metal Worker, Electrical Fitter, Mechanical Fitter, Pipe Fitter, Monitoring Fitter, Chlorination Fitter, Auto Mechanical Fitter, Auto Electrical Fitter, Machine Plant Fitter, Lead Plant Operators, Pump Operators, Plant Operators, Trenching Operators, Building Tradesman, Carpenter, Spray Painter, Assistant Drillers, Roughnecks, Heavy Plant Drivers, Motor Transport Drivers

APPENDIX 3
NEWSPAPER EXTRACTS

No water problems for the Dolmen Hotel



They are going to produce it themselves

With the summer heat making greater demands on the water supply, more and more enterprising hoteliers are solving their water problems by producing it themselves. In fact, the management of the Dolmen Hotel, Qawra, is presently installing a Reverse Osmosis system to have a regular supply of water on hand for its guests.

This energy efficient Reverse Osmosis technology has been introduced to Malta by Panta Lesco Ltd. and has already been adopted by other leading hotels including the new Jerma Palace Hotel at Marsascala.

This system will produce a daily supply of

15,000 US gallons of fresh drinking water from the sea, with less than 500 parts per million Total Dissolved Solids.

The management of the Dolmen Hotel was quick to see its advantages, a guarantee for its guests and their requirements daily.

Think about it yourself too. It makes good sense, particularly if you are situated near the sea. Act now. Contact:

PANTA LESCO LTD
WATER TREATMENT DIVISION
PANTA HOUSE, BIRKIRKARA ROAD
MSIDA, TEL: 41361



Figure App.3.3.1. *The Times* 7/7/81 p.8.

DAPHNE CARUANA GALIZIA

National dehydration

THE PHRASE "the water of life" has come to have new significance for people who are suffering water cuts as severe and unjust as those which provoked street demonstrations seven years ago.

Lack of water caused hardship then, and lack of water is causing hardship now. The only change is in locality. Up to the summer of '86 it was the people of Sliema who lived in the sort of sordid, fetid conditions which only the denial of water can cause. Now it is the people of Malta's south. Just as the Labour government was guilty of cruelty then, so the Nationalist government is guilty of cruelty now.

No government can leave people without water – water which it can provide if it spends money without being accused of extreme irresponsibility.

Our government is nothing but a knot of men who are paid to look after the interests of the country. We do not take "the country" to mean three small islands of barren topography, roughly 90 kilometres south of Sicily, but the people who are doing their best to live here and who, in the main, succeed.

Failure

That they succeed in a waterless environment is to their credit. The lack of running water is an indication of the part-failure – and a substantial part at that – of a government which swore to provide for its people, but has not done so.

It is the water of life indeed when we are deprived of it for days at a stretch, when all we get in several weeks is an overnight trickle; then we have no eyes or feelings for chocolate and spaghetti. We have little thought for the creation of jobs or membership of the European Community.

The absolute absence of water obsesses the mind and defeats the spirit. We begin to realise that all else is vanity. If sustained water

cuts have anything to commend them, it is that they concentrate the mind.

Depriving people of water in the savage heat is particularly diabolical. Those who have not lived through the long summer months scavenging among friends and relatives for a jerrycan of water will never know what it means. It means being forced to choose between begging a shower off a little known acquaintance, or living wrapped in your own sweat for a week.

Floors are washed with buckets of seawater, while the stench of unwashed dishes and filthy clothes increases. More bucketfuls of seawater are used to flush the lavatory. Well water is precious: it is boiled and used for the dishes, to brush one's teeth and occasionally to wash hair which has become stiff with accumulated sea salt.

Cooking takes on a whole new meaning. Boiling pasta becomes an expensive affair because it takes many bottles of shop-sought water to fill a *borma* big enough for a large family. Households on limited budgets cut down on food to buy bottled water, or do without. It is difficult to say which is the worse option.

Hygiene, particularly with babies and small children, is the paramount nightmare. Somebody recently told me how horrified he was to see an Egyptian peasant mother wipe the baby's bottom on the dusty ground when the baby defecated. "That's when I knew what poverty was," he said.

In Malta we do not know anything like that poverty, yet our lack of water forces us to resort to behaviour which is usually associated with all-round material deprivation.

What does one do when one's baby has suffered an acute attack of the runs, the taps are dry, the water-tank is dry, the well is dry, and one's neighbours, mother, mother-in-law, and close friends have no water? One cleans up the mess with sheets, towels, table-water and whatever else comes to hand, lets the clothes stink and putrefy for three days, then gives

up and drives with them in a dustbin bag in search of an understanding person with a functioning washing machine, or a launderette which turns a blind nostril to horrible smells. This is no fiction. It was a real life experience.

For me that way of life is past, though raising babies without running water cannot easily be forgotten. I lived in the most cruelly hit area then, when the pathetic sound of a trickle of water struggling into the water-tank at 2 a.m., once or twice a week, provoked great joy.

Untruth

My own comfort now does not inure me to the fact that great numbers of people are still knuckling under to such misery, with the everyday difficulties of life much exacerbated by the need to hunt for water.

Successive governments have insulted us with the accusation that we waste water, a blatant untruth designed to massage their consciences and to let them live in peace with the knowledge of their failure. For has there ever been a race as neurotic about the conservation of water apart, perhaps, from those of drought-stricken African countries?

We are a nation that thinks twice about flushing the lavatory, and that guiltily turns off the tap between rinses. Some of us do not use water at all, because there is none in the taps. How much longer will we have to suffer the consequences of the government decision to spend LmX million on Y, instead of an upgrading of our water production systems?

Perhaps the greatest insult we have been dealt in recent years is the swimming-pool built for the Small Nations Games. Costing millions of liri and containing millions of gallons of pure water, it is a monument to our government's confused assessment of priorities. To those with no water in their tanks, who are expected to swallow the lie that there is no money to work on our water problem, that swimming-pool is tantamount to two fingers raised in scorn.

a

Tourists' water consumption

From Mr Joseph Bonnici
I MUST congratulate Mr Michael Falzon for the way he handled the increase in water rates. I feel sure that many like me will show their appreciation at the next elections.

I learned with vivid interest the fact that increases for industry will only be undertaken in 1995 and only after "consultations". I suppose this is only fair since the poor industrialists will, if water rates are increased now, see their profits dwindle into single million figures.

But as for individuals like myself, since I have to live on a salary which the government feels should not be overly increased, test inflation go wild, I must deduce that since no "consultations" were carried out, the government could not care less!

To add insult to injury we were informed that no increase in tourist rates is contemplated. The average tourist who comes to Malta because of our sunshine spends a sizable part

of his holiday lounging around pools and the norm of most days is as follows:

Rub suntan oil; wash off suntan oil with a shower (most pools have a sign asking patrons to do this); take a dip in pool; wash off with a shower; rub suntan oil - and so it goes on. A never-ending sequence of rub, shower, dip, shower.

I am sure that most Maltese will sleep easy at night knowing that these poor tourists are not paying for the water and it is they (the Maltese citizens) who - the ultimate in hospitality - are paying for all of their approximately 10-20 showers a day.

It is unfortunately the kind of mentality evidenced by the present government that is the reason we are today still struggling to have a place in the sun (with an adequate supply of water if possible).

J. BONNICI
Naxxar.

b

Higher water rates

From Mr Francis A. Galea
I SHALL NOT GO into whether or not the government is justified in putting up the water rates, but limit myself to what Minister Michael Falzon is reported to have said, namely, "No changes are planned in the tourism sector" (*The Times*, November 23).

I shall be the first to acknowledge that Malta need tourism. However, certain measures taken from time to time, including this latest Ministerial statement, make one wonder whether we Maltese are still rated as first-class citizens in our own land.

Our water rates have been increased partly to make good for water which is unaccounted for. It has been explained that unaccounted for water may be due to various factors, not excluding certain abuses in rural areas. However has any consideration been given to the thousands of people living in apartments, some of which are so high that water hardly fills the roof tanks? These people have no gardens or swimming pools. I fail to see how these people could waste water in any way.

There are a few lucky families who, except for systematic water cuts, can boast of a satisfactory water supply. But one should not forget the many others who have to put up with a trickle.

Years ago we used to be told that when the main water pipes are empty, the air that seeps in registered unavailed of consumption. This is the pathetic situation behind the increased water rates. In a few words, those who pray for their daily drop of water will be expected to make good for those who abuse, the extravagant and the cheaper water rates available to the tourist.

On the other hand I am not in the least impressed by what a Labour MP said recently, namely that many families who are used to paying Lm1.20 for their water consumption are now being asked to pay something like Lm1.4. To my mind such a statement is politically motivated.

The same Labour spokesman should have said how many of those who have been used to paying Lm1.20 have their water meters

blocked, jammed, rusty, dial flooded or what not.

F.A. GALEA
Valletta.

From Mr Harry Jones
AS BOTH a regular reader of your paper and a visitor to your island I feel I must reply to Mr Joseph Bonnici (*The Sunday Times*, November 28).

To me, his letter is yet another short-sighted, petty gibe at what some Maltese people regard as tourists enjoying a privileged life.

Successful tourism is not about people visiting the island once but about them coming back time and time again. People will only do this if they have been treated well, been shown courtesy and consideration, got value for money and not been fleeced.

Perhaps Mr Bonnici would advocate that all tourists, on first arrival, should be issued with a little book in order to record all showers and "flushes." On departure this could be presented to the authorities for assessment and payment.

Malta depends on tourism and so surely all reasonable Maltese people should be looking at ways to encourage it rather than discourage it.

Finally, I would ask Mr Bonnici and all others who think like him to try to imagine the situation in Malta on January 1, 1995, if during 1994 Malta had not received one single tourist. To my mind it is a somewhat frightening scenario.

M. JONES
Doncaster, England.

From Mr Dieter Fenech
I SUPPOSE Mr Bonnici should be informed that tourists pay for the water they consume through us, the hotel operators, or as he defines us, the industrialists.

Secondly, he should also be informed that most hotels in Malta tend to service their poolside showers with seawater, of which I am inclined to believe there is plenty.

Maybe he should take note next time he washes his car.

D. FENECH
Ta' Xhies.

Figure App.3.6.1.

a. *The Sunday Times* 28/11/93 p.16.

b. *The Sunday Times* 5/12/93 p.16.

a

Gozitan farmers protest

Farmers and residents of Nadur gathered yesterday morning to protest against illegal quarrying in the area. This quarrying, they allege, is taking natural spring water away from their farmland.

Organised by *Alternattiva Demokratika*, the protest was attended by around 120 people. They claim that dynamiting in the quarry is altering the flow of the springs that feed their fertile fields.

Around 40 farming families are threatened, most of whom depend solely on the land for their livelihood.

Last week, desperate farmers blocked access to the quarry, with police acting fast to take their particulars.

Similar protests took place three years ago, after which the quarrying stopped. It seems that the quarry has now changed hands, and dynamiting has started all over again.

b

How greener was the valley

From Mr Anthony Portelli

I refer to the article "Gozitan farmers' protest" (TMI, 12 March) where you claim that quarrying with dynamite has been introduced by the present contractor. I would like to declare that in fact only quarrying by mechanical means is being carried out. This was done illegally when the necessary permits had not been issued.

On 6 September 1993, an application (PA 3309/93) was filed by the former contractor for an extension of the area to be quarried. The application was evidently rejected. However, quarrying in the area in question subsequently took place without the authority's permission.

On 23 March 1993, the Department of Agriculture and Fisheries claimed that a farmer's borehole at the top of the valley was being over-pumped and this could adversely affect the springs. This is untrue because the closest borehole is two miles away.

The residents of San Blas and Myrtly Valley always insisted that the more quarrying that takes place the more the danger that the springs would be adversely affected.

We beg the responsible authorities to terminate this illegal quarrying and grant us permission to refill this ugly wound.

**A. Portelli
NADUR**

Figure App.3.6.2.

a. *The Malta Independent* 12/3/95 p.3.

b. *The Malta Independent* 26/3/95 p.29.

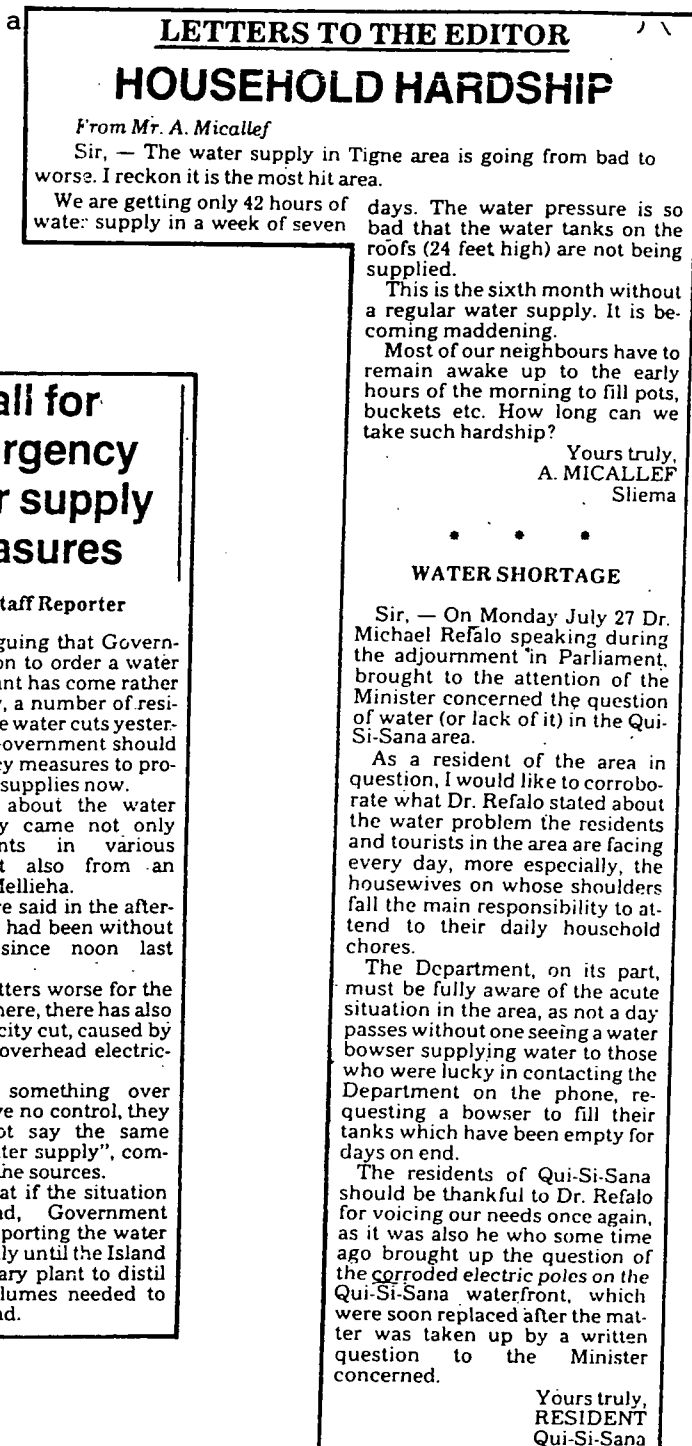


Figure App.3.6.3.
a. *The Times* 5/8/81 p.3.
b. *The Times* 5/8/81 p.3.

a

ANOTHER WATERLESS DAY FOR SLIEMA RESIDENTS

By a Staff Reporter

The Sliema-St. Julian's-San Gwann area appears to be in the grip of a prolonged spell of water cuts. Residents and hoteliers have complained that the supply has been cut off for days or the pressure has been so low that water has failed to reach anywhere above the first floor of a building.

A hotelier yesterday morning had one extra problem besides those encountered in the running of his hotel. He was worried because the hotel's water reserves were fast running out, there was no water in the mains and until about mid-day no bowser had yet supplied water. He was dreading the moment when he would have to face his clients when these found out that there was no water in their taps.

"It is not very easy to explain to a tourist returning to the hotel after spending a day on the beach that there is no water in the taps. The task is more difficult when I cannot assure them that the situation will be back to normal the day after", he said.

In fact many people living in Sliema, but particularly in the Tigne area, yesterday continued to ring "The Times" offices to complain that they had been without water for the last three days. When water mains were turned on for a short time, the pressure was very low and roof tanks remained empty.

Areas particularly affected during these last days were Thornton Street, Locker Street, Hughes Hallet Street and St. Mary Street in Tigne and Dingli Street, Melita Street and Depiro Street besides others in Sliema. It was reported that in some parts in Tigne the mains water supply was only turned on for three hours in four days.

A number of hotels in the Sliema and Tigne area were on Sunday supplied with water through the bowser service run by Government but residents complained that they were left without water from the bowsers as the mains remained shut off. Even yesterday they had no water in the mains or roof tanks.

A well-known club in Sliema stopped serving tea on Sunday because of lack of water.

b

SERIOUS PROBLEM

Sir, — May I call the attention of the authorities concerned to the serious water shortage especially from the human point of view.

Living in Msida Circus for these last three years has been a real struggle for water supply. I wish that the Minister responsible for water supply would come and check personally to see in what condition the families in this area have to live, particularly those who have children.

We phone and phone times without number to get through to the Water Works Dept., for the bowser, and when we manage to receive an answer we are told that when our turn arrives they will send the bowser.

May I suggest that the Government build a water reservoir near the University to supply the area, and if the reservoir needs filling up, it can be filled directly by bowsers rather than the bowsers having to go from house to house or one flat to another, thus saving on time and money.

I beg the Minister to look seriously into the matter, not as a Parliamentarian but as a Christian. I thank him in advance for any prompt action.

Yours truly,
GOING MAD
Msida.

NO WATER

Sir, — We have no water — I live in Amery Street, Sliema, and for the past weeks I have been trying to telephone for the bowser service. Needless to say the number is continuously engaged. But on the very rare occasion that I managed to receive a reply, I duly informed the gentleman that I required the service of the bowser. I was informed that he will do the best he can. But to date this best is not enough.

This was a good three weeks back and my water tank is still dry waiting very patiently day after day for the bowser to come. "Daddy", goes the cry, "the bowser man is just round the corner" — at a particular block of flats which had the honour of a visit from Mr. Bowser man three times weekly. What justice!

When approached the man invariably tells us that the bowser is now empty and he has not been instructed to call elsewhere.

We have had cuts daily and not the once weekly cut which should be our lot. Is this right? Why is this particular area of Sliema so penalized?

Yours truly,
WATERLESS,
Sliema.

Figure App.3.6.4.

a. The Times 11/8/81 p.9.

b. The Times 12/8/81 p.10.

a

WATER SHORTAGE

From Mr. Edward Pace

Sir, — Are the Socialist MPs Mr. Paul Xuereb and Mr. Lorry Sant aware that for many thousands of Maltese, the one-day-a-week water supply cut was simply never introduced?

I ask in view of the question put and the reply given by the two gentlemen and which appeared in *The Times* recently.

Sliema, in particular, may not fall within their constituency, it is true, but there are several other towns and villages that are equally hard hit by the water shortage which now can be said to have become a way of life under our Socialist administrators.

For thousands of people, some Nationalists, some Mintoiffians, water is available in the very early hours of the morning up to seven o'clock, that same morning and then only in a trickle. This, of course, apart from the once weekly cut which for them extends to two days, and sometimes even three, without a single drop. For many months — since early Spring in fact — water tanks on the roof fill only when the water bowser calls every three weeks or so on its errand of mercy.

Certainly not all suffer equal hardship. Some might be faring

even worse; many others possibly have to endure less. But it remains true to say that countless citizens, oppressed by the water shortage, the one-day-a-week cut with otherwise a normal supply, is no more factual than a fairy tale.

These are undeniable facts and proof would easily be obtained from the Water Works Department and the Public Works Department for that matter.

The long suffering housewives too would cooperate in providing the evidence, if needs be, by accepting into their homes bonafide workers from these two departments to see for themselves and for their Ministry.

Yours truly,
EDWARD PACE
Sliema

b

No water for washing — chars sent back home

By a Staff Reporter

Several charwomen engaged by residents in Sliema were sent back home over the past few days — because there was no water in the houses in which they worked.

"I am sorry", said one employer, "but since there had been no water in the house for some days, it was useless getting the char. I had to send her home, refunding her bus fare. Of course the charwoman lost her £M4.50 for the day". Several others had

had to do the same. They all live in the Capua Street area of Sliema.

Complaints from the Qui-Si-Sana area continue unabated. "We had no water to speak of since last Wednesday at about 5 p.m." said one resident from McIver Street. Complaints from Locker Street nearby were numerous and a resident of Hughes Hallet Street said that there had been running water in the taps on only one of the 12 days since he returned home from holiday.

Nor are complaints restricted to the Sliema area. Birkirkara, parts of Hamrun, Msida, Guardamangia and several other areas — not mentioned in the list published by Xandir Malta every morning as the day in which water supplies are suspended — have been without water for days. Other areas reported such low pressure that water never reached the second floor of any building, let alone the rooftop tanks.

Figure App.3.6.5.

a. *The Times* 13/8/81 p.16.

b. *The Times* 12/8/81 p.11.

HOUSEWIVES AT TA' XBIEX HOLD WATER PROTEST

By a Staff Reporter

Housewives living in four blocks of flats at Ta' Xbiex yesterday staged a public protest to highlight their plight over the unavailability of water supply in their apartments.

They complained that over the past 15 to 17 days, they had to use bottled mineral water for cooking purposes and that they had to "collect" water from their relatives for other daily needs.

The situation had become so unbearable that they yesterday decided to stage a public protest. They gathered outside the blocks in Gasan Court, Emmanuele Galizia Street, and handed Pressmen a written statement explaining their complaint.

Empty tanks

The housewives said their roof tanks were completely empty and they were not having any supplies from the mains. They wanted to know why people living in nearby Government estates were "enjoying the commodity" when they did not have any. There are about 60 flats in the area.

In their statement, the housewives said that they could not endure the situation any longer. "Whenever we try to ring up the authorities concerned, we are

never put through to the people who could hear our complaints".

One housewife said that at one time the pressure was so low that it took her 1½ hours to fill a saucepan. "How can the water reach the roof tank if the pressure is so low?", she asked furiously.

Flow of complaints

The flow of complaints about the water shortage has now reached its peak, with people living in various localities reporting shut-offs varying between three days and a week.

Complaints were yesterday received from Msida, various parts

The Ta' Xbiex housewives who yesterday staged a public protest over the unavailability of water in their flats.



of Sliema, Floriana and Fgura. One man in Fgura said he had been without water supply at his house for the past five days.

A few families living in a badly hit area in Sliema are now planning to install water "storage" tanks at ground level — in addition to those on roofs — in a bid to beat the low-pressure problem.

One resident in a Sliema street said he knew of families who had already done so in order to get additional supplies at home. Installation of such tanks meant additional expense, but, as he put it, it was better to spend £M100 or more for such an additional tank, than to go without any water. In his street, he said, they were getting water only one day a week, "and when it comes, it is only a trickle".

Importing water

Government should have made sound plans for the provision of adequate supplies to meet the demand, pointed out a Floriana resident. As it turned out, Government had failed miserably in this important sector and the only feasible solution to meet the present shortage appeared to be that of importing water from Italy, he remarked.

People of different political colour look at the problem differently. Many Socialists argued, for example, that the Government was wise in tapping natural ground water resources. They held that the installation of water distillers was too costly and that the Administration should continue to follow its present policy of drilling more boreholes.

But the Nationalists disagree with these views, maintaining

that the Island needed to build a sound infrastructural basis to ensure an adequate supply of water for the local community and for the growing number of tourists. Distillation was costly, but the Island could not possibly make further progress without an adequate supply of water.

Matter of priority

To independent observers, it was all a question of priorities. Government, they believed, should have given greater priority to the problem in its development plans. Tapping natural ground water resources was good, in so far as this was possible, but it remained obvious that the Island could not depend on this to meet all its water needs.

In the opinion of these observers, water was far more important than building a national stadium or converting the Knightshall into a conference centre. Investing in long-term water infrastructural works should have been given top priority, since water was as important as electricity.

In the same way that people had become accustomed to paying higher rates for electricity, telephone and other services, they would also accept higher water rates. They felt it just did not make sense for Malta to have colour television, but no water.

"Priorities seem all mixed up", they commented.

a

NO COURAGE

Sir, — Even if, very hypothetically, the whole of Sliema were to have more than enough water in their taps between now and general election day, I, as a former resident of that place fortunately residing away from it, would still retain my stance of absolute disdain for the majority and level of courageous honesty of Sliema electors were they not to ensure that at the next election both the present Socialist MP's of that district are left unelected, and that at least four Nationalist deputies be elected.

After 15 years of suffering, Sliema residents have not even had courage to massively support a public protest their hardworking Dr. Michael Refalo L.L.D., organized for them. You get what you deserve! I'm sorry to be so blunt and honest about this, because I still love my birth place, but facts are facts.

Do Sliema residents have the sense or knowhow to kick (quietly, at the ballot box!) whoever has been letting them down for so long on this vital matter of water supply?

Yours truly,
SLIEMIZ,
Birkirkara.

b

"WATER FROM THE TAP"

From Mr. G.H. Ferro

Sir, — Some years ago, while on holiday, I watched a woman from darkest Africa being interviewed on BBC-1 on her first visit to UK. The interviewer asked her what was the thing that had struck her most in England. Unhesitatingly, the woman had replied: "Water from the tap".

She explained that she had been used to drawing water from a well and carrying it a hundred yards to her home.

The above episode has come to my mind dozens of times during the past eighteen days when water from the tap has not been available in my house and I have had to draw water from our well and carry it up the stairs.

To have a bath, my wife and I have had to go to a friend in another area where people more equal than others live and have all the water they need.

Indeed our area and many parts of Malta have been reduced in this water business to nothing better than darkest Africa!

Yours truly,
G.H. FERRO,
Sliema.

c

DESPERATE FOR WATER

From Mr. Joseph J. Portelli

Sir, — The health warning for summer, issued by the Health Department and published in your paper on June 28 should, I am sure, be of a reminder to all regarding the importance of personal hygiene.

In its statement, the Health Department recommends that 'both fruit and vegetables should be properly washed in a light disinfectant solution, and that vegetables such as lettuce and cabbages should have their leaves cleaned one by one.

May I ask the Health Department how could one observe the above warning and act accordingly when our taps are bone dry? Are the Health people not living in Malta? If they are, they should know only too well the hardship we, waterless families, have to endure.

For seven days in June, we did not even have a drop during the night as well. We are desperate — the water supply situation has been going from bad to worse over the past six years.

We, residents of upper St. John Baptist Street, Sliema, have been putting up with this inconvenience for the last six years during which time we have had water in our taps only at night. Now we are being deprived of this too. The water situation is desperate. How long will it take the authorities concerned to understand that we taxpayers have a right to a regular water supply while they have a duty to ensure that it is provided.

Perhaps the Ministry concerned, through the Information Division at Castile, will give an explanation.

Yours truly,
J.J. PORTELLI
Sliema.

Figure App.3.6.7.

a. *The Times* 7/7/86 p.12.

b. *The Times* 11/8/86 p.14.

c. *The Times* 4/8/86 p.10.

Housewives plan Valetta protest demonstration over water shortage

By a Staff Reporter

Housewives who have been putting up with excessive water shortages for several years have organized themselves into a representative group to press for an improvement in the situation, and their first activity will be a protest demonstration in Valetta next Friday.

Mrs. Myriam Pullicino, a housewife from Sliema, said the housewives' group planned to deliver a protest letter to Prime Minister Dr. Carmelo Mifsud Bonnici at Castile at the end of the demonstration. The activity will start from City Gate at 9.30 a.m.

The group owes its origin to the housewives' desperate situation: "Let us stop grumbling and do something about the situation which now has become unbearable," Mrs. Pullicino said when she, together with group members Mrs. Anna Gatt, of Sliema, Mrs. Charmaine Agius Ferrante, of Mdina, and Mrs. Grace Gatt, of Sliema, addressed Press representatives at the Capua Court

Hotel in Sliema, yesterday, to launch the demonstration.

She said housewives expected a constant flow of clean water in their home. The group described as outrageous the Health Minister's warning to wash vegetables and fruit when the Minister knew very well that in many areas in Malta this was not possible because there was no water.

UNBEARABLE

She added that the group also found as unbearable the fact that the Public Works Minister had never made a statement to inform the public about the water situation or on how and when it would improve.

It was the Prime Minister who made the statement in the absence of the Minister responsible, but the Prime Minister's statement left much to be desired.

First of all, not all the areas hit by the water shortage had been mentioned and, secondly, it was very difficult to believe that a situation, that had existed for close to six years, could be solved in a couple of weeks.

Mrs. Pullicino said families had become desperate for water and nobody, least of all the Prime Minister, should blame them if they installed extra watertanks or pumps to get a drop of water "every now and then".

"All this meant extra expense, not to mention the cost of mineral water which housewives had to buy, and this for a service which should be provided by the state, whatever the cost."

Mrs. Pullicino urged all those suffering from a water shortage to participate in the demonstration. She also appealed to those having a constant flow of water to support the "less fortunate" as, she said, it could be their turn next.

The Housewives' Group have asked for a Police permit to hold the demonstration and they are expecting a reply today.

Mrs. Pullicino stressed that the newly set up group was apolitical. It is composed of housewives from the Sliema area, Mdina,



Mrs. M. Pullicino (second from left) announcing the holding of a demonstration on Friday to protest against the water situation. The other group members in the picture are (from left) Mrs. C. Agius Ferrante, Mrs. A. Gatt and Mrs. G. Gatt.

Nigret, Zebbug and Zejtun among other places, she said.

Mrs. Anna Gatt, who said she has had no water since last Wednesday, complained about the lack of official information on the water situation.

"We have borne hardships for a number of years and would continue to do so if at least we had the consolation of knowing that something would be done and could live in the hope that the situation would some day improve," she said.

Sliema housewives are keeping their fingers crossed in the hope that the new reverse osmosis plant at Sliema would alleviate their hardship.

DETERIORATION IN ELECTRICITY

But one of those present hoped that the extra power that would be needed to operate the plant would not mean a deterioration in the electricity supply situation in the area, because, she said, residents experienced electricity cuts every now and then.

Mrs. Pullicino said she disagreed with the Prime Minister that when the public is forewarned of water cuts they would rush to store large quantities of water, resulting in wastage.

She said it was true that housewives could store water to cope with their needs "but one would have to be really irresponsible to waste precious water in a situa-

tion like this."

A housewife said she had been trying to contact the Bowser Section on Sunday and Monday without any success.

She said that other housewives were heard complaining that even when they succeeded in contacting the section, they were left without water.

"I know of people who had to pay Lm7 to have water tanks filled by a private bowser service," she said.

Some were known to have secured their water tank lids with locks to guard against their water being stolen, as was known to have happened.

Public protest

The demonstration in protest against the persistent water shortage, held in Valetta on Friday, reflected the people's deep sense of frustration over a matter that has caused so much unnecessary hardship in recent years.

Despite promises, thousands of people in a number of localities still lack in their homes the commonest commodity of all, water. The women who took part in the Valetta demonstration last week were representing, as it were, many others who are regularly hit by the water shortage.

The organizers of the event — the first of its kind on a national scale — are themselves housewives, and come from different areas of the Island. They took it upon themselves to organize the protest, symbolic of a transition from mere grumbling to physically making their protest heard.

The organizers made it clear from the start that their protest was non-political. Still, Government supporters, swayed by political passion, hurled provocative abuse at the marchers, particularly when they gathered outside Castile to hand a letter of protest to an official from the Office of the Prime Minister.

The people hit by the water shortage have had good reason to make a public protest. For far too long, the Government did not appear to be sufficiently aware of the real situation facing households in so many parts of the Island. It is only now that a serious effort is being made to remedy the situation. And if people are still sceptical about the Government's efforts, this is because they had been promised remedial action several times in the past and the country is still without an adequate supply to meet domestic requirements.

On the same day that a protest was being staged in Valetta, the Prime Minister, Dr. CARMELO MIFSUD BONNICI, was at Tigne, inspecting the work on the building of a reverse osmosis plant there. When operational, this is expected to meet the water needs of Sliema and the surrounding areas.

The Prime Minister has once again given target dates; mobile units are expected to go on stream tomorrow and the first train of the reverse osmosis plant is scheduled to start working at the end of the month. The second train is scheduled to start operating on August 15. The people living in the area are hoping that the scheduled dates will be met as they have now suffered more than enough.

But the shortage of water does not concern the people of Sliema and the surrounding areas alone. Maybe, the Government would have, sooner or later, to repeat the Tigne experiment, putting up more small reverse osmosis plants in other areas badly hit by the shortage.

Also important is the building up of reserve supplies. The recent shuttle of tankers bringing water from Sicily — to make for the loss incurred from the main reverse osmosis plant at Ghar Lapsi while this was being extended to produce a greater volume of water — shows the extent to which the water supply situation has deteriorated.

Unfortunately, the Government mishandled the water shortage problem from the start, and the Island is now paying the price of Socialist mismanagement and pique. It is a heavy price. Whoever is responsible for bringing about today's deplorable situation should have resigned long ago.



WOMEN BEATEN UP IN VALETTA WATER PROTEST

By a Staff Reporter

A demonstration by several hundred women protesting at the water situation which has left them parched dry for weeks on end was attacked by Government supporters who had gathered on Castile Place yesterday morning.

The demonstrating women, jeered by some women, had walked peacefully from City Gate, carrying placards, streamers, kitchen utensils, and pieces of plastic water pipes.

Some walked hand in hand, others held plastic water bottles aloft and many chanted "ilma" — "water", adapting a political slogan to voice their protests calling for water.

The trouble started as the demonstrators approached Castile Square where a sizeable group of men appeared to have been waiting in anticipation.

Whisked away

A number of demonstrators, including several women, were beaten up, some having to be treated for their injuries.

At least two men, one of them bleeding from the nose, were seen being whisked away from

the scene of the incidents in Police vans, eye-witnesses said.

"They just could not tolerate the peaceful protest and kept coming at us, beating us as we gathered in front of Castile," said a woman demonstrator, who said she has been without water for three weeks.

Among those attacked was Miss Joan Galea Naudi, of Sliema, who said she was punched in the stomach and ribs and had her clothes torn. Mrs. Jennifer Psaila of Bahar ic-Gaghq, who went to her assistance, was assaulted as well.

The police intervened on several occasions to avoid clashes. Some of them were also rough with the demonstrators, who were themselves beaten up by the police, eye-witnesses said.

Incident with the Police

Dr. Raymond Zammit, president of the Nationalist Party Youth Movement, had to receive medical attention after being involved in an incident with the police during the demonstration.

He claimed later that he saw

police dragging a demonstrator by the hair and he started taking the police's service number.

Dr. Zammit said he was subsequently punched in the stomach by a number of policemen.

At the time of the demonstration, the Prime Minister was touring the reverse osmosis plant at Tigné to see progress there.

The demonstrating women achieved their purpose, having a letter delivered to the Office of the Prime Minister.

Letter to PM

In it, they urged the Prime Minister to deal with the water situation as expeditiously as possible and to keep the public informed of developments.

In the letter, the women spoke of untold hardships due to the severe water shortage, acknowledging that a problem existed and that the Government was trying to tackle it.

It would have been fairer if warnings had been issued before the drastic cuts, some lasting for weeks, were made, they wrote.

The women referred to the possibility of water wastage if water

Yesterday's protest demonstration against the water situation starting from City Gate (top left) and proceeding peacefully to Castile; (top right) demonstrators carrying pieces of plastic water pipe, banners, kitchen utensils and plastic water bottles.

were to be distributed on a rationing system which was mentioned by the Prime Minister in Parliament, and said that "as responsible citizens we can give you our sincere assurance that this will not happen and that the rationing system would be the fairest of all."

Another of the grievances mentioned in the letter was the bowser service, which they said must be given top priority if the water situation was to continue.

Good faith

"Mr. Prime Minister, having come to you in good faith, we ask you to take upon yourself the responsibility to deal with this serious matter as expeditiously as you power enables you and to keep the public informed of any developments", the Committee said in the letter which also expressed preparedness to meet the Prime Minister to discuss the problem.

The letter was signed by Mrs. Myriam Pullicino L.P. of Sliema, Mrs. Anna Gatt, of Sliema and Mrs. Charmaine Agius Ferrante, of Mdina.

The Nationalist Party Youth Movement (MZPN) yesterday issued a statement in which they condemned what they called as the Police attack on Dr. Ray Zammit, during the demonstration in Valetta.

The Movement said the action of the Police and of Labour supporters during yesterday's protest was a clear admission that Government was to blame for the water shortage crisis.

Police deny beatings at Valetta water protest

The Police were investigating reports by persons alleging they were beaten up or roughly treated in Friday's water protest demonstration, the Information Division said yesterday.

The Police were also prepared to investigate every report about the demonstration but would not take any notice of generic allegations which could be nothing but lies and inventions by those who had an interest in putting the Police in a bad light with the people, the statement said.

The Information Division said reports had appeared in a section of the Press, about the demonstration, in which accusations had been made about the Police. Now that the necessary investigations had been made, it added, this statement was being issued.

The same report made accusations of brutal action and beatings by some members of the Police. The Police denied categorically that excessive force had been used or that any demonstrators had been beaten up but at the same time it had to be said that it was the duty of the Police to react as was necessary in such circumstances, to disperse the people and avoid incidents being created.

In another statement, the Information Division also referred to a report in last Sunday's *Il-Mument* which reported PN leader Dr. Eddie Fenech Adami saying at Santa Venera that "the lessons the police had been given by North Korea were being carried out on Maltese citizens".

This statement was not only unfounded, it also made no sense, the Information Division said. One could not understand where, it added, the Leader of the Opposition or whoever informed him had seen any member of the Police practising karate or judo during Friday's protest.

Training

Training in karate and judo or self defence by two Korean experts had been given to some members of the Police corps on a voluntary basis between 1979 and 1980. Because of lack of interest by the Police the training had stopped in 1980 and was never resumed.

Therefore, the Information Division said, anyone saying that the Malta Police were being trained by the Koreans, or had been trained by the Koreans to control protests in the country, or that the police were practising on Maltese citizens what they had learned from the Koreans, would be doing this to put the Police in a bad light with the Maltese and foreigners.

Incidents

Reports had said that some men started throwing stones. In fact no stones were thrown, the statement said. The Police were present during the demonstration and had seen no stone throwing, neither were any reports of this made.

Had stones been thrown, someone would have been injured, or something damaged, but none of this happened.

In fact, to avoid incidents of such a nature, the Police confiscated water-filled glass bottles held by some of the demonstrators before the protest started.

It was not true either that a Government car had been driven at, and injured some people slightly. The police had received no reports to confirm this, the statement said.

Saying that the Police were investigating reports of beatings, the statement added that the Police were also investigating incidents in which it was the Police who were the victims during the protest demonstration.

These included the incident in which the Deputy Police Commissioner was attacked, and another in which a Police photographer was attacked and had his camera removed.

Various other Corps members were also attacked by people who were not known and who had torn their numbers from their shoulders.

"WE MARCHED IN GOOD FAITH" — HOUSEWIVES' COMMITTEE

The housewives' committee, which organized the demonstration, thanked hundreds of women who had supported them and contributed to the success of the protest.

Their motives, they said in a Press release, had been to make everyone aware of the hardships suffered by families in areas where the water supply had been practically nonexistent for many years and to emphasize this intolerable

situation to the authorities.

"We marched in good faith, many of us accompanied by our young children, and were totally unprepared for the hostility shown by the illegal gathering of people, mostly men, waiting for us at Castile Square", the committee said in the Press release.

They said they strongly deplored the violence used against them by this mob, and they alleged, by some members of the Police Force.

a

Waterless days

From Ms Helen Grech

We are having water cuts every single week.

For two whole days there is no water in the taps, the tanks run dry and then we need at least another two days for the tanks to fill up again. So there is no water in the bathrooms and toilets.

Is it possible we have come to the situation we had 10 years ago? No wonder that I cannot convince my teenage sons that 10 years ago we were worse off when they come home after sports training to find no water in the taps.

In our area we have to economise on water while others waste water in washing their cars.

H. GRECH,
Balzan.

c

Water supply cuts in San Gwann

From Mr Joe L. Portanier

We in San Gwann are in the same situation as people living in Senglea as we are now having water cuts on an almost regular daily basis, resulting in extra expenses to the housewife. When the water is back, gallons would have to go down the drain before the rust is all washed out, not to mention the damage this does to automatic washing machines and dish washers.

J.L. PORTANIER,
San Gwann.

d

Water cuts

From Fr George Mercieca

Is the water supply in Library Street, Victoria, Gozo (just to mention one!) going to be cut every day all summer?

G. MERECICA,
Victoria.

b

Complaints pour in over water cuts

As reports of water cuts pour in from various parts of the Island, a top official of the Water Services Corporation says in general there are no problems – although the supply is not enough to meet peak demand.

"There are no acute water problems in general. The only problem is that the supply is not meeting demand at peak periods," corporation chief executive, Mr Anthony Riolo told *The Malta Independent* yesterday.

Residents of various areas including Birkirkara, Santa Venera, Hamrun, Bugibba and Madliena are complaining of persistent water cuts at least twice a week.

The owner of a hairdressing salon complained of cuts at least three times a week for the past three weeks. Water bowzers were called on several occasions but they had not turned up, forcing the cancellation of afternoon appointments and a loss of business.

• A statement by *Alternattiva Demokratika* spokesman for energy, Prof Edward Mallia, highlighted certain water problems such as the consumption-production imbalance, regular weekly shutdowns and the poor bowser service.

Prof Mallia called for greater efforts to educate consumers to use less water. He said the introduction of a fair pricing system was becoming urgent.

He also called for the launching of a campaign aimed at maximising energy efficiency and increasing use of alternative sources.

Figure App.3.6.12.

- a. *The Times* 6/8/93 p.4.
- b. *The Malta Independent* 8/8/93 p.5.
- c. *The Times* 11/8/93 p.4.
- d. *The Times* 29/7/93 p.4.

a

Sun has stopped shining

From Mr Ray Bartolo

Recently I hosted four foreigners and their two children, aged two and 10. For the first week of their stay the water supply was suspended. And, of course my roof tank ran out of water!

I volunteered to take their washing to the laundry; I spent Lm5 daily on table water and other requirements in order to keep my foreign guests as comfortable as possible.

The situation was so bad my guests decided to move out and rent an apartment from an

agency (which cost them a great deal of money).

So apart from the poor water situation, my relatives had also to sample the high cost of living, the unreliable public transport service and the dangerous driving - enough to make them decide "never to return".

It is not the sea and the sun tourists want but good, clean tap water running continuously, and an organised country.

The present situation is truly shameful.

R. Bartolo
FLORIANA

b

□ Residents of Marina Street, **Pletà**, have complained that they have been without water supply for more than seven weeks. Before this complete **dryness** came to be, water tanks used to fill up during the night at least. The Water Services Corporation has sent its personnel to locate the cause but so far has not come up with a solution.

c

Waterless Senglea

From Ms Lorraine Napier

As Mr Ninu Zammit is too busy to acknowledge any of my letters, I thought I would try to get some feedback through *The Times*.

The residents of Senglea had no water on Monday, July 5, Friday, July 9, and again on Monday, July 12 - three days in a span of eight!

I am not going to bother readers with the discomfort and frustration caused by these water cuts, but I am sure a country aspiring to become a member of the European Community should have more to offer than this.

L. NAPIER,
Senglea.

d

■ An angry mother called in to complain on behalf of her daughter, a resident of Qawwara Street, Marsascala, who has been experiencing **water shortage** problems since May. Before rates are increased it would be better for the authorities to ensure that everyone had water in their taps, she lamented. And, of course, she is right.

e

From Mr Joseph Scerri

I CANNOT understand how this government has the cheek to expect Malta's entry to the EC when it is not even capable of providing a basic service such as water on a regular basis?

Figure App.3.6.13.

- The Malta Independent 22/8/93 p.10.
- The Malta Independent 30/1/94 p.6.
- The Times 26/7/93 p.4.
- The Malta Independent 22/8/93 p.6.
- The Sunday Times 22/8/93 p.5.

a

Waterless in winter

From Mr Leslie Causon

Can the government authorities take note of, and act upon, the desperate situation which residents in Triq id-Delu, Mosta, are facing due to a serious water shortage. We have had no water (it sometimes drips but it has never reached the water tanks on the roof) for the past five weeks!

We have reported the matter to the Water District Office, but every day we are told that there was an underground leak which was eventually fixed; that they then had to check the boreholes; and that when they changed the water meters in the houses the previous month, someone must have inadvertently closed a water main!

However, to date we are still without water. How is that for accountability!

Do we need to revert to street protests and placards to get something done in a country aiming at a quick entry into the EU?

L. CAUSON,
Mosta.

b

A mini-waterfall in Floriana

From Ms Mary Rose Zammit

Half-way up Crucifix Hill, Floriana, seeping through a crack in the bastion, is a mini-waterfall varying in size, not according to the amount of rainfall recorded, but depending on the pressure or otherwise of potable water fed to the nearby building, which most probably is Sir Paul Boffa Hospital.

Hundreds of gallons are wasted daily and considering this has been going on, not for days or weeks, but for months now, one must presume that thousands of gallons of water have literally been going down the drain.

As the water is finding its way through the nearby culverts, no mess is created at the bottom of the hill. I was tempted to call this a blessing in disguise. But on second thoughts, it is actually the opposite. Had a mess been created, I am sure some action would have been taken by now! Is no one responsi-

ble to see that such faults are seen to immediately?

And all this waste of water when some parts of Malta are experiencing severe shortages! We, at Msida, have been suffering from water cuts from two to three days a week.

This is causing us hardships and inconveniences. The least the department concerned could do is distribute the water as equally as possible. There are some places where water shortages are never or rarely experienced.

M.R. ZAMMIT,
Msida.

c

'Not a drop to drink' - still

Residents at Bahar ic-Caghaq yesterday complained about a "waterless week" which, according to one, "has no end in sight".

"We had a trickle of water on Sunday, had a supply of rusty water on Wednesday but not another drop of water since then," one irate householder said.

d

South of Malta "in a state of neglect"

By a Staff Reporter

Labour MP's yesterday highlighted shortcomings in various towns and villages in the south of Malta, arguing that it seemed to be 'forgotten' by the government.

Dr George Vella, deputy leader (parliamentary affairs) told a press conference that the south particularly Zabbar, Żejtun, Marsaxlokk and Marsascala, were in a state of neglect.

On Marsascala, Dr Vella said the police station was closed, the health centre was usually open for only a few hours, and the infrastructure had not kept up with the rise in the resident population there. There were sewage overflows in the locality too.

The national swimming pool needed a facelift badly.

Marsascala's touristic potential was not being exploited in the correct way, Dr Vella said. He also called for the opening of bank branches.

On Marsaxlokk, Dr Vella said its traditional characteristics were being lost as it was becoming one big tawdry market. The power station chimney had no filters against toxic gases.

Football grounds and water polo pitches in the area seemed to have been forgotten too, he said.

Other complaints included poor roads, water cuts, and delays in completion of the Żejtun home for the elderly.

Dr Vella said local councils would help improve the situation, but it was the government which needed to take certain decisions.

Figure App.3.6.14.

a. *The Times* 23/2/94 p.4.

b. *The Times* 18/9/94 p.4.

c. *The Times* 26/7/93 p.4.

d. *The Times* 26/4/93 p.40.

a

■ Summer is still a few months away but Marsascala people suffering from water shortages wonder what the situation would be like when the hot season arrives. A foreign resident there said she would be happy to have water supply even if twice or three times a week. She had to rely on bowzers over the Christmas period and when they did not turn up, the family had to bathe at relatives in Qormi.

b

Marsascala water problems

From Mr Pierre Mizzi

Due to the inefficient water supply, Triq il-Qawwara and other elevated areas in Marsascala are left for weeks on end without a drop of water.

We have invested in equipment in order to draw the water to the storage tanks upstairs, but this is useless if the water does not even reach ground level. Although the bowser service provides some relief, we cannot keep calling for this assistance interminably.

The last time we received a supply of water through the pipes, was sometime around the end of June. However, now that all the summer residents have retired to their winter homes and a new pipeline is said to have been laid, we cannot understand why the water has not yet arrived.

The authorities should look into this matter immediately, as the situation is becoming totally unbearable.

P. MIZZI
Marsascala.

c

□ A Marsascala resident phoned in lamenting the way the government is treating this southern region. Apart from the smell emanating from the waste recycling plant, some roads have been dug up for weeks now and at least one area has not had a water supply for a month. At Xmiel Street, Marsascala, there has been no water supply at ground floor level for a week.

d

Marsascala water situation

From Mr Anthony Ellul

I fully agree with Mr Pierre Mizzi (November 11) on the water situation in Marsascala because in my flat in Triq il-Qaliet, the water tank is on the third storey and since last March till now it has never had a drop of water from the mains because of very low pressure.

The only water we get sometimes is during the night and it only reaches ground floor level.

We had been told that when the new water mains are ready we would have an adequate water supply. But we have not had an adequate supply yet.

A. ELLUL,
Marsascala.

e

Marsascala

- Complaints about water shortages in the south continue to pour in. Telephone calls detailing problems in many areas have been received but a special mention must go to Qawwara Street, Marsascala, where a resident complained he has had no water supply for nine weeks. Is this a record?
- A caller from Slipway Street in Marsascala claims the promenade "is infested with hawkers". The matter has been reported to police on more than one occasion but no action appears to have been taken.

Do not let Marsascala become another Marsaxlokk, the caller said.

f

□ Perhaps action is being taken to solve the water supply problem in the south, but the people living there are still not happy with the situation. A resident at Juno Heights, in Marsaxlokk, says his house had no water for more than a week, and wondered why it is taking so long for the south to have this and other problems seen to.

□ A similar complaint arrives from Qawwara Street, in Marsascala, where the problems seem to be more acute. A resident in fact says his family have been without tap water supply for over one year! And the road he lives in needs to be tar-macked too. Infrastructural problems do abound in the south.

Figure App.3.6.15.

- a. The Malta Independent 9/1/94 p.6.
- b. The Times 11/11/93 p.4.;
- c. The Malta Independent 3/4/94 p.6.
- d. The Times 7/12/94 p.4.
- e. The Malta Independent 5/9/93 p.6.;
- f. The Malta Independent 8/4/94 p.6.

a

Xghajra problems

From Mr Joseph Demanuele, B.Ed (Hons)

WHILE for most fellow Maltese summer heralds a time of rest and holiday, for us lesser mortals living in Xghajra this time of year brings with it a recurring nightmare.

For starters the water crisis has been getting worse over the years, so that it is nowadays a day of rejoicing indeed when we can open our taps and expect water to come forth. The only water supply that we get is the little that sometimes flows through the pipes at night. This comes only about once or twice a week and then only reaches tanks that we have positioned at ground level. Thus we never have a direct water supply in our taps.

The little water that one may collect at ground level must then be pumped to tanks positioned higher up. But even then during the hottest months we sometimes have had no water at all for weeks at a stretch.

The bowser supply (I refuse to call it 'service') rubs salt into the wound because it is sporadic and infrequent, to say the least. Very often one must wait a couple of days between phoning (at least four times) for the supply and get it delivered. One must also forget all about work and other needs and wait patiently for the men with the dirty trucks (who said anything about hygiene? it's only drinking

water!) to arrive. Squabbling with these men and between neighbours is not uncommon as tempers flare up in the hot sun.

Some days ago I opened a tap to find a stream of air coming out. Out of curiosity I looked at the water meter and to my dismay saw it going round even though not a drop of water was getting through! So we are obviously paying for air going through the pipes!

One could also mention the poor quality of the water, which is so salty that it is not fit for cooking, let alone drinking. Therefore we have to depend on bottled water or else pay for private bowser service, where the water bought is of much better quality. But even then we have to pay through our noses for the private water bowser, and the water must be boiled for ten minutes if it is to be used for drinking.

However, what has really infuriated us was the statement by Minister Falzon, where he said that this is our last year of cheap water. Who is arguing about the price? What we want is water (and possibly of good quality) in our taps. However let no-one be fooled! Many European countries have a free water supply because their governments recognise the fact that water is a basic necessity.

The people here are bored to tears with politicians pointing fingers at each other. We have passed

the point of caring whose fault it is or how many kilometres of water mains have been laid. To us it is all pointless as long as there is no water in our taps. But to top it all, we then get our water bills, and we have to pay for our suffering.

Water is, however, only one problem in this area. Our beautiful rocky beaches are being spoilt by the dumping of waste building material. The sea in the area which should be a beautiful deep blue is more often than not unfit for swimming because of the sewage overflowing into it. One can tell the presence of effluent by the stench and the foam and other waste floating on the water.

Our streets are unsafe for both drivers and pedestrians. The number of half-dug trenches and building material in the middle of the streets make it an ordeal to go anywhere safely. It is incredible the way the police are blind (powerless?) to all the illegal building practices in the area.

The St Peter's area is also populated by a large number of stray dogs (I will not say anything about the cats, because they, at least, control the rats). These dogs roam the streets all night and day overturning bins and bark incessantly especially during the night. Every now and then one of them gets run over by a car and one must then face the pitiful scene of a howling creature in agony.

As Mr Adrian V. Muscat Inglott rightly said in his Customer Service Column, we Xghajra residents are displaying a high tolerance level. But I am afraid that this must stop and we will take what action we deem necessary.

J. DEMANUELE
Xghajra.

b

Xghajra water supply

I REFER to my column of August 1 in which I wrote about how amazed I was to see a woman I happen to know as a quiet, reserved and docile person, seethe with intense passionate anger as soon as she started talking about the water, or rather lack of water, situation she has had to put up with for the last 16 years.

Well, I received a telephone call from this mysterious lady with latent passions. She is so excited, I could feel her vibes through the telephone. "We have had water last night with real pressure!... the kind of pressure I have not experienced for more than ten years!... this is fantastic!... both our tanks are full!... oh I'm so excited!... I am excited too!

Indeed I had quite a few cordial telephone conversations with Mr Joseph Mercieca (Public Relations/Customer Services, Water Services Corporation) the person I took to task in my August 8 column. I must give credit where it is due and, just as with Benna, I do note a willingness on their part to co-operate. Indeed, he did tell me about "imminent improvement" but, without meaning to undermine suppliers, I like to hear good news from consumers. On behalf of Lady Mysterious, I thank Mr Mercieca and I look forward to hearing about the further imminent improvements, he informed me about, from Xghajra residents.

c

From Ms Monica Saliba

THE long saga of waterless days and nights continues unabated at St Peter's, Xghajra.

It has been over six years since our roof tanks were supplied with mains water. During these last three weeks we have been without a trickle.

Complaints lodged with the Parliamentary Secretariat responsible for Water and the Water Services Corporation have produced no results. In the meantime we continue to live in despair.

The circumstances one tends to conclude that in comparing Xghajra and Sarajevo vis-à-vis the water situation, the latter is far more adequately served than the former.

M. SALIBA
Marsascala.

Figure App.3.6.16.

a. *The Sunday Times* 9/5/93 p.15.

b. *The Sunday Times* 3/10/93 p.8.

c. *The Sunday Times* 1/8/93 p.16.

a

Living in hope

From Mr Paul A. Cordina

IT HAS become a treat for my whole family when we hear water trickling into the tank which is situated right behind the meter at ground-floor level.

This happens once, maybe twice, and in occasional circumstances three times a week at night between nine in the evening and five in the morning. The roof tanks have not received any direct water for the last three years.

But for this I must be thankful to the various minds who are responsible for supplying me with water whether it is from this or any previous administration.

It is said that health considerations are foremost in the mind of any administration; but in actual fact, is it? Running water has always been considered a most important aspect of hygiene.

Before the last election we were told that a pipeline would be laid in order to help the 'south'. We were even duly informed that the pipes had already been bought by a local election candidate.

My personal telephone calls also revealed that pumps would be installed to boost up pressure. At one time this pipeline was scheduled to be finished by the end of last year, then rescheduled for last April.

Now according to Mr Chris Vella (engineer in charge of distribution) it was supposed to be ready by August 20. At least that is what he told me on the phone on July 20.

Finally Mr Joe Mercieca (Water Services PRO) has proclaimed that it will be ready by September/October (see *The Sunday Times*, August 8). One point is to be stressed: this is only phase 1.

Today (August 26) is the ninth consecutive day without a drop of water. Outside I can hear people protesting about the lack of water supply. (Do you really think somebody hears or cares?)

People are already saying that we at Xghajra will not get any supply for the next eight days; but of course this is only hearsay. My and my family's hope differs. Time will tell.

P.A. CORDINA
Xghajra.

b

Xghajra water supply

I RECEIVED a letter from the Water Services Corporation, which I feel obliged to feature.

Kindly refer to your note dated June 29 in connection with the complaint letter of Mr P.C.

It is anticipated that the water distribution to Xghajra in general would improve considerably by the end of September/beginning October 1993 as soon as phase one of the Qrendi pipeline project would be in operation.

In view of the existing narrow pipeline distribution, the water pressure in this area is rendered at low levels. In the last few weeks, two breakdowns of the water booster pump that supplies the water service in this area occurred, thus affecting even further the water pressure.

Furthermore, the Corporation is conducting 24-hour suspensions. In particular areas like Orlando Zabbar Street, the water pressure build-up would be affected.

The Corporation is monitoring the situation closely in order to reduce the current grievance. (Joseph Mercieca, Public Relations/Customer Services o.b.o. the Water Services Corporation).

Well, I thank Mr Mercieca for his letter; however, the residents had already told me about the Qrendi pipeline project. I sincerely hope this will prove to be the final solution. We have to wait and see and, in the meantime, Xghajra residents continue to suffer.

I note the words Public Relations and Customer Service with avid interest. If I were a Xghajra resident, I would find those words insulting but I sincerely hope the Qrendi project proves to be the solution.

There is another development in this case and I might have some more commitments to tell you about. However, to many Xghajra residents, commitments and words do not seem to hold water, pardon the pun. Nothing will impress them, not even action. What they want is water running out of their taps linked to the main pipeline not out of their taps linked to their tank.

Figure App.3.6.17.

a. *The Sunday Times* 9/5/93 p.15.

b. *The Sunday Times* 8/8/93 p.8.

a

Village 'desert' in a deep blue sea

Mark Wood

Independent Staff

Most Maitese have at some time or another experienced water shortages. For householders in Xghajra, on the outskirts of Zabbar, it is a way of life.

Large parts of the area have suffered from a poor water supply for years, said Mrs Carmen Abela of Church Street.

The existing pipeline to carry water to the area was installed around 50 years ago, designed for what was then limited consumption needs.

Governments have come and gone along with local protests for the service to be improved - the residents' campaigning usually falling on deaf ears except to avert potentially embarrassing incidents.

One woman recalled how threats to march in protest, pails in hand, during the Queen's recent visit to the Cimiterju tal-Inglizi brought on a sudden

and unexpected abundant supply.

A booster station built at Zurrieq in the early 1980s fell short of providing an adequate supply to Xghajra.

One woman said: "No one is ever sure if they will have water in their mains the following day, week or month."

"My husband goes to my mother to collect water in tanks and jerrycans," said Mrs Abela, a long-suffering mother of six. "We have to use the bath-water to flush the toilet. Even when the water does come, it is so brown at first that it cannot be used. Often a whole summer passes by without a drop." Another resident complained that the bowser service was unreliable.

The ground floors of houses in affected areas have an intermittent supply, but because pressure is weak it never reaches the upper floors. This means families are faced with the daunting task of

having to carry pails of water upstairs every day.

One resident said his hot water geyser had not been switched on for a whole year.

Some families have invested in electric water pumps to fill rooftop tanks. Others, luckier still, have their pumps connected to private wells, but one said: "How long is the well water going to last?"

Asked about the problems in the area Water Services Corporation spokesman Joe Mercieca said an intensive leak detection and repair programme was being carried out in the village.

"This exercise is yielding the desired results," he added.

Mr Mercieca said the Qrendi Pipeline Project, launched last July and designed to improve distribution in the south, was expected to be completed by June.

But residents remain sceptical, one commenting: "I'll believe when I see it."

b

The water supply at Xghajra leaves much to be desired, leading residents to complain of severe shortages which very often last days. They say they have been promised a reliable water supply for several years now, but the situation has not changed. It is perhaps worse than it was in previous years.

Figure App.3.6.18.

a. *The Malta Independent* 4/4/93 p.5.

b. *The Malta Independent* 12/6/94 p.8.

a

Rusty water

From Mrs Mary Xuereb

I WONDER how many more months we, residents of the Tal-Brolli area of Birzebbuga, are going to suffer the brown, rusty water from our taps and roof cisterns.

We've been drinking it, cooking in it, washing in it, etc... White clothes are being ruined because of it.

This has been going on for the past three months now. So how about some action?

M. XUEREB
Birzebbuga

b

Once again, students attending the **Sir Adrian Dingli** junior lyceum at St Andrew's have started a scholastic year with **no water**. When there is any, it is usually brownish in colour.

One parent wondered how a school with over 1,000 students can be expected to function properly without such an essential commodity. The problem has been there for several years but has never been solved.

c

□ Brown, rusty water still comes out of the taps in **Birzebbuga** homes. This has been going on for the past three months. "We drink it, cook in it, wash in it" one of the residents said. Many of her white clothing items were ruined as a result. Do such residents still have to pay for their water according to the new rates?

d

□ A woman who went for a cup of tea at the **Mgarr Hotel** in Gozo last Sunday was "more than disgusted" with the quality of the tea she was presented. She said a waiter informed her that tap water is used to make tea there. Would it be asking a lot from a five-star hotel to use mineral water for a cup of tea, she asks.

e

DROP DEAD

● Not many people will drink brackish water, even if it comes out of a tap after seven days without a drop. This is the situation obtaining at the **Zabbar Housing Estate**. Moreover, all the water allowed to drain from the pipes till it becomes potable has to be paid for.

Figure App.3.6.19.

- The Sunday Times* 16/1/94 p.21.
- The Malta Independent* 10/10/93 p.6.
- The Malta Independent* 23/1/94 p.6.
- The Malta Independent* 5/12/93 p.6.
- The Times* 12/4/93 p.10.

a

In the pipeline ...

From Mr J. Mercieca, PRO/Customer Services, Water Services Corporation
I refer to the "Who cares ...?" column (TMI, 6 March) wherein it was reported that a resident from Ghajnsielem has been waiting eight months for the installation of a new water service.

New Street off Fuq il-Ghajj Street, Ghajnsielem is located in an area still under development.

Furthermore, the necessary road levelling has not yet been concluded.

As a result, the Water Services Corporation

is not yet in a position to install a permanent water main. It is anticipated that this water main extension will be carried out in the near future.

Presumably the complainant has paid the required contribution for a water service to be given when a permanent main is installed, as is normally done by every applicant.

The corporation is prepared to install a temporary water main at the complainant's request.

J. Mercieca
LUQA

b

Water "services" indeed!

From Mr Antoine Grima

THE government deserves praise for the new air terminal and the St Venera tunnel, important projects which were badly needed, and for carrying them out in a short time.

But what about the craters and potholes on the rest of our roads? Why is the government so careless?

And how can we forget the thumping on water-cans, back in the Seventies? How we screamed for water during Nationalist Party mass meetings! Yet, after six years, the water situation has worsened.

Is the water situation so bad because the government has run out of money? Can the government give priority to the real necessities? Water Services Corporation, incidentally, must surely be a misnomer.

c

□ Residents of St Publius Street, **St Paul's Bay**, have reported that hundreds of gallons of clear water is being lost every morning from a **leakage** in their street. One of the residents remarked that the road must be the cleanest in Malta, but he still feels the matter should be tackled. The Water Services Corporation is believed to have sent personnel to check but no solution has been found.

d

INEFFICIENCY

● The new Water Services Corporation is allowed to dig a hole in the road but not to fill it up again! Very efficiently the corporation repaired a burst pipe in Graham Street, Sliema, working through Saturday/Sunday night. Now, a week later, the hole is still there!

e

■ Water has been leaking from a burst water pipe in Apparition Square, Ghajnsielem for the past two weeks or so. And the authorities say they cannot put their finger on the problem of **water leakages**.

Figure App.3.6.20.

- a. *The Malta Independent* 20/3/94 p.25.
- b. *The Sunday Times* 1/8/93 p.16.
- c. *The Malta Independent* 27/3/94 p.6.
- d. *The Times* 16/8/93 p.21.
- e. *The Malta Independent* 22/8/93 p.6.

a

The wind of change

From Mr Victor Farrugia

IN APRIL 1993 I applied to the Water Services Corporation for a new water service. As the procedure requires the applicant to pay the amount due at the Valletta office and then return the application to the district office, and since I was advised that there was a heavy workload at the time, I made sure that this process was done within ten days. Today, almost twelve months later, I am still waiting for this essential service.

After I completed my application I let a few weeks pass so that matters would take their normal course. Unfortunately I received no communication, verbal or otherwise, from the WSC and I therefore started chasing my application.

After several phone calls to the foreman concerned all I obtained was a series of excuses ranging from "phone me next week" to "I have instructions to carry out repairs first." In September 1993 I decided to write to the chairman of the WSC and after a mere acknowledgment I was finally

graced with a reply from the PRO in December, saying that my case was being investigated.

At last I thought that things were moving, but alas three months later I am still waiting. What's the whole point of setting up a customer service department when it apparently has no authority or control over the actions of other departments?

I cannot but help comparing the standards of service I received from Telemalta Corporation and WSC. A telephone was installed within three weeks of my application but one year after my request for a water service I am still in the dark as to when to expect the service I have already paid for.

Unfortunately it still seems that in some sections of the public service the only way for the citizen to obtain what is rightfully his, is to speak to a friend or to provide some form of incentive. Has the wind of change not blown hard enough?

V. FARRUGIA
Paola.

b

Water meter readers

NOW that water rates have been revised one hopes that each time the meter reader calls, residents are informed beforehand.

Most of the flats in Cospicua have their water meters under the stairs, in a dark recess, and there is hardly light enough to read meters with their small dials.

When the meter reader calls he should inform the residents at least by ringing the doorbells and not enter the block of flats because the main door is open, read the meters and leave without the residents being aware of this. The Customer Service section of the Water Services Corporation should note for necessary action.

READER
Cospicua.

c

□ A resident of Ghajnsielem points out that the Water Services Corporation should not accept money for services it can not offer. He said he paid in his contribution for **water** to be supplied to his house in New Street off Fuq il-Ghajn Street eight months ago but still has not been supplied with water.

d

ON TAP

• It has taken nearly four months for the Water Services Corporation to send someone to check whether the replacement water meter has been installed correctly in one of the Lower Barrakka flats in Valletta, despite several telephone calls and a long wait in the complaints queue.

Figure App.3.6.21.

- The Sunday Times 27/3/93 p.6.
- The Sunday Times 12/9/93 p.16.
- The Malta Independent 6/3/94 p.6.
- The Times 1/9/93 p.19.

a

Water shortage: The problem persists

There was a time, not so long ago, when the water supply problem appeared to be well on the way to being solved. With unannounced water cuts being reported in a number of areas, it is clear that the problem is far from solved yet.

However, to say, as the Labour Party spokesman on the environment said a few days ago, that the water shortage this year is the "worst ever" is going a bit too far and indicates a short memory indeed.

Some Lm65 million have been spent on water production since 1987 and supply has been increased by over 10 million gallons daily. So the obvious question is, why the cuts?

Allowing for tourism, water production per head is some 15 per cent higher than in Britain. Clearly, there is a great deal of waste.

About 60 per cent of production is unaccounted-for, far too much by any standard, but more so in Malta's case because most of the production comes from expensive reverse osmosis plants.

Twenty per cent of the unaccounted-for water is lost in the system. Thirty-one per cent reaches consumers but is unregistered (and therefore not paid for) due to faulty metering. The remaining nine per cent is stolen.

The increase in the volume of unaccounted-for water, and greater use of the commodity by consumers has resulted in demand exceeding supply for yet another year, confounding government planners and resulting in water rationing.

Water rates are low, one reason for the high level of waste. Plans to introduce a quota system per person, with the rate increasing when the quota is exceeded, make sense. The new system will hopefully ease the demand on production and on the public purse.

But the problem of unaccounted-for water would have to be tackled too. Water meters are already being gradually replaced, but greater attention would have to be given to the need of updating the distribution network, to eliminate leaks and ensure that demographic changes do not lead to new areas being poorly served.

It is the towns and villages of the south which are taking the brunt of this year's water cuts, not only because there is not enough water, but because the main pipes serving them are inadequate.

Work on a Lm2 million pipeline from Qrendi was delayed, but is now due to be completed this year.

The government has not decided yet on whether or not to build another reverse osmosis plant in the south.

Some 55 per cent of the island's water supply is produced by reverse osmosis and production is set to increase further as the Pembroke plant is expanded. One shudders to think what the situation would have been like today had the government not taken immediate steps to embark on an extensive water production programme on taking office in 1987.

Yet the problem persists. Further expansion of the plants, together with the new tariff structure and improvements to the distribution system will no doubt help ease the problem.

b

The dry season

Water production is set to increase by 5.5 million gallons daily to 36 million gallons a day by next summer. Making the announcement, Water and Energy Parliamentary Secretary Ninu Zammit held forth the prospect that this increase would provide these islands with a spare water production capacity to meet possible breakdowns in the production system. He said that this will be the first time that Malta will have such spare capacity.

The present rate of consumption is estimated at 30 million gallons a day. Last summer, demand for water exceeded supply, prompting the government to increase production at the Pembroke reverse osmosis plant by 1.8 million gallons a day in August and to plan another 5.5 million gallon increase by the summer. There are plans for another reverse osmosis plant in the south of Malta, the site of which has yet to be determined.

This is all to the good if an increase in production capacity and improved distribution would at least ensure an adequate and regular supply to local consumers.

Since 1987, contracts worth Lm8 to Lm10 million for new RO plants were awarded by the government either after a call for tenders or by direct order. Another direct order to the tune of Lm10 million was also placed for the operation and maintenance of these plants and the spending programme is to be extended.

In a "public awareness" campaign, the Water Services Corporation let it be known last year that about 60 per cent of water produced is "unaccounted for", either lost in the system, stolen or not logged due to defective meters. It would seem that this situation has prevailed for a number of years, which means that the more water produced the more is unaccounted for. In his report for the year 1991, the Director of Audit declared that, in the year which had just ended, potable water reported to have been consumed amounted to 44.7 million cubic meters whereas only 17.4 million cubic meters were claimed.

By merely purchasing more plant and water meters, the Water Corporation will not solve the core problem which represents a loss of no less than 60 per cent of production hitherto unaccounted for.

Instead of spending more and more millions of liri in new plants, the powers-that-be would be well advised to undertake a detailed study of the operations of the Water Services Corporation and conduct a survey of its resources. A plan could be drawn up on the basis of the findings to control and reduce the loss of production. Water production and use should be beyond party politics and one would expect all the political parties to achieve consensus on what has to be done.

It is unacceptable, and indeed unbelievable, that 14 years after the commissioning of the first RO plant, the operation and maintenance of the water production system is the cause of so much loss and waste.

Whilst supplies are lost or gone to waste, various parts of the Island have endured supply shortages for unacceptably long periods and salinity levels in water reaching the south of the Island were at one time reported to be high.

The *Malta Independent* has in the past questioned the *modus operandi* of the Water Corporation, a utility with an annual turnover running into millions of liri. It could not be said that strong public complaints about the overall performance of the corporation yielded the desired results. A money-no-problem type of policy has failed to satisfy public expectations. It is time to cut the waste and save the losses - and to show results. Those who are accountable must give proper account of their stewardship.

Figure App.3.6.22.

a. *The Times* 12/8/93 p.4.

b. *The Sunday Times* 17/4/94 p.8.

a

Questions the Water Services Corporation must answer

The interview with Mr Antonio Riolo, the chief executive of the Water Services Corporation (TMI 24 May) was somewhat out of sync with the articles which your newspaper has been carrying recently on matters concerning the corporation.

Your paper has been reporting and also commenting on the workings of the corporation and often referred to the award of

tenders and contracts. It was therefore surprising to note that your correspondent did not question Mr Riolo on the methods and awards of such tenders. The interviewer should have given space to Mr Riolo to dismiss any possible insinuations and dispel any doubts regarding transparency in the operation of his corporation. It would also have continued to reassure us that the

WSC is run professionally and that it has no skeletons in its cupboard. In the absence of such questions by your correspondent, I have formulated a few myself which the WSC should be in a position to answer hopefully in simple, reader-friendly terms.

1) During 1992 the WSC awarded a contract amounting to Lm10 Million for the operation and maintenance of its reverse osmo-

sis plants. Why was such a contract not awarded by tender?

2) Mr Riolo states that by 1996 the WSC will be taking over the running and management of all plants. The WSC owns five plants and in 12 years has, somehow (?) not succeeded in managing at least one of the plants. How then, does the WSC realistically propose to take over five (or possibly six) such plants in just three short years? Unless appropriate tangible action is taken now, the WSC may well be made to make a crisis decision later.

3) Mr Riolo claims that the WSC was handicapped because of the lack of flexibility that is "required to run enterprises that are essentially commercial in nature".

Surely then, if it really believed that this was so, the WSC should have used commercial criteria when awarding contracts. Commercial enterprises just do not throw their lot with one single supplier. They shop around to ensure that they are securing the best deals possible, spreading their risks.

Your correspondent failed to raise the question of the incident which arose at the Pembroke plant and which was reported by your newspaper recently as well as carried in *L-Alternativa* (21 May). Can the WSC clarify what exactly went on and can the taxpayer be reassured that the tender which is supposedly still under adjudication was not in fact a fait accompli even before the closing date of the bids? In the letter written to the local contractor's parent company the WSC chairman, Mr G W Borg wrote that the "incident could also seriously embarrass the government once it is given publicity in the press". What exactly was meant by this? What is being kept from the public by the corporation?

4) Your correspondent inquired on the method used to establish the water cost. Mr Riolo rather condescendingly states that "the water costs are established on sound technical and financial basis". This "answer" is somewhat vague if not outright evasive and Mr Riolo cannot shy away from being open about the method used to arrive at the cost

of water. He placates the public by saying that the financial plan "comprised all items of expenditure incurred and planned".

He then rushes to announce that the cost of water was arrived at 75 cents per cubic metre (litres) yet he just cannot bring himself to illuminate the man in the street as to how this figure is actually calculated. Why?

Mr Riolo prides himself in telling us that Malta's "RO plants enjoy an excellent reputation worldwide and are considered fine examples of the technology". Such a statement augurs well for the so far sole contractor of all the Malta plants especially since the tender for phase II of Pembroke is still under evaluation! If Mr Riolo's claim were indeed correct, then could we please be informed where else apart from Malta, have these "fine examples of the technology" been installed?

My questions focus on the RO aspect of the corporation's activity because this process generates over 52 per cent of Malta's production and presumably eats into the largest part of the corporation's expenditure. Also the extraction of water from boreholes, springs or via pumping stations does not involve a high level of technology and therefore should not incur high production costs.

On other points raised by your correspondent a number of Mr Riolo's answers were rather vague if not also nebulous. For example he tries to "put once again the matter of leakages into perspective" by quoting statistical breakdowns of the "Unaccounted-for Water". He indicates that his results are based on a sampling but does not specify the extent of this. To my mind, his sample results do not tally with those quoted in parliament a few weeks ago. This bombardment by statistics within statistics is rather confusing to the average man whose only concern is to ensure that public money is being judiciously spent.

We now expect the Water Services Corporation to convince us in this respect by answering this round of questions.

Name and address withheld.

b

The Water Corporation

Since 1987 contracts worth Lm8 to Lm10 million for new reverse osmosis plants have been awarded by the Government either after calls for tenders or through direct orders. Furthermore, a direct order to the tune of another Lm10 million was placed for the operation and maintenance of the plants. The awards always went to the same contractor.

In a recent "public awareness" exercise the Water Services Corporation (WSC) let it be known that about 60 per cent of water produced is unaccounted for, either lost in the system, stolen or not logged due to defective meters. It appears that this situation has prevailed for a number of years, which means that the more water produced, the more is unaccounted for. In his report for the year ending 31 December 1991, the Director of Audit says that in the period under review potable water reported to have been consumed amounted to 44.7 million cubic metres whereas only 17.4 million cubic metres were claimed.

The corporation's board of directors will, no doubt, insist that matters are put right and that the cause of this state of affairs is thoroughly investigated.

But by merely purchasing new plants and meters the corporation will not solve any problems since 60 per cent of production will continue to be lost, somehow. Before spending any more public money the WSC should first undertake a detailed study of its operations and conduct a technical survey of its resources. It could then draw up a 10-year plan formulated in consultation with all political parties thus ensuring consistency and continuity in the event of a change in government. After all, water production should be beyond politics.

The WSC should ensure that its officials are not merely technically competent but also have proper management skills and capabilities. Above all, persons in authority have to be made accountable for their actions (or inactions) and answerable to a board which will refuse to act as a mere rubber stamp of political decisions, when and if the situation arises.

It is totally unacceptable, indeed unbelievable, that 14 years after the first RO plant was commissioned by the Government the operation and maintenance of these plants remain beyond the capabilities of the WSC. Likewise, it is strange that calls for tenders for new plants are almost invariably issued and decided upon in some crisis related to water shortages. Projected consumption levels are known, or at least should be known, to the corporation well before matters reach a head. As such if the supply of potable water is not enough to meet demand, the corporation has only itself to blame.

The recent water tests commissioned by the Guze' Ellul Mercer (GEM) Foundation showed unacceptable salinity levels in water reaching the south of the island where the situation is far from what it should be. One solution, the public was told, could be found in the form of yet another plant - while 60 per cent of present production goes unaccounted for!

This newspaper has often questioned the *modus operandi* of the corporation, a utility with an annual turnover running into millions of liri. And yet there was no reaction from the WSC and the Opposition's criticism did not really go beyond the matter of water cuts.

The corporation does not give the public enough information regarding its workings. Efforts by *The Malta Independent* to obtain more details and possibly interviews with senior officials have very often come up against a brick wall. In Europe water companies are made to submit proper reports and accounts which enable the public to assess their performance.

The Government should seriously give consideration to the Build, Operate and Transfer (BOT) concept. This means that a contractor undertakes to build and operate a plant for a determined number of years without the Government incurring any capital costs. At the end of the agreed period the plant is handed over to the Government free of charge. During the period of operation the Government undertakes to purchase a given quantity of water at pre-agreed rates.

This has been found to be most cost effective and can determine beyond any doubt whatever the actual cost of the water. Speaking of costs, the present method of determining how much water is costing the taxpayer should be made public. It may well be that the WSC is overlooking some important factors when preparing costs to be charged to the customer such as, say, fixed overheads, replacements, or even financing costs.

The public can be expected to pay higher water rates only if it is satisfied that the Water Services Corporation is run efficiently and does not allow itself to fall victim of crises decisions.

Water problems in 1993

The distribution side of the water portfolio in the hands of the parliamentary secretary for energy and water, Mr Nino Zammit, performed badly in 1993. The annual report does not quite admit this, but it comes near enough to doing so when it states that between February 1993 and January 1994, no fewer than 20,711 calls were made for bowser service.

That works out at an average of 56 calls per day throughout the year. As these were made from just under 40,000 dry residences (naturally, not different residences; many will have made repeat calls repeatedly), the number of discontented speaks for itself.

In that, and suggestions at the time that Mr Zammit should consider tendering his resignation, alerted the government to the unpleasant fact that a crisis existed. Something other than "resisting" the inheritance "truth" was needed: a massive programme of works to jack up a distribution system that was close to being extinct. Some 100 kilometres of mains and secondary lines were in need of replacement.

A capital expenditure of Lm6 million earmarked for Mr Zammit's water baby, in 1993, one million pounds up on 1992, was nowhere near enough to cater for supply and distribution. The popular outcry against the hapless parliamentary secretary encouraged the government to double the 1993 vote to Lm12 million for this year.

Figure App.3.6.23.

a. *The Malta Independent* 20/5/93 p.24.

b. *The Malta Independent* 12/5/93 p.16.

c. *The Times* 27/4/94 p.2.

As water cuts persist:

Will a watertight solution ever be found?

Mark Wood
Vanessa Sullivan
Independent Staff

Never mind the quality - will Malta ever have enough water to meet all its needs?

Summer just would not be the same without the now traditional rounds of complaints over shortages. Hardly surprisingly, the Government and the Opposition take diametrically opposed stances over the matter - the Labour Party describes the situation as "the worst water crisis ever", while the Government insists the situation is improving, holding the shortages are created by the consumers through sheer waste.

Poor distribution

Labour spokesmen have blasted government handling of the problem, saying it is the poor distribution system which should have been targeted for improvement rather than seek a solution to increase production.

Production over the years has risen to an all-time high of 28 million gallons a day, but almost 30 per cent of this is lost through theft and leakages. Another 31 per cent is unregistered due to inefficient meters.

The Government puts part of the blame for shortages on the way the Labour Government made excessive use of boreholes, leading to a reduction of

water quality, and poor distribution. Boreholes are now being phased out.

Alternattiva - Demokratika spokesman Prof Edward Mallia agrees with the Government in essence that "the water situation can be seen to be making a slow improvement."

"The distribution system is not the root cause of the chronic water shortages in the south and south-east. Sheer lack of production seems to be at least as important," he said recently.

But by admitting that demand has gone far beyond its expectations, the Government is shouldering at least some of the blame - if management of the situation had been correct it should surely have included more accurate consumption forecasts.

The Water Services Corporation now has to resort to "management of reserves": the water supply is being suspended on a weekly basis practically all over the island. Twenty-four hour cuts enable reservoirs to recover from the excessive demands made upon them.

Depending on where one's house is situated, and whether it is on high or low ground, one will either continue to have water regardless of the cut, or water will still not have reached the taps two to three days after reservoirs are opened.

Wastage

But in some cases, according to reports reaching *The Malta Independent*, the cuts may well be



The writing is on the ground for the government to see

backfiring and leading to more wastage.

Predictions

Householders are stocking up in advance of the anticipated cuts, by now quite easy to predict - and then throwing away excess stored water once the supply is resumed.

In some areas of course, the most notorious of which is probably Xghajra, in the limits of Zabbar, the water supply is more often than not suspended.

The long-suffering town is "at

the end of the line", as it were, of a pipeline from Qrendi reservoir. The pipeline, laid in the 1950s, is no longer adequate to meet demands in the south of the island.

The new Qrendi pipeline, which is aimed along with other measures at increasing efficiency of supply to the south, will now not be completed until the end of September.

It is perhaps a reflection of the water situation in general that the completion of the pipeline had originally been planned for the beginning of summer.

Windfall for private water bowser companies

Persistent water cuts and a poor government bowser service have prompted desperate consumers to seek the services of private water bowsters.

A leading private water bowser service reports an increase in the demand for water over last year. Mr Mario Magri, of Sinja Water Supply in Gormi, said that since the company placed an advertisement in the local papers, calls demanding the service have been pouring in constantly.

"The situation at the Water Services Corporation is chaotic. There are only three bowsters which cannot cope with the workload. They do not even have road maps to guide them through the new streets," Mr Magri said.

Mr Magri, who pumps around a quarter of a million gallons of water a day from a borehole, says the Government will be able to improve the "shocking situation" if it buys water from him.

It would cost a consumer something like Lm12 to engage the services of a water bowser but this varies according to the distance.

"It is not the water you pay for but the service," said Mr Magri.

Requests for water pouring in

Southerners suffer brunt of the problem

Water cuts are much more common in the south of the island than in the north. The various residents' associations contacted by *The Malta Independent* confirmed that in the south water cuts are frequent occurrences sometimes as often as three to four times a week.

"In Cottonera the water supply is suspended at least twice a week. When it is restored we waste buckets of the water as it is too rusty. I am not so sure the Government is actually saving water when it orders the supply to be suspended," said Mr Joseph Cachia, president for the Cottonera Residents' Association.

Worst hit

He added: "We are not the worst hit. Marsascala has a much more serious water problem. The supply there is cut seven days a week."

In other areas, including Guardamangia, Sliema and Msida, water cuts are considered as being "normal".

"The water supply is cut once a week. Maybe we are lucky because the hospital is close by," said the president of the Guardamangia Residents' Association, Mr Joseph Farrugia.

The St George's and St Julian's areas seem



to be spared from the water problem.

"Three weeks ago the water supply was suspended for a couple of hours. But it is not cut off regularly," said Major Henry L. Gatt, president of the St George's Residents' Association.

Labour MP for Marsascala, Zabbar and Xghajra, Mr Alfred Portelli says: "The water problem is growing. Most areas in these towns have experienced prolonged water cuts since 1987. Moreover, the quality of water is very poor."

Problem

Mr Portelli says he has tried time and again

to focus attention on this problem in Parliament but to no avail.

"We have only received promises that the Qrendi pipeline, which was expected to be completed by the beginning of this summer, will improve the situation," he said.

Marsascala has a serious water problem. The supply there is cut seven days a week

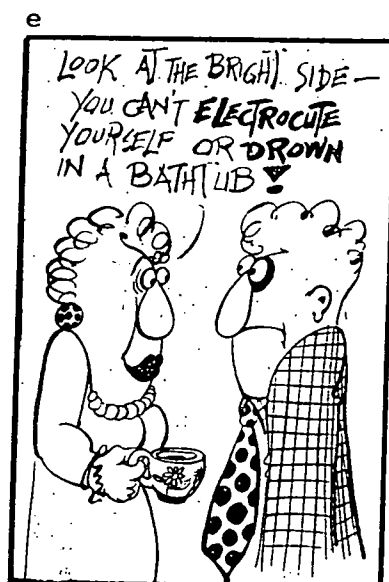
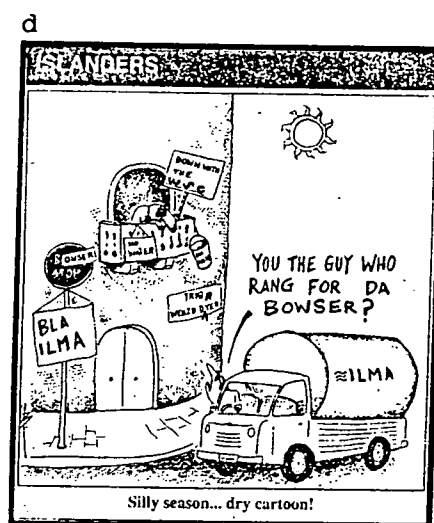
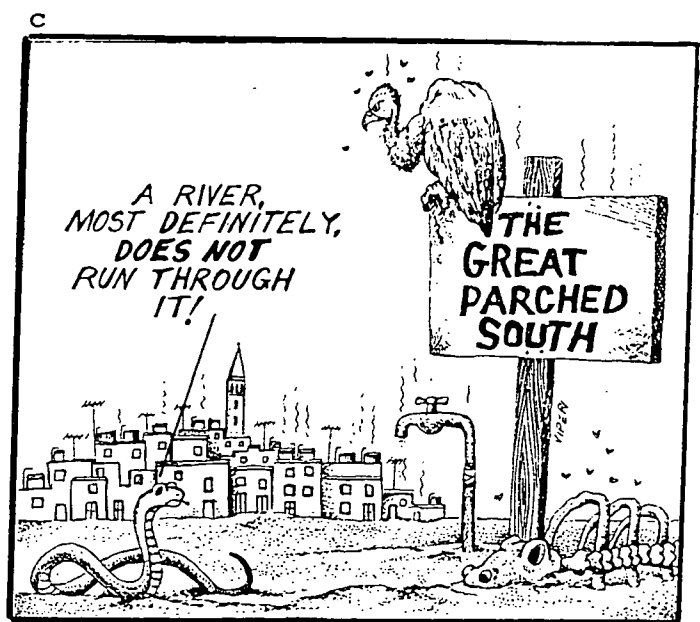


Figure App.3.6.25.
 a. The Sunday Times 28/11/93 p.26.
 b. The Sunday Times 9/5/93 p.26.
 c. The Malta Independent 2/5/93 p.16.
 d. The Sunday Times 12/9/93 p.12.
 e. The Sunday Times 12/9/93 p.12.

Zabbar water protest

by a Staff Reporter

RESIDENTS of Zabbar and its environs yesterday protested against poor quality water and low water pressure in the south of Malta.

The small and sometimes rowdy crowd, including mostly housewives, met at St. James Square in Zabbar. They brought with them bagfuls of plastic mineral water bottles and protest placards.

The activity was organised by the Gużè Ellul Mercer Foundation which, earlier this month, published a report on the salinity of tap water to the south of Malta.

Labour Party deputy leader, Dr. George Vella told participants at the protest that no government minister had denied the contents of the report on water quality, drawn up by Dr.

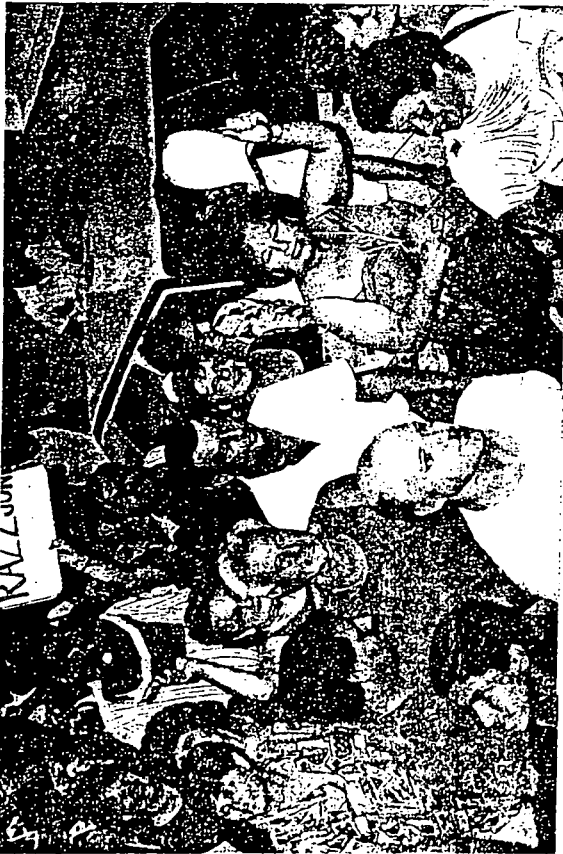


ZABBAR residents protesting against low quality water in St James Square being addressed by Dr. George Vella.

Alfred Vella.

Dr. George Vella ripped the government for delays in finalising the north-south water pipeline.

Figure App.3.6.26. Sunday Times 25/4/93 p.68.



Vittoriosa residents protest over water supply

James Calvert

Hundreds of Vittoriosa residents yesterday evening vented their anger at years of water supply cuts. They gathered in Vittoriosa's main square, then walked around the entire town banging buckets and bottles and shouting "We want water". Some explained that they only have water for two days a week and even then the pressure in the taps is very weak. One carried a placard saying they were only being given "rations". Ironically, after several dry days supply was back

yesterday, but the people were quick to point out that it would be off again in no time. Opposition leader Alfred Sant took part in the walk which lasted for about an hour. At one point he stopped and addressed the crowd saying it was not the Labour Party which had organised the protest but the people of Vittoriosa. He said: "Nobody in Birgu, nobody in Vittoriosa, nobody in Malta or Gozo is to blame for the water shortages. It is the government's fault." One angry protester shouted that they were expecting the Parliamentary Secretary responsible for Water to resign, as he had promised to do four months ago at a public meeting in Vittoriosa.

Angry protesters in the main square of Vittoriosa where water supplies are very erratic. Dr Alfred Sant, leader of the opposition joined in the protest.

Figure App.3.6.27. The Times 25/8/93 p.40.

a

□ **Plenty of water is still leaking** from a damaged water pipe at Triq l-Imrejkbha, **Bugibba**. Residents have been reporting it for the past two weeks but water keeps flowing on the road. Workmen visited the site once, on a Saturday night (presumably on overtime), but water keeps gushing out. If water is scarce, why this waste?

b

Conserving water

From Mr Tony C. Cutajar

Daphne Caruana Galizia said in her analysis "Water costs Malta the earth - every drop counts" that the Water Services Corporation is trying to create a social conscience and was doing its best to conserve water. I beg to differ and I would like to take Mr A. Riolo, the chief executive, to task.

How can he say that he wants to work hand-in-hand with the people to conserve water when we have been reading in the papers for the nth time that people report leakages and these are seen to weeks afterwards?

And what about the number of cracked reservoirs which have been waiting for years to be

repaired?

I can mention one of them situated between the government flats and Guzé Delia secondary school at Ta' Paris, Birkirkara.

So much precious rain water has been wasted these last years for leaving this big reservoir to deteriorate.

To make matters worse, tap water has to be used for the garden nearby and the gardens in the school. I have reported this fact to the Principal Agricultural Officer and wrote many times in a number of papers. But nothing has happened.

T.C. CUTAJAR,
San Gwann.

c

Every drop counts

Every drop counts, especially if you are waterless. But one is never able to calculate the volume gushing down a street as a result of leaks.

Two leaks at Triq il-Mazzola and Triq l-Imrejkbha, Bugibba have been reported but were still unplugged until yesterday afternoon. A resident who said he reported the matter various times yesterday was always told that "the matter is in hand and will be seen to as soon as the workmen engaged on other duties return."

d

Still leaking!

From Mr Giovanni DeMartino
WHO would believe me if I say that the underground water pipes which were leaking and pumping thousands of gallons of water down the drain (about which I wrote in *The Sunday Times*) are still doing the same today, more than a month later?

And this in spite of the assurance given to me by Mr N. Debono, from the office of the Parliamentary Secretary for Water and Energy, that the contents of my letter had been noted! Some of these leaks were first reported more than three months ago.

G. DEMARTINO
Mosta

Figure App.3.6.28.

a. *The Malta Independent* 17/6/94 p.4.

b. *The Times* 10/6/94 p.2.

c. *The Malta Independent* 23/1/94 p.6.

d. *The Sunday Times* 19/9/93 p.17.

a

Water leak helpline

From Mr J. Mercieca, public relations officer, Customers Services, Water Services Corporation

With reference to the letter "Water leak" (May 14), the Water Services Corporation confirms that following a report of a water leak in G. Abos Street, L-Ikkin, the Emergency Section inspected the site on May 6 and a series of detection tests were carried out to identify the source.

These tests had to be followed up since there was no evident indication of water running out, notwithstanding the pilot hole which was excavated to investigate the leak's source.

The leak was detected as originating from the water service main of a resident from the

same street. Since the owner of this residence was not available, this service main was plugged in order to contain this water leak.

On Monday, May 9, the owner's residence was contacted again in order to process his application for the service repair. This service repair was carried out on May 11, to the satisfaction of the consumer.

Whilst appreciating your correspondent's concern on the Corporation's water conservation campaign, we urge the public to call us on our dedicated helpline on 234530, 234531 and the emergency service on 238716, 224142, 231656 to report water leaks.

J. MERCECA,
Luqa.

b

Water leaks

From Mr G. Cauchi
CAPT. J.M. WISMAYER'S experience of the sort of service provided by the Water Services Corporation (*The Sunday Times*, November 20) is by no means unique. For nearly three weeks water seeped from the ground in front of my house.

After various reports to the WSC office in Paola, the problem was solved by digging up the road and shutting the valve which supplied water to my house, which I presume was the offending pipe. The trench dug up was immediately filled in and the problem buried.

This action was taken on November 9 and I am still without water today, November 22. Filling of forms and numerous phone calls proved futile. I was not allowed to talk to the foreman on the phone but invited to call at his office at 7.30 a.m. to join the crowd of others in the same predicament, harassing the poor foreman every morning pleading their case. My wife even did just that - without any results.

What makes one wonder is why the workmen do not repair the pipe immediately the ground is dug up, avoiding all these inconveniences and avoid digging up the road a second time and doubling the work. Surely there is a better, more professional way of dealing with water leaks.

G. CAUCHI
Sana Lucija.

c

□ A water pipe in Conception Street, **Benghajsa**, Birzebbuga, has been leaking for three weeks but no one turned up to repair the damage, a resident says. "Then they tell us not to waste water and the rates are increased," she remarked.

d

■ The Water Services Corporation ought to be commended for embarking on a long water conservation campaign. But unless this concept is fully understood by its employees the exercise would be futile. A leak in St Paul's Bay was reported but it took district office employees over three days to turn up to locate the fault.

Figure App.3.6.29.

a. *The Times* 17/6/94 p.4.

b. *The Sunday Times* 4/12/94 p.16.

c. *The Malta Independent* 5/12/93 p.6.

d. *The Malta Independent* 11/12/94 p.10.

Trenching works at Ta' I-Ibrag spark off complaints

Joanne Cocks

Trenching works at Ta' I-Ibrag have sparked off a series of complaints from the area's residents and visitors to a nearby hotel.

They claim the contractor has shown a lack of co-operation and been inconsiderate while carrying out the work.

Contractor Joe Galia has been assigned by the Water Services Corporation to lay new pipes for a transfer main between the Pembroke reverse osmosis plant and the reservoirs in Ta' Qali/Musta.

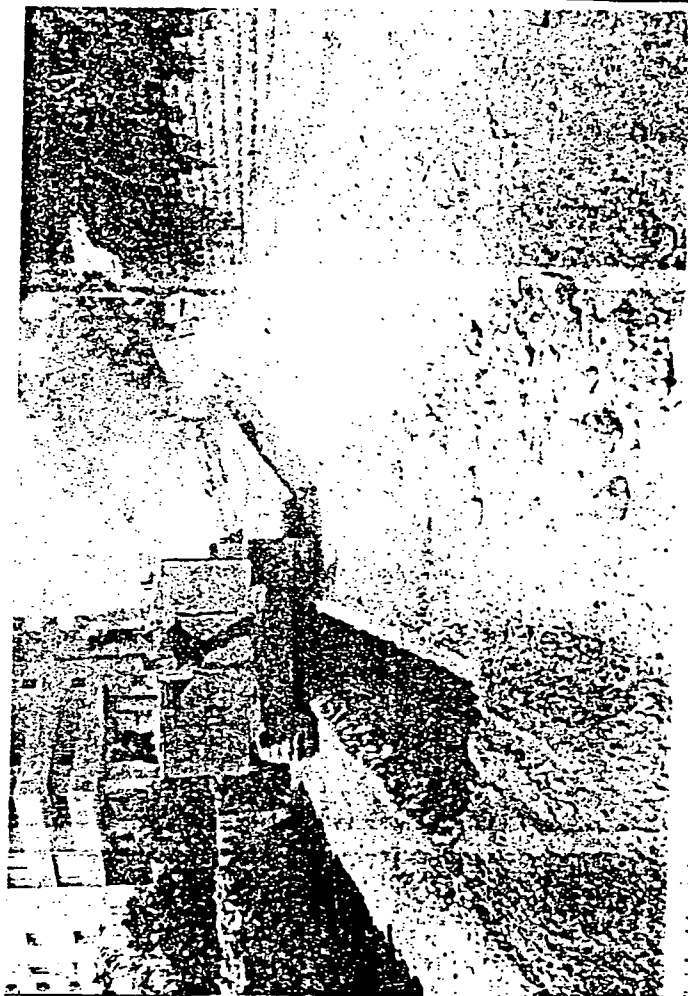
But many residents, including visitors at The Halland Hotel, have complained the contractor has been using loud machinery late at night. And yesterday the corporation confirmed the contractor had used a heavy trench digger on Tuesday until 8.30 p.m. and a jack hammer until 10.30 p.m.

A spokesman for The Halland also said yesterday the hotel had not been given any information in advance about the trenching works, and at one point its car park was blocked.

On Tuesday, many of the residents left the hotel because they could no longer stand the noise, sources said.

The hotel was also hit in the afternoon when it suffered a short power cut after machinery damaged an electricity cable causing a power failure.

A Water Services Corporation spokesman said the entire pipeline project between Pembroke and the reservoirs was expected to be



Trenching works at Ta' I-Ibrag: the cause of many strong complaints from residents.

finished by July. Production at the Pembroke reverse osmosis plant is expected to soon increase by 5.5 million gallons of water a day.

The 9.5-kilometre pipeline will ensure the daily production of water will be transferred to the south via the pipeline from the reverse osmosis plant.

a

Ta' l-Ibrag Road residents say roadworks making life a misery

□ "... there is a limit to how long
we can tolerate it"

Rosanne Zammit

Road works for the laying of a new water main are making life a misery for some residents in Ta' l-Ibrag Road, Ta' l-Ibrag.

"Some inconvenience is acceptable but there is a limit on how long we can tolerate it," one resident said.

Another resident, who has a stationery shop nearby, said that since the road had been dug up, just over a week ago, his business had suffered because people found it difficult to get to his shop over the trench in the middle of the narrow road.

"To make matters worse, a man fell into the trench on Monday and broke his spectacles. He lost consciousness for about four minutes," the businessman said.

He claimed the accident happened because the piece of wood across the trench serving as a plank for people to pass from one side to the other was not strong enough.

"I reported the matter to the police. They said they were coming but they never did. I ended up arranging a piece of wood with an iron frame underneath it myself."

b



How is it possible that a private contractor is allowed to take his time to repair water mains damaged during road levelling works and inconvenience residents for days on end? A case in point is Tal-Fuklar, in Attard. Would it have happened had the Minister for the Environment or the Water Parliamentary Secretary, or any other top brass, for that matter, resided in that part?

Figure App.3.6.31. a. *The Times* 25/5/94 p.27.
b. *The Malta Independent* 9/1/94 p.6.

a

Water cisterns

From Mr Joe Zammit Ciantar
I AM AMAZED at the message being passed on to the Maltese housewife (and whoever else cares to take up the washing of clothes) - that of having better results by using rainwater from "the well", currently being advertised by the Water Services Corporation in the local press as part of the water conservation campaign. Many of the houses, and especially Government flats, built in these last 20 years or so, do not have a cistern, and hence no rainwater.

I can assure the Corporation that the majority of Maltese do know that rainwater is the best water that may be used for washing - anything... clothes included. And the authorities concerned are to be congratulated for diffusing such precious information.

All the authorities should work hand in hand.

Prehistoric man in Malta gathered water from cisterns he dug in the vicinity of Mnajdra and Hagar Qim (at Il-Misqa), and the Tarxien temples, among other places.

And, at least 400 years ago, the Maltese were ordered to have a cistern next to their house: "Che ogn'uno sia obligato fare una cis-

terna almeno in Casa sua..." (rule decided on May 12, 1596; in A.O.M., *Liber Conclonium*, 92, 1 141v).

Section viii of Chapter 10 of the *Building Laws & Regulations - Code of Police Laws*, published by the Sanitary Engineering Section of the Works Department in 1988, states: "every house shall also have a cistern in good condition, of a capacity of at least three cubic metres, for every five square metres of the surface of the floor of each room of such house."

I recall that, back in 1966, before a health inspector confirmed that the house I was having built did really have the cistern required by law, the building had to stop.

Did any change in the Maltese law on the building of these cisterns take place? Even if today this law is no longer being enforced, those building a new house should plan for and insist on having a large cistern; later on in life they'll bless the day they found a place for it in their plans, and the precious rainwater it holds.

Water is life - let us save of it as much as we can. We can save much!

J. ZAMMIT CIANTAR
Santa Lucija.

b

Topping up the Med.

From Mr Walter E. Sullivan
I am grateful to J. Mercieca, PRO/Customer Services of the Water Services Corporation for his letter (TMI, 15 January). I duly contacted an official at the Department of Agriculture who was very understanding but could not assist with my predicament. My vulnerable basement, situated below road level, comprising garage, four rooms plus kitchenette/laundry and shower/toilet has been flooded on three occasions and claims for damages to furniture and carpets have been duly met by an Insurance Company.

To avoid a repetition, I enlarged a well adjacent to the garage but with the recent abnormal rainfall my pump could not cope with the situation.

When the well was overflowing the water was seeping into the

basement. I had no option but to call in a bowser contractor to empty the well. I was hoping that he would utilise the water. But he told me that he was dumping the 3,000 gallons plus in the sea.

What a pity! Every drop of water counts. We must save water. Naturally I had to pay for this service. The position however is reversed when I need this precious water, when available, for irrigating the garden.

I understand that in some countries including Israel and Morocco which suffer water shortages, drainage is processed and used for irrigation. A thought comes to mind. Could this water and other surplus water normally wasted or discarded be stored in unused quarries or elsewhere to be used when needed in summer?

W. E. Sullivan
SAN PAWL TAT-TARGA

c

Msida reservoir

From Mr Anthony Tabone
THE RECENT heavy rains have caused flooding in many parts of the island, particularly at Msida. Unfortunately, millions of gallons of rainwater have again gone into the sea.

With this pitiful situation happening annually during the winter months, I wish to make a practical suggestion so that we could save a good proportion of this rainwater wastage.

An essential project, which may cost a few thousand liri could solve this perennial problem.

At present, opposite Msida church, where the yacht marina and garden begin, in the middle of the quay, there is a U-shaped inlet in which all the rainwater coming down from Birkirkara and other places goes down to the sea. This sizable inlet could easily be enclosed by constructing a retaining concrete wall on the outside of the open, calm sea and thus a rectangular cistern would be formed.

This kind of work was successfully performed when the St Paul's Bay Sirens water polo pitch was enclosed some years ago by the Marine Section of the Works Department under the personal supervision of Mr Censu Galea, now Minister of Food,

Agriculture and Fisheries.

When this is done, all the necessary work required inside this reservoir, like pumping sea water out, cleaning, sealing and covering with concrete, could be performed by the Marine Section and other government departments as required. It should then be roofed and the area available would then form part of the existing garden.

An access into this reservoir is a must, as this could be cleaned periodically. Millions of gallons of precious rainwater would thus be saved annually.

As a second phase follow-up, I suggest that a pipeline be constructed and the water overflow could then be transferred to the very large reservoirs on Manoel Island. These were repaired some ten years ago and all the necessary installations were in good working order.

My hope is that such a project would be of immense benefit to the public and to the Agriculture Department in particular.

If the authorities give their backing, by next winter millions of gallons of valuable water will be saved and stored for useful purposes.

A. TABONE
St Paul's Bay.

Figure App.3.6.32.

a. *The Sunday Times* 9/10/94 p.15.

b. *The Malta Independent* 5/2/95 p.25.

c. *The Sunday Times* 4/12/94 p.16.

a

Water rates overflow

From Mr Godwin C. Micallef
I have recently received the first bill from the Water Services Corporation with the new charges for water consumption.

Notwithstanding the fact that my consumption remained static the total charges went up by over 230 per cent over the old rates. This percentage was arrived at after deducting the so-called "government subsidy."

I do realise that I must pay a reasonable amount for water consumption but why should I pay for the grossly inefficient

water distribution system and the lethargic managing of the corporation? Various letters in the press concur with my contentions.

I must point out that for a household with the previously accepted maximum level of consumption of 57 cubic metres the consumer would have paid only Lm5.48 in the past while at the present rates the same household, of say 3 persons, would have to pay Lm23.54. How about that for inflation!!!!

G. C. Micallef
ATTARD

b

Water bills complaints pour in

Between November and January the Water Services Corporation (WSC) received some 900 complaints — it has received over 3,000 during the past month.

From over 128,000 domestic bills issued between November and January, the corporation received 879 complaints only — which amounted to about one in every 200 bills issued.

The total rose to over 4,000 complaints over the past month, from a total of 160,000 domestic bills issued, about two per cent, a WSC spokesman added.

He said that most of the problems arose because consumers involuntarily gave what the computer sees as different addresses.

For example, when they registered for ID card purposes they said their house was called "St Philip" and when they registered their children, the house became "Saint Philip".

This difference in the spelling created discrepancies when the government subsidy on water bills was worked out on the number of persons living in the household. The corporation's computer is transferring computer data provided by the Electoral Office and the Social Security Department.

Special applications have now been made available for persons who want to complain in this regard.

c

Water rates

From Mr A. M. Galea
Cost effectiveness should be the aim of every parastatal company. To achieve this the Water Services Corporation has substantially increased its water rates and to lessen the burden on the citizen the government is heavily subsidising the rates.

This is understandable but are the rates being applied fairly? Or are residents in certain localities shouldering more than their fair share of the burden?

Surely the costs in developing areas like Madliena are much higher than in other developed areas.

So why should the average working man shoulder the costs which should be borne by developers in certain areas?

Couldn't the water rates reflect the costs more fairly?

I understand that this is the practice in other countries. Why should Malta be so different?

A. M. GALEA
Paceville.

d

Water, electricity meters in garages

From Mr S. Cassar

In February 1993, I took over a garage in Sliema. On the same day I read the water and electricity meters and sent readings to the chairman of the Water Services Corporation.

In two years, according to the actual reading of meters, I have only used one cubic meter of water and three units of electricity.

Meter readers are fully aware of low consumption in garages, so much so that, though they always find my garage door closed, they never leave a note informing me of the date they will call again, as is done in case of households.

In my latest bill covering the four month period up to last August 16, the electricity is shown to read 1884, for a consumption since I took over the garage, of 421 units, whereas in fact I used only three units.

This is a system of robbing Peter to pay Paul, which I submit is immoral and therefore unworthy of the state.

S. CASSAR
Sliema.

e

Water rate subsidy

From Alex G. Magro

Mr Tancred Tabone, chairman, Water Services Corporation, said (February 1) that it is the customer's interest to check about bills, so may I please ask him why our bills on our summer residence are not being subsidised as well?

When we move to our summer residence it is all the family that moves, not just the head of the family. It is not fair that we are subsidised only on one house, because we get the same rentals and the same maintenance bills for both houses.

When we are using water at our summer residence we are saving and not wasting it from the other house. It is during the summer months that we need subsidising more.

Can Mr Tabone please give me a calculation of a bill for a family of four persons for a period of four months without any subsidy consuming up to the first level of waste?

G. MAGRO,
Zabbar.

f

Water rate subsidy

From Mr Reginald Pace

Mr Joseph Cristina asked (November 22) why there is no subsidy on water consumption in summer residences. I wish I could afford to have a summer residence besides my ordinary home. Had I been that affluent I surely would not complain for the little extra amount I have to pay.

R. PACE,
Lija.

Figure App.3.6.33.

a. *The Malta Independent* 5/2/95 p.25.

b. *The Malta Independent* 26/2/95 p.3.

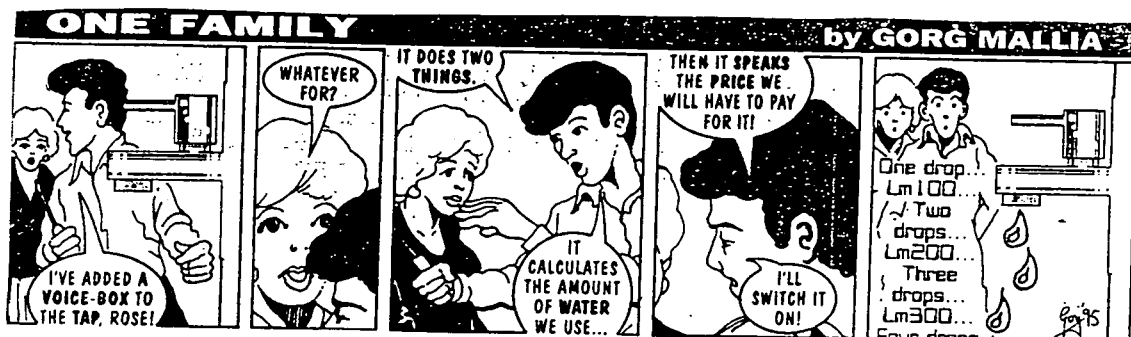
c. *The Times* 25/2/95 p.4.

d. *The Times* 17/2/95 p.4.

e. *The Times* 11/2/95 p.4.

f. *The Times* 22/3/95 p.4.

a



b

New water rates

From Mr Joe Micallef
CONSUMERS are now receiving water bills computed according to new tariffs and rates. The steep rise in these bills will become painfully evident to everyone. This may perhaps help to alert everyone to the preciousness of water on demand in our taps.

Nevertheless, there is an aspect which is very unfair to consumers having more than one residence. Those who migrate to summer homes during the hot season are a case in point. Residences other than the main one are arbitrarily considered to be occupied by one person only, irrespective of family size.

Here is an example, involving a family of five, who spend 90 days at their summer residence, consuming a total of 45 cubic metres of water:

Bill if family stayed at home: Lm9,474 less Lm6 discount = Lm3,474

Bill for summer residence: Lm29,605 (no discount for second home)

This very unjust state of affairs can easily be remedied. The water consumption at the second residence may be added to that of the main residence, for the same period. Alternatively, the consumer may be given the option of declaring where his/her main residence was, for any given period covered by a bill.

Whatever the method, a way must be found to render water bills for alternative residences fairer to the consumer.

J. MICALLEF
Balzan.

c

Unregistered consumers

From Mr Francis Cassar
It has been announced that the new water rates will allow for a consumption quota for each member of the household at a basic rate and then consumption above this quota will be at higher rates. It has also been announced that the Water Services Corporation will obtain information regarding

the number of persons per household from the electoral register.

May I humbly ask what will happen in the case of foreign husbands or wives of Maltese citizens, children and foreign residents and expatriates whose names do not appear on the electoral register?

F. Cassar
SAN GWANN

d

Water rate subsidy

From Mr Joseph M. Cristina
I refer to Mrs G. Mingo's letter "Water rate subsidy" (February 12). One cannot but fully concur with the fact that it is absurd that no subsidy is given on our summer residence.

This reasoning brings about an injustice with all those who own a summer rest place "for own use" since as already pointed out the water being consumed at the summer residence is being "saved" from the other inhabitants.

If the decision of giving subsidy on summer houses for one person only is coming from the idea that this second home can be rented out, then that is another matter and should be dealt with differently. It is not

fair that anybody owning a summer residence used by oneself only and not for business purposes is deprived of receiving the full subsidy.

I feel this attitude is discriminating between those who own and those who don't own a summer residence.

Those who don't own a summer residence are being subsidised the whole year through while those who do own one, are only being subsidised for nine months.

May I appeal to the newly appointed chairman of the Water Services Corporation, Mr Tancréd Tabone, to take up this matter.

J. M. CRISTINA,
Mosta.

Figure App.3.6.34.

- a. The Sunday Times 9/4/95 p.26.
- b. The Sunday Times 5/2/95 p.16.
- c. The Malta Independent 27/2/94 p.25.
- d. The Sunday Times 9/4/95 p.26.

a

Controlling water loss

From Mr Edgar S. Carabot

You reported that the Prime Minister is resisting moves by the Water Services

Corporation to introduce stiff water meter rental rates, and that the cabinet is still trying to decide on what new rates are to be established (TMI, 17 October).

You also reported that the new rates are to be introduced to reflect the real price of water and to make good for losses through theft of water.

While I appreciate that the Prime Minister is not in agreement with the new proposals, why should the losses through theft be covered by these increases, so that honest people are made to pay for whoever is stealing water?

The Government should find a way to apprehend whoever is responsible and penalise him heavily to make up for the losses in question.

If the Government is compelled to increase the water meter rates, at least all pensioners should be exempt.

E. S. Carabot
SLIEMA

b

Every drop counts...

From Mrs Anna R. Grech
Mr Rene Buttigieg (May 27) must be among the lucky consumers who enjoy good tap water and his suggestion for a reduction in water rates for the conscientious consumers might serve as an incentive to save water.

However, I feel it is consumers like me who certainly deserve special rates (inferior to normal rates) because for the past two years we have had nothing but brown, rusty water coming out of our taps.

Obviously, this means that thousands of drops are wasted unnecessarily.

The Water Services Corporation is well aware of this disastrous situation.

A.R. Grech,
Ta' Xbiex.

c

Water rates

From Mr Albert M. Galea

I am not at all convinced that the new water rates and the government subsidy are fair, as I have been quoted as saying by the PRO/customer services, WSC (March 22).

The need for the WSC to increase its tariffs in order to be cost effective is only part of the solution.

For example, are the heavy increases in the water rates justified if the corporation is not being run as efficiently and as economically as it should?

I am also of the opinion that the water rates do not reflect the true costs for the distribution of water in Malta. Other countries have

different rates for different localities. Why should Malta be so different?

We know that the production costs have almost doubled over a period of 10 years. May I ask by how much has the wastage of water through leakages been reduced during the same period?

And is it fair to increase only the domestic tariff rates without a corresponding increase in the industrial and commercial sectors?

Why should the average working man shoulder the costs which should be borne equally by entrepreneurs?

A. M. GALEA,
Paceville.

Figure App.3.6.35.

a. *The Malta Independent* 24/10/93 p.16.

b. *The Times* 9/6/94 p.2.

c. *The Times* 5/4/95 p.4.

a

WSC's goals – just the norms

From Mrs Josephine Agius

The goals indicated by the new chairman of the Water Services Corporation, February 11 are nothing special and should not make headlines because they are just the norms that should be followed by each and every responsible manager.

So, instead of taking a breath of relief at such assertions I would rather feel like sighing in disappointment at what degree of inefficiency we have lived through in the meantime.

To admit that mistakes occur is a virtue but to commit so many of them is certainly not. The fact that it necessitates printed forms for all the customers who are served with mistakes is enough proof of this and is nothing but a tentative step to organise one's inefficiency.

To my knowledge computers do not make mistakes unless the operators feed them accordingly.

To admit that a cashier dealing with so many bills "would have regressed" is not good either. When the employee is about to start regressing, have him do

something different and less monotonous.

The funniest part though reads: "I want our phone lines etc..."

On January 23 I wrote to the chairman about the failure of the WSC to deduct the Lm's credit from my bill for the second time running.

To date only an acknowledgement has been received but no revised bill has been issued.

I do not think overcharging a 79-year old pensioner whose only source of income is the monthly pension is the right way of "making life easier for the consumer".

Or is the WSC's promise to have the amount deducted from future bills their own way of stimulating in me fresh hopes for longer life?

J. Agius,
Shema.

c

□ Brown, rusty water still comes out of the taps in Birzebbuga homes. This has been going on for the past three months. "We drink it, cook in it, wash in it" one of the residents said. Many of her white clothing items were ruined as a result. Do such residents still have to pay for their water according to the new rates?

b

Cost of water

The era of the cost of water being cheap is over for good. We are about to enter the era of water penalisation, where the good population has to cover the cost of inefficient authorities which cannot trackdown people using fresh water in their swimming pools, or those wilfully wasting water.

The era whereby Water Corporation officials and employees take hours and hours, if not days, to deal with water leaks, despite being given due notice by assiduous citizens who do their duty and waste several phone calls, at new prices, in informing them of such leaks several times.

The counter of that is complaining by phone that one has no water.

Good old Citizen Joe and Citizen Mary have to carry the can (literally!) at the end of the day and hope they will live long enough to be able to draw their pension, or to have a telephone line which actually works efficiently, or to dream of turning on the tap and getting an adequate water supply.

The leaps being unashamedly imposed on us are leaps into the darkness which abounds.

Albert Fenech

Figure App.3.6.36.

a. *The Times* 20/2/95 p.4.

b. *The Malta Independent* 18/8/93 p.G3.

c. *The Malta Independent* 23/1/94 p.6.

a

Pembroke: where a vision is just a mirage

Wandering through the garigue, glittering silvery rocks enshrined with wild flowering plants and miniature shrubs dominating the fissures and the gaps between the rocks, I stumble and notice a corrugated piece of metal, covering two weathered oil drums, mighty neighbours of an obsolete ozone destroying fridge which some gun-toting macho placed there for his murderous bird blasting pastime. Bird hides occupy the land, with small pieces of metal jutting out from stone, a small song bird struggling in a miniature cage deprived of its freedom.

Along comes a stylish block dominating the air with a hum, an ear damaging noise which spans the 24 hour cycle, frustrating the folk who have made Pembroke their base to live in peace away from the noisy environs of the nearby towns. It provides water for the people of this drought stricken island through the wonders of technology, converting sea salty water into drinkable clear water.

Reverse osmosis is the name of the plant which is the cause for concern. Plans have been drawn, money has been spent, thousands of trees have been planted, doors and windows sound proofed, motors encased. That is what the folks have been told, but ask those who live in Pembroke, who

will tell you that what had been said is just one of those jokes which are fed to the people every five years and then forgotten with all the rest.

b

Water cuts and noise at Pembroke

From Mr N. Farrugia

Besides the inconvenience caused by the water cuts, Pembroke residents also have to put up with an incessant airport-type whine coming from the reverse osmosis plant there.

The recent extension of the plant and further planned expansion are bound to increase the noise to an unbearable level.

The plant can be sound-proofed, yet the residents' pleas continue to go unheeded.

Perhaps the result of a recent noise monitoring exercise carried out in the area and commissioned by the authorities themselves will convince them of the need for serious action to remedy matters.

N. FARRUGIA,
Pembroke,
St Andrew's.

c

Noise from water plant

Pembroke local council said the government is to provide money to improve the situation at the Sant'Antnin waste recycling plant, where the stench was inconveniencing the people there.

But, it said, no indication had been given that funds would be

given to solve the problem of noise from the reverse osmosis plant.

Expressing solidarity with Marsascala council, Pembroke council said the necessary funds to eliminate the problem at Pembroke would amount to only 1m100,000.

e

A spokesman for The Pembroke Residents' Association mentioned the noise pollution emanating from the Reverse Osmosis Plant there.

The subject was brought up some time ago and the Water Services Corporation was meant to have remedied the situation. When a call for tenders was originally made, the specifications clearly called for noise protection equipment to be installed at the contractor's expense.

Did the contractor in fact comply with the terms of the contract? Can someone inform the public?

d

Noise reduction plans for Pembroke

Measures are to be taken to reduce noise levels at the Pembroke reverse osmosis plant, the cause of complaint by residents nearby.

In announcing the intended relief, the Department of Information said the Water Services Corporation has placed orders for some of the equipment needed to reduce the noise and has issued calls for tenders for the work.

It is anticipated that the project will be completed within the next three to four months.

The DOI said that following occasional complaints by Pembroke residents about noise from the plant's rotating machinery, the corporation investigated the reports with the help of local and specialised foreign experts.

In May this year, New Acoustics of Glasgow conducted a site survey to investigate the problem and if necessary to propose action to bring the noise levels down to standards considered acceptable in EC countries.

A report by New Acoustics stated that there are no European standards for appropriate noise levels from industrial plants in residential areas, but the measured level of plant noise was at the upper end of the range considered acceptable in similar circumstances in Great Britain.

The report further points out that the product and boost pumps as well as the openings in the permeator and pump halls are contributing to the overall noise level.

Figure App.3.6.37.

a. *The Times* 15/8/93 p.17.; b. *The Times* 18/9/93 p.4.;
c. *The Times* 31/10/94 p.25.; c. *The Times* 26/10/93 p.1.;
e. *The Malta Independent* 29/8/93 p.8.

a

Pembroke RO extension tender

From the chairman, Water Services Corporation

I refer to your feature "RO works start before tender award" (TMI, 8 August). The following is by way of amplification and clarification of some points in your article.

The bids received in response to the call for tender for the Pembroke RO plant expansion were adjudicated by the Water Services Corporation. As is normal practice, the recommendations were referred to the Treasury Contracts Committee for their deliberation. The Contracts Committee agreed with the Water Services Corporation recommendations, i.e. to award the tender to the lowest priced technically acceptable bid. This offer was submitted by Polymetrics Seawater Systems, Inc., the supplier of plant on previous occasions.

In today's circumstances, when production of water has been outstripped by the high demand - ground water production is three quarters of a million gallons per day less than the corresponding period of last year - it was decided, in the interests of the consumer to use plant and components held in Malta as spare to existing plant and also to use auxiliaries bought in Malta or belonging to the Water Services Corporation, to put two trains on line early. The plant will be

finished to tender specifications in due time as specified in the successful bid.

The spare parts utilised for this early construction form part of the spare parts inventory required under the much publicised O & M Contract under which the RO plants are operated. The level of that stock of parts is tied to the high level of plant reliability and to the stiff penalties specified in that contract in case of default. Temporary withdrawal of the parts (i.e. until the new contracted material is delivered) therefore required negotiation and clear understanding of any possible consequences by both parties. This takes time and will of course be recorded in writing as soon as final agreement is reached with the contractors.

The issue of the letter of acceptance by the Water Services Corporation for the plant bought for Pembroke expansion is only a formality and the delay in issuing it is of no consequence.

Indeed, the standard Form of Tender required all those who submitted a tender to declare that their bid may be accepted "even by a verbal communication of acceptance". This is normal practice.

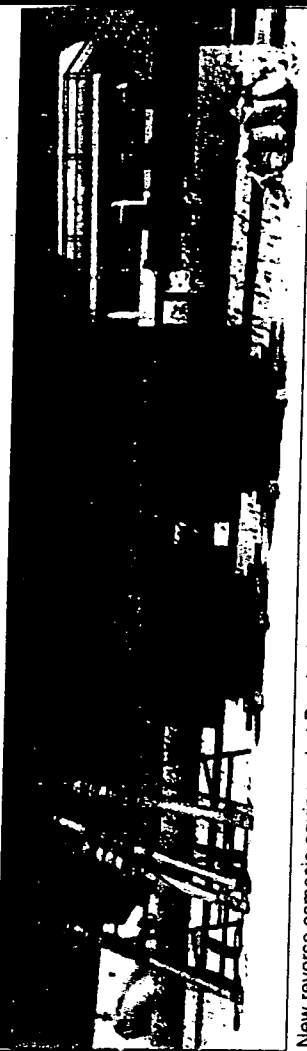
It is, also, understandable in the light of the extraordinary efforts being made by the contractor and by the Water Services Corporation staff to put the plant in service as early as possible.

I am sure your readers can see from the above that there is a simple explanation to the points you raised in your feature of last Sunday.

G. W. Borg
VALLETTA

b

RO works start before tender award



New reverse osmosis equipment at Pembroke: it is being installed prior to the release of an acceptance letter

Work on the installation of two additional trains at Pembroke reverse osmosis plant has started although a letter of acceptance to the still unannounced selected bidder has not yet been issued.

Mr George Borg, chairman of the Water Services Corporation, confirming that work was in hand, told *The Malta Independent* on Friday that the Treasury had been informed of who the selected bidder was.

In order "to gain time" it was decided to ask the bidder to start installing the two trains immediately rather than wait for the letter of acceptance.

When asked who the bidder was, Mr Borg said he preferred not to give any details at this stage because "there could be changes". But the work has already started, he was told. However Mr Borg still refused to say who the selected bidder was.

It could not be established how

the required equipment was already available in Malta before the release of the letter of acceptance. The two additional trains at the Pembroke RO plant will increase daily water production there by 1.8 million gallons. The Corporation is expected to exercise an option on a third train.

The two trains being installed were expected to become operational in a few weeks' time, Mr Borg said.

Figure App.3.6.38.

a. *The Malta Independent* 15/8/93 p.29.
b. *The Malta Independent* 8/8/93 p.52.

Pembroke: 'Just what is going on?'

Foreign companies wary of local tender procedures

Foreign companies are looking at the way international calls for tenders are being treated in Malta and some say they will be "reluctant" to tender again following the Pembroke reverse osmosis plant extension contract - where work was started by Polymetrics even before the tender was formally awarded.

"If Polymetrics have been awarded the tender, people are bound to be very sceptical about any Maltese tender for water plants," said Mr John Colburn of Wier Westgarth, one of the companies bidding for the project.

A spokesman for an Austrian company Hydro Technik, which also tendered for the works at Pembroke, said his company would be writing to the Treasury because it wanted to know "what the hell is going on".

'Direct order'

Wier Westgarth has already written to the Treasury protesting about the way matters were being conducted. In their letter, Wier Westgarth insisted that their bid was advantageous because it offered reduced running costs due to lower power consumption and longer-life water filters, known as membranes.

"Polymetrics appear to have purchased parts before the tender was issued. But there was no indication of the availability of such



Desperate measures for precious water

Angry residents of Tal-Hawli in Cottonera yesterday broke into a sealed well after being without water for four days.

"People were up at 4am filling buckets with the green stagnant well water," said one resident.

"The water will flush our toilets and clean our houses but it is not potable. If people drink from this water an epidemic could arise."

parts to the other tenderers," Mr Colburn said.

Mr Manfred Schierach of Hydro Technik, said: "The tender should be cancelled and re-issued. All companies should have the same chance, otherwise there should have been a direct order.

"Obviously there must be something wrong. There are many questions about what is going on in the Water Services Corporation. We have never experienced this situation, not

even in countries like Uganda," Mr Schierach added.

Contacted on Friday afternoon, Prof Josef Bonnici, Parliamentary Secretary in the Ministry of Finance told *The Malta Independent*: "The tendering procedure is complex. Many factors are involved before a decision is taken. I do not know the details about this case and I cannot find out on Friday at 4pm." Prof Bonnici suggested contacting the Accountant General.

Figure App.3.6.40.

- a. *The Malta Independent* 22/8/93 p.1.
b. *The Malta Independent* 22/8/93 p.5.

Chairman replies over Pembroke RO

*From the chairman of the Water Services Corporation
Mr George Borg.*

Before commenting on your article "Pembroke: Just what is going on?" carried on the front page of your issue of 22 August 1993, I am listing below the salient points connected with this tender:

1. Call for tenders issued on 26 January; closing date 18 March 1993.

2. Bids were received from: Hydrotechnik GMBH of Austria, Ionics Italia Spa (Italy), Polymetrics Seawater Systems Inc (USA), Weir Westgarth Ltd (UK).

3. These bidders submitted a total of 24 options, of which there were 18 by Polymetrics, 2 by Hydrotechnik, 3 by Weir Westgarth and 1 by Ionics.

4. Six options by Polymetrics were out of specification and technically not acceptable.

5. The technical analysis of the offers by a specially-appointed Water Services Corporation Adjudicating Board was completed by the 30 June 1993.

continued on page 5

WSC Chairman replies over Pembroke

continued from page 1

6. The plant selected was technically acceptable, had the cheapest capital cost, worked out to be cheapest on running costs and hence produced water at the lowest cost. It was clearly the most advantageous offer.

7. The Adjudicating Board's recommendations were later approved by the Board of the Water Services Corporation and by the Contracts Committee.

8. In order to accelerate water production, the Water Services Corporation decided to utilise existing inventories of

components in Malta to put two trains on line in the shortest possible time.

As your readers may see from the above, the Corporation followed all the normal tendering procedures and regulations. The decision to accelerate water production, which the Corporation believes was right and very justified in the circumstances, was fully explained in my letter to *The Malta Independent* published on the 15 August 1993.

For some unknown reason, you seem to have completely disregarded the points made in that letter, and which would have clarified much of the comments in your

article of the 22 August 1993. It is disappointing to note that a newspaper, and one which incorporates the word Independent, could carry out such unbalanced reporting and be so biased against the Water Services Corporation.

I have no doubt that there are members of your staff who are conversant with local government tendering procedures and regulations.

They should know that according to these procedures, the Water Services Corporation could not discuss the situation with the various tenderers prior to the award, except on points of

clarification which were in fact obtained by fax.

In fact it is the intention of the Water Services Corporation to invite the spokesmen of both tenderers mentioned in your article to meetings at the Corporation's office when the fairness, accuracy or otherwise of statements you attribute to various spokesmen of foreign companies questions of running costs, lower power consumption and longer life water filters, tendering procedures, etc. will all be discussed directly.

GW Borg,
Chairman

More questions on the Pembroke RO extension tender

I refer to the letter from Mr G. W. Borg, chairman of the Water Services Corporation (TMI, 15 August) and also to the front page article entitled "Pembroke: just what is going on?" (TMI, 22 August).

Mr Borg went to great pains reassuring your readers that the tender adjudicating procedure adopted was that normally followed. He goes on to stress the fact that his corporation had the blessing of "The Treasury" in making the award but he fails to highlight the fact that the treasury per force is guided by the recommendations and technical reports submitted by the relevant department placing the order; in this case the Water Services Corporation.

It was therefore quite futile invoking the treasury. The responsibility lies with Mr Borg's corporation in ensuring that proper tender procedures are adopted. It is a matter for his corporation to plan ahead and ascertain that water shortages do not bring about crises decision involving millions of liri.

It is quite pointless of Mr Borg to try and excuse the unorthodox method of completion of the plant by saying that water production has been outstripped by demand. It does not take much to realise that since a third of water production goes somehow lost, then shortages will arise.

His corporation has opted for the line of least resistance by producing a larger volume of water. The end result being that a third of a greater water production will then somehow go lost! Unless the corporation gets its act together, next summer will see a repetition of the situation, and "in need" the corporation will again be forced to make a crises award and quickly put together another plant by spending a few cool million liri.

Your newspaper raised the issue concerning contract awards by the Water Services Corporation over a year ago and your features carried warnings against awards being made in haste.

The various articles and letters, I believe, went unanswered by the corporation and it is only after another award was made that the corporation deemed it fit to somehow react.

One cannot help but ask why Mr Borg felt it unnecessary to clarify the incident whereby boxes of spare parts for the "Phase I" plant were noticed to be marked "reserved for Phase II." This incident occurred on the 12 February 1993 and before the date of the actual call for tenders had closed. Mr Borg, in a letter dated 19 February 1993 addressed to Polymetrics in USA, objected to the marking on the boxes saying that this gave "the *prima facie*" impression that the award of the tender was a "fait accompli." He went on to say how embarrassing it would have been had the press got wind of the incident. Yet, when *Alternattiva* reproduced his letter in full in their issue of May 1993, the Water Corporation lay low.

In his letter of 15 August, Mr Borg confirms that the spares held on standby for the existing plant (presumably Phase I) are being used to complete Phase II. It therefore follows that the *prima facie* impression given in February ended up by being the correct impression in August. Those spares did end up being used for "Phase II"! How can the public therefore be assured that there was no *fait accompli*?

The award of this contract raises a number of questions among which:

- 1) The spares used (amounting to a few million dollars) are presumably owned by the WSC as they form part of the operation

and maintenance (O&M) contract. Will the WSC be compensated by the contractor for making available its own paid for spares?

2) Will the building of the new plant be carried out during normal working hours? If so this could result in the WSC paying twice for the same job i.e. once under the O&M contract and another under the tender award.

3) It appears that the equipment and also the manpower required to build the plant may be both already paid for by the WSC under the O&M contract. What remains then is the design of the plant to which the WSC

should have access considering that this is the umpteenth time that it has bought plants from the same contractor. If this is the case, then one enquires as to why the WSC was not competent to build the plant itself.

Mr Borg refers to the "much publicised" O&M contract. The truth is that the contract for its award was not publicised at all as the WSC preferred to place a direct order and did not seek offers other than from Polymetrics to whom it awarded the contract.

Could Mr Borg make the contract public bearing in mind that this is a public corporation and

the circa Lm10 million being paid out are public funds?

You issue of 23 May carried a question and answer feature with Mr Anthony Riolo, the chief executive of the WSC subsequently (on 30 May 1993) a letter headed "Questions the water services corporation must answer" was carried and this posed a number of interesting questions which the WSC deemed fit to ignore.

That letter contained a number of pointers regarding the tender award itself, and Mr Borg may now favour your readers with a long overdue reply.

Nannie and address supplied

Figure App.3.6.41. The Malta Independent 29/8/93 p.27.

a

Water corporation tenders

The public relations officer of the Water Services Corporation, in a letter to *The Malta Independent* (5 September) invited me to a meeting at the corporation's head office "to discuss the points raised" in a previous letter of mine.

A number of questions concerning the award of tenders were raised yet, so far, the corporation has chosen to leave these unanswered.

Does the corporation really believe that it can shrug off its responsibility to the public by "inviting" (for which read "challenging") a member of the public to reveal his/her identity?

The Water Services Corporation is a public body; the tenders it issues are public.

Tenders and the money that funds them are public money. The questions have been put in a public forum and that is where they should be answered.

In the interest of transparency, accountability and integrity the Water Services Corporation cannot but answer the legitimate questions being put to it.

It should pluck up courage and do so without further hesitation.

Name and address supplied

b

Water Secretary sues *The Malta Independent*

Mr Ninu Zammit, Parliamentary Secretary for Water and Energy, has sued *The Malta Independent* for libel following the publication of an article entitled "Tender critics invited to Malta".

Mr Zammit said the article, carried on the front page of the 29 August edition of the paper, reported that he had told a press conference that: "The extended Pembroke reverse osmosis plant was in effect tailor-made for Polymetrics Seawater System Inc. - and his comments implied that the company had a distinct advantage over others who tendered for the work."

He denied saying those words or making such implications. Thus, he alleged, the article was intended to negatively affect his reputation and to expose him to public ridicule. It was further aggravated, he claims, by the fact that he is the parliamentary secretary responsible for water and energy, and thus also responsible for the reverse osmosis plant.

Figure App.3.6.42.

a. *The Malta Independent* 12/9/93 p.27.

b. *The Malta Independent* 19/9/93 p.4.

a

Where the wind blows

From Mr Mario Cachia

Marsascala residents in particular must have read with great interest the article "Smell gets up residents noses" (TMI, 2 January, page 7), about the filtering systems to be installed at the solid waste recycling plant.

However, it is worth raising a number of points. Why was the solid waste recycling plant assembled in Marsascala? The location is mainly residential with appreciable investment in touristic facilities and a major recreation centre in the south of the Maltese Islands. Surprisingly enough, all this is within 500 metres from the solid waste recycling plant. Moreover, numerous residents live as close as 100 metres from this site.

If water from the sewage treatment plant was indispensable for the operation of the solid waste recycling plant, then the latter should have been assembled at a future date, next to one of the three proposed sewage treatment plants recommended in the Structural Plan for the Maltese Islands.

Since the only end product of the plant shall be used to reclaim land and in agricultural and afforestation projects, it would have made much more sense to locate the solid waste recycling plant in an agricultural and farming area.

One wonders whether the same consideration would have been given to a site with similar characteristics to Marsascala had such a site been on the northern coastline of the island.

Much better use could have been made of the relatively scarce land for urban development in the area.

Until a solution for the bad smell emanating from the plant is found, the government should seriously consider postponing all activities in the plant. Alternatively, if fermentation of the waste is the problem, such

activity should be carried out in non-residential areas.

Bars and restaurants in the area during the festive period were practically deserted. This may be the first of a series of results following the operation of the solid waste recycling plant.

Undoubtedly there is a political price to pay for this failure. However, will this suffice to solve our problems or shall we hope of favourable wind directions?

M. Cachia
MARSASCALA

b

Waste transfer from Gozo

From Mr Paul Bezzina

AS IF it is not enough that the south of Malta has been burdened by the Sant'Antnin plant, it has now been announced that a station is being set up in Gozo for the transfer of waste to Malta! (*The Sunday Times*, December 12).

Cannot Gozo recycle its own waste? Have serious studies been made regarding the cost of transferral and the harm to the environment in Malta? Is Malta to be burdened by truckloads of waste from Gozo on our roads?

Besides, has anyone thought of effective plans for the elimination of obnoxious odours originating from Sant'Antnin plant?

I hope that common sense will prevail.

P. BEZZINA
Vittoriosa.

c

■ Marsascala residents were pleased to note that their pleas about the smell from the waste recycling plant will finally be heeded. What they ask for now is that the government does not take long to implement its plans. They hope that it will not be long before words are put into action.

Figure App.3.6.43.

a. *The Malta Independent* 15/8/93 p.17.

b. *The Sunday Times* 19/12/93 p.16.

c. *The Malta Independent* 9/1/94 p.6.

Water emergency

A topic that has raised so much controversy and heated political discussion over the past 10 years has been the usefulness or otherwise of installing seawater distillation equipment. For years, Socialist politicians have consistently derided the previous Nationalist Administration's strategy in providing the Island with non-conventional means to meet shortfalls in water production.

The Nationalists had considered the installation of the distillers as a vital infrastructural service, indeed as essential as the provision of adequate electricity generation capacity. To an Island with a standing record of a poor rainfall and depending entirely on outside sources for energy supplies, the need to ensure adequate water supply and electricity generation capacity was given top priority in development.

Few, if any, would disagree with the Socialist Government's policy of exploiting ground water resources, in so far as this is feasible. Measures to conserve supply, to harness, as much as possible, run-off water and to use water recycling methods for irrigation, are also considered appropriate in an overall water supply plan.

However, the Socialist Government went off course when it did not make adequate infrastructural provision to meet periodic shortfalls in production supply. The public is today paying for Government's lack of foresight in this regard through water shut-offs, a measure which is causing a great deal of inconvenience and even hardship to many, particularly to those living in areas which are more badly hit than others.

In the development plan proper, published over the week-end, Government is at last recognizing the need to make stand-by arrangements to meet the demand in case of a shortfall in production supply. This need is explained by Government in this way: "This is necessary not only to meet the emergency situation caused by the exceptionally low rainfall during the 1980-81 season following successive years of dry weather, but also to ensure the availability of supplies in the future."

Surely the Government could have foreseen, over the past 10 years, the possibility of an exceptionally low rainfall. The fact that it did not is seen by many as confirmation that the Socialist Administration appeared to act out of pique over the question of distillation.

Coinciding with the publication of the development plan was the call for tenders for two seawater desalination systems. According to the call, Government is now thinking of installing an independent multistage flash plant, and two independent reverse osmosis single-pass seawater desalination plants.

Shadow Minister for Public Works Mr. CARM LINO SPITERI said, when commenting on the water situation some weeks ago, that the reverse osmosis system was preferable as a single-purpose system, that is, only to obtain potable water from seawater. The capital costs of the distiller and reverse osmosis were almost equal, but the reverse osmosis was cheaper to operate.

Mr. SPITERI also said that through contacts, the reverse osmosis system could be brought here just seven months after the placing of the order. Although this is a reasonably short time, Government needs to look into the possibility of importing — as an emergency measure — a sufficient volume of water to ease the current shortage.

Above all, it has to be ensured that the Island will not be caught once again with a production shortfall. Distillation is expensive, but a developing economy aspiring to achieve a higher economic growth rate and an improved living standard could not make much headway in this regard without the availability of such an essential commodity as water.

Water supply shut-offs

An already bad water situation has suddenly deteriorated into an acute, well-nigh intolerable problem for many a household. The supply shut-offs are becoming more frequent and longer. Families throughout Malta, and their guests, the tourists, are at times being placed in a situation where they almost have to beg for water for their everyday needs.

Even the one-day-a-week per district cut-off of supplies, introduced as the summer was approaching, is not being followed regularly. Not only are complete shut-offs in some areas lasting much longer than the promised 24 hours, but in between some localities have such low pressure that water hardly ever reaches the first floor of houses and flats. Rooftop storage tanks, which up to some time ago used to fill up during the night, now remain empty for days on end.

Meanwhile people have to drink, wash themselves and their clothes and clean their houses, particularly at this time of the year when temperatures hover around the mid-30 centigrade. The situation as it now exists is becoming not only impossible for several households but also dangerous to the health of the people.

There is one glaring fact which everybody must have by now realized only too well — that the supply of potable water in Malta today is insufficient to meet the needs of the population, its industry and its tourism. Water from rain, boreholes and the few desalinators available has proved to be inadequate for several successive summers.

Worse still the authorities have failed to announce a single project as an immediate solution, such as importing supplies in water tankers from Italy.

On a long-term basis, the authorities have opted for a system of drilling more boreholes and providing various water catchment areas and accompanying purification plants. That full use should be made of rain water, the cheapest possible source, is laudable. What is questionable is whether the varying amount of rain that falls over Malta is hardly ever adequate to ensure a sufficient supply, considering also the wastage of rainwater running into the sea.

The time has come for the authorities to reverse their thinking, as regards distillation of sea water. This process is inevitable to supplement supplies adequately all the year round for a population of 318,000, a tourist intake of 700,000 a year and a growing industry.

Unfortunately a joint water project proposed by France, Italy and West Germany to help Malta exploit to the full all its natural water resources, was not acted upon by the Malta Government. It has been shelved for reasons which did not sound at all convincing.

The time has certainly come for the people of Malta to be rewarded with one of the most essential everyday needs — water from the tap in adequate quantities at all times. For so many people to be called upon to endure so much, year in, year out, is becoming too deplorable.

It is no longer a question of stretching existing supplies as far as possible. The people are thankfully more hygienically-minded. It is a visible fact of present-day society. The march forward must not be halted or interrupted because of lack of water.

WATER PRODUCTION FIGURES

From Mr. Renato La Ferla

Sir, — I wonder how Socialist agit-prop will react when faced with the obvious conclusions that can be drawn from the figures released by Minister Sant in answering a Parliamentary question on water production figures (The Times, July 27).

A simple subtraction will give an imbalance of consumption vs the year round, or their production of slightly over 25 million gallons for 1980.

Since the production figure for the distillers is given at 784,979,320 gallons, and we know that they each have a capability of 1 million gallons/day, we can easily conclude that 2 distillers have

been working round the clock all the year round, or their production of slightly over 25 million gallons for 1980. Now your gentle reader will recall that another distiller had been ordered from Westinghouse of similar capacity but that the order was cancelled and a penalty had to be paid when the borehole mania set in.

Moreover, the original plans had also envisaged the setting up over the past ten-year period of another two distillers each of 1½ million gallons per day capability. Meaning that with these three other distillers in action we would have been able to produce an additional 4 million gallons/day or a total of 1,460 million other gallons.

Now if, to the 25 million gallons imbalance, we add the 1,285 million gallons produced by the boreholes, we get a total 1,310 million gallons. The additional distillers, which then cost much less, would between them have produced more than enough to rub out the deficit.

Yours truly,
RENATO LA FERLA
Stroma.

Figure App.3.7.1.

a. The Times 19/8/81 p.10.

b. The Times 12/8/81 p.10.

c. The Times 18/8/81 p.10.

a

Water supply problem

The outline of the 1981-85 Development Plan, published last week, amply indicates that as regards water supply Government intends to continue with its efforts to explore and exploit existing sources — collection of rainwater and boreholing. There is only a vague reference to investigating a technological process which would be the most suitable for producing water outside conventional methods.

There is no reference in the outline to the possibility of laying a pipeline between Malta and Sicily or Southern Italy. This was announced by the leader of the Italo-Maltese mixed commission set up under the neutrality agreement with Italy. Indeed, the outline of the plan speaks of increasing water catchment projects and the purification of rainwater via water treatment plants, more drilling of boreholes, trial drilling for water in depths of between 300 and 1,200 metres, and arrangements for utilizing rainwater which falls on the roofs of factories, schools, hospitals and similar large buildings. The authorities also hope to minimize loss of water through leakages.

The fact remains that up to now Malta and Gozo have to continue to depend for supplies almost entirely on the annual rainfall which over the past few years did not provide the required volume to meet the demand of the population, swelled by about 700,000 tourists a year. Because of this, the authorities had to cut the supply at least for one day per week in every locality to conserve water resources as much as possible.

Since rain is the cheapest source of supply, it is wise to harness and utilize to the full, either for consumption or irrigation, as much of what falls during the short rainy season. Government says that boreholing is giving good results. Considering the cost of other production methods, it is also relatively cheap. Had it not been for the extra supplies from the distillers and boreholes, the problem would have been bigger than it is at present.

Even so, because of the planned expansion of the industrial base and the growing demand generated by tourism, the authorities need to seriously consider if the plans they have in hand will solve the problem on a long-term basis.

A Finnish firm is at present laying a water pipeline from Gozo to Malta. Much of the water to be pumped to Malta is expected to come from the Gozo distiller which, having been left idle for several years, is being reactivated at a very high cost. But how far will this go towards alleviating the present problem remains to be seen.

Government has been against the installation of more distillers on grounds that the water would come to cost too much. However, there now appears to be mounting interest in the reverse osmosis process. What has to be kept in mind is that, given the development of the country, it is no longer possible to rely solely on the annual rainfall. Emphasis should be laid on increasing the supply both through improved harnessing of rainwater and through other methods.

The possibility of laying a pipeline between Malta and the Italian mainland has to be considered from many angles. Besides the cost of the project, the Administration would have to consider whether it would be advisable for the Island to come to depend on another country for the supply of a substantial volume of water, when the Island can provide its own sources through the installation of distillation plants.

b

Water supply imbalance

If anyone from the Prime Minister downwards thinks that the people are at all happy with the water situation, then he is far off the mark. Too many households from Marsascala to Sliema and beyond being still being subjected to waterless days — and this is no joke especially for mothers with children and elderly couples.

It is known that last year water consumption exceeded supply by over 25 million gallons. It is only too clear that this imbalance is repeating itself with a vengeance this year. Mr. L. SANT, the Works Minister, supplied the figures in reply to a Parliamentary question put by Dr. JOSIE MUSCAT, the Nationalist MP recently.

It was stated that Malta's water consumption last year reached 4,927,362,200 gallons, while total production that year was 4,902,286,323 gallons. A breakdown of this figure was also given: water production from the distillers reached 784,979,320 gallons; the remaining volume came from pumping stations, 2,739,639,363 gallons; boreholes, 1,285,126,128 gallons; springs, 89,124,213 gallons; and treatment plants, 3,417,200.

The Government's efforts to provide adequate water supplies for domestic and industrial use have not proved to be successful enough to make production exceed demand. In spite of that, its policy is still based on exploration and exploitation of existing sources, namely the collection of rainwater and boreholing. In the Outline of the 1981/85 Development Plan, only a vague reference is made to investigating a technological process to produce water from sources other than conventional methods.

The Outline of the Plan mainly refers to increasing water catchment projects and the purification of rainwater, via water treatment plants, more drilling of boreholes, trial drilling for water in depths of between 300 and 1,200 metres, and arrangements for utilizing rainwater which falls on the roofs of factories, schools, hospitals and similar large buildings, as well as cutting down on leakages.

These plans and projects depend very much on the annual rainfall. For this reason, therefore, alternative sources of supply must be available to supplement shortcomings from natural sources.

Such an alternative source is the desalination of sea water, a process which, the Nationalist Party is rightly convinced, is the best way of ensuring an adequate water supply at all times. The Nationalist Party is known to be studying what are the most suitable systems for Malta — the distillation or reverse osmosis systems.

Meanwhile, the people would like to hear about immediate plans to meet the current shortage. The "one waterless day a week" plan, which in many cases is not being followed, has certainly not solved the problem.

Complaints from households are still only too frequent, not only because the main supply is cut more than one day a week, but also because low water pressure keeps water tanks empty for days on end. The bowser service, primitive and cumbersome, is far from satisfactory.

One quick way of relieving the situation is to import water from Italy. This country already has special water tankers in service to supply water to offshore islands and can, therefore, help to relieve Malta of its water problem without great difficulty.

c

GOVERNMENT'S WATER POLICY CRITICIZED

By a Staff Reporter

In a statement strongly criticizing Government's water supply policy, the Nationalist Youth Movement said yesterday that the call for tenders for the water distillation plants did not mean that the problem had been solved.

Months had to pass before the plant could be installed, and the people, said the Youth Movement, had already suffered enough through the water shortage. A way had to be found to ensure water supply for the Island's immediate needs.

Blaming the Government for the water shortage, the Movement mentioned the cancellation, by the Government in 1971, of two distillers that had been ordered by the Nationalist Administration. Had these been installed, the people would not have faced a water shortage problem, pointed out the Movement.

The Movement also mentioned the campaign against the use of the distillers and a known remark to the effect that the distillers should be dismantled and placed outside the door of the house of ex-Nationalist Works Minister Dr. Carmelo Caruana.

But then a short time ago Government had to start operating the distillers again, and was now even planning to buy another distiller.

Figure App.3.7.2.

a. *The Times* 9/7/81 p.14.

b. *The Times* 5/8/81 p.3.

c. *The Times* 20/8/81 p.18.

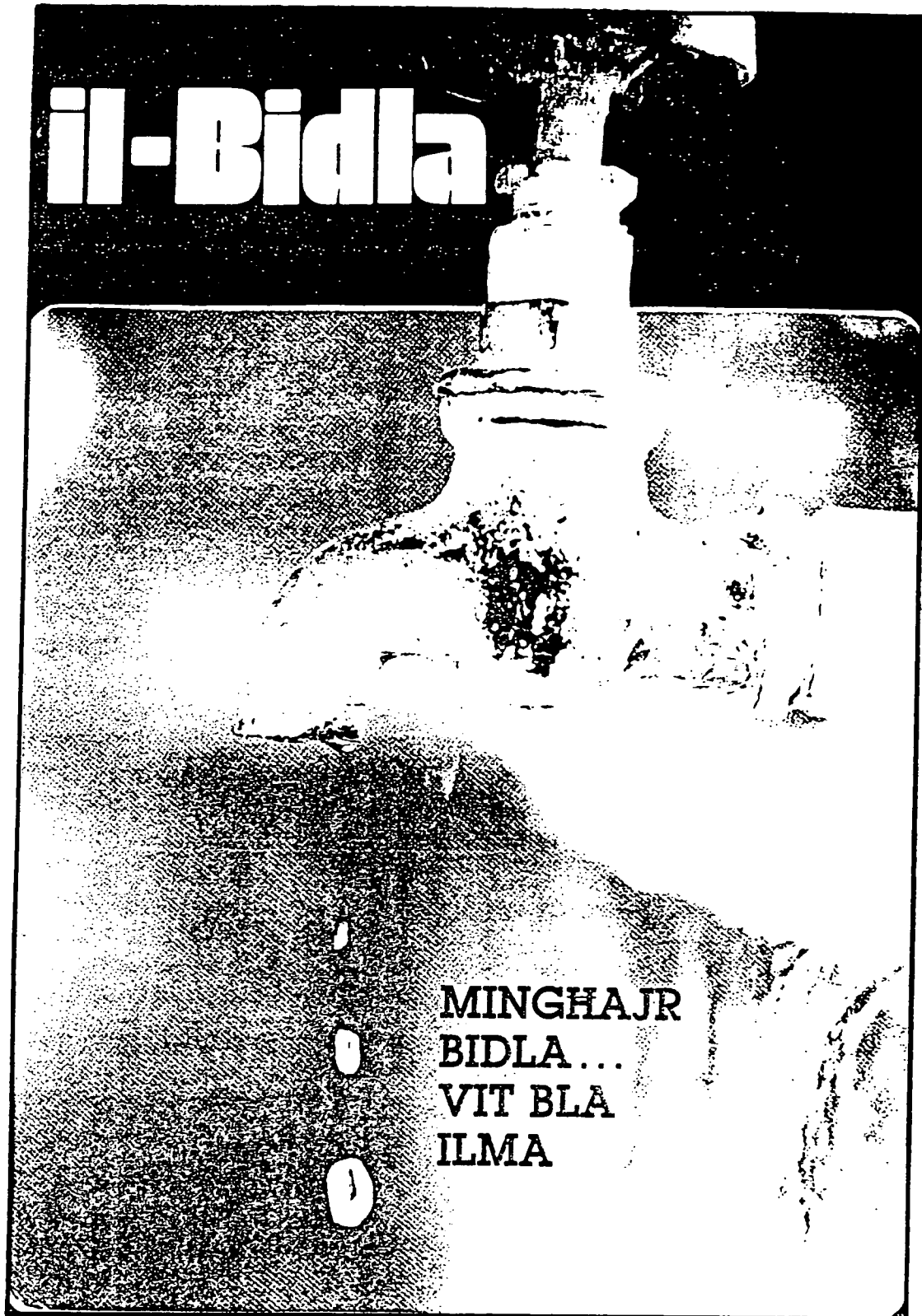


Figure App.3.7.3. Nationalist Party, 1981.

FUQ IX-XANDIR KULJUM TISMA' DAN L-AVVIZ

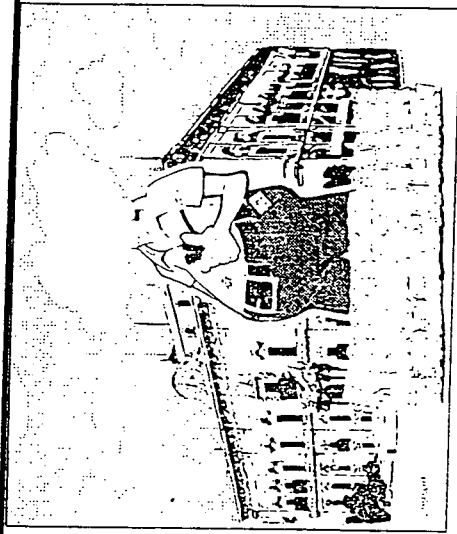
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diffikultajiet teknici ghandha tinqata/kellha
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MISSHOM JISTHUI



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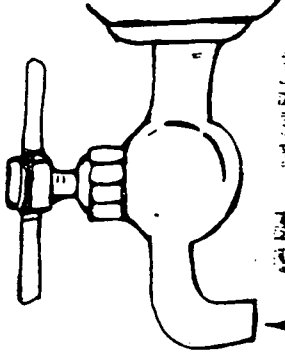
- MAQTUH MILL-POPLU . . JGHIX FIS-SHAB
- JIFHEM F'KOLLOX . . . TA' QABEL KOLLU
HAZIN
- MA JAFX MINN XHIEK GHADDEJ IL-POPLU
- FORSI IL-QTUGH TWIL TAL-PROVISTA TA'
L-ILMA QATT MA LAQTITU ILU
- L-ILMA HUWA L-HAJJA — META
MINTOFF FALLA FIL-QASAM TAL-ILMA
FALLA FL-AQWA OGGETT
- L-ILMA HU SAHHA U NDAFA — ANKE
DAN KAPRICC TAHT MINTOFF
- X'JISWA LI TIVVOTA GHAD-DEPUTATI
SOĊJALISTI META DAWN LANQAS FETHU
HALQHOM FUQ PROBLEMA BHAL DAN?

IVVOTA P.N.

ŽGUR

LI JEKK

TIFTAH



SE SSIB

L-ILMA?

- DAN HU PROBLEMA NAZZJONALI
LI MINNHU JIDDEPDI
L-GHIXIEN TAGHNA
- ARAW KIF IL-PIKA U R-RAS
IEBSA TA' BNIEDEM WIEHED
QED ĠĠIEGHEL IL-POPLU
KOLLU JBATI
- SE NIBGHQU SEJRIN HEKK?

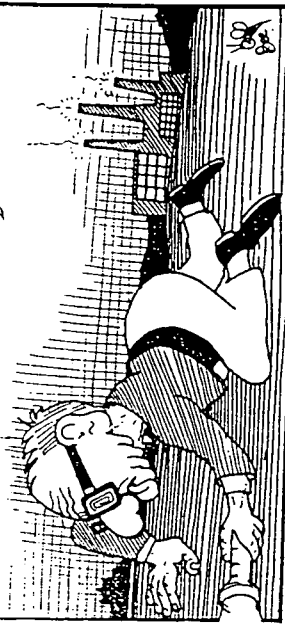
Figure App.3.7.4. Nationalist Party, 1981.

L-ilma

- Il-kriżi ta' l-ilma li għandna illum hija tabiħhaqq hitja ta' Mintoff. Gabbha b'idejha.
- Dan għaliex Gvern Nazzjonalista ta' qablu kien ġa huseb biex ordna żewġ distillaturi ta' l-ilma bahar oħra.. ma' dawv li kien hemm.
- Mintoff hassar dan il-kuntratt u hallas mijiet ta' eluf ta' liri bħala piena tal-ksur tal-kuntratt.
- Dahhalha f'raħsu, kontra l-ichma ta' kull min kien tassew jifhem, li jipponpja hafna aktar ilma minn taht l-art. B'hekk għamel hura lis-sistema ta' provvista ta' l-ilma minn taht l-art.
- Mintoff qallina, "Dawn id-desalinaturi n-Nazzjonalisti x'għabuhom jgħmlu? Dan iherbiq Ahna fil-boreholes nemmu".
- Ir-riżultat kien qnugh kontinwu ta' l-ilma u telagħna lura għal żmien il-gwerra, meta konna nigbru l-ilma bil-barnil.
- Wara għaxar snin Mintoff bela' kienmu, u waqt li kien qed jkaxxah lura yachti, il-Gvern tneghu halbar sejh għall- offerri ta' żewġ desalinaturi.
- Il-Gvern Mintoffjan għagħal lil-poplu jbatu kollu minhabba l-ras iebes u pikuża tiegħu.

Il-kliem vojtt tagħhom

GVERN BLA ENERGĠJA



- Qabel ma telghu fil-gvern, il-Mintoffjani kien u jgħidu li "l-impriza ta' l-elettriku mhux biss mhux adegwata għall-bżonnijiet tas-snin li għejjin izda wkoll immexxija b'tell kbir". Qalu wkoll li "l-ilma qed tiġi prodott b' metodi l-aktar għaliġin".
- Fl-1976, wegħeduna li l-Power Station kellhom iżidulha magħha żewġ generators oħra li kien u ser jiddubbaw mingħand il-Taljani. Dan ifisser li l-ewwel hames snin li kien fil-gvern Mintoff, ma sar xejn fil-Power Station, bħalma kien u qalu.

FIL-PROBLEMA TA' L-ILMA

MINTOFF ZELAQ FIN-NIEXEF



- Dwar l-ilma, kellhom il-wicc tost jgħidu li "l-boreholes għandhom hijja indefinita", u illum għandna boreholes rovinati mis-sistema Mintoffjana.
- Mintoff innifsu qallina fl-1970 li kien u qed jahdmu biex "fi żmien sentejn kull dar u lukanda jkollha l-ilma tagħha mingħajr il-vit tal-Gvern". Mintoff halliena bil-għax għal għaxar snin shun.
- Fis-supposti Pjan ta' l-iżvilupp 1981 – 85 il-Gvern Mintoff-jan jistqarr li beħsiebu jgħmel dak li qed jagħmel issa – jgħifieri jinfagħna fil-baħh ta' l-għatx u d-dlam.

Figure App.3.7.5. Nationalist Party, 1981.

L-elettriku

- Wara li Gvern Nazzjonalista ha hsieb biex jibni power station, li ghal dak iż-żmien kienet moderna, il-Partit Mintoffjan ma ghamel xejn biex jiehu hsieb din l-istation.
- Allavolja l-Gvern Mintoffjan mar jtkarrab ghand it-Taljana biex jagħtu zewġ generators qodma, u li fl-aħhar tawhomli izda għadhom ma jahdmux, is-sitwazzjoni ta' l-elettriku hija mwiegħra.
- Hija haga normali, l'każ bhalma hu l-elettriku, li gvern ikollu riserva ta' kapacità. Izda jekk nibqgħu sejin bil-politika Mintoffjana, il-generators li għandna dalwaqt ma jkunux jiflihu għall-enerġija elettrika li għandna bżonn.
- Fi kliem iehor il-Gvern Mintoffjan qiegħed jippjana kif igħib krizi, minflok kif jevitaha.
- Mhuwiex mod dan kif tħalljar l-investiment fl-industrija, li ma timxix bil-qiegħ tad-dawl. Għalhekk il-Partit Mintoffjan qed ipoġġi fil-periklu l-impjeg ta' eluf ta' nies minhabba l-falliment tiegħu fil-qasam tad-dawl.



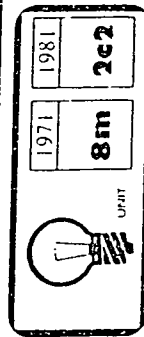
L-ALTERNATIVA NAZZJONALISTA

Gvern Nazzjonalista jiehu l-mezzi kollha biex qatt ma tirrepeti ruħha l-krizi ta' l-ilma.

Gvern Nazzjonalista jwiegħed li ma jhallix il-poplu mingħajr ilma, u ilma ta' kwalità tajba, kif ukoll li jsalva, sa fejn jista', s-sistema tal-provvista ta' l-ilma minn taħt l-art, imhedda jekk mhux irvinta mill-Gvern Mintoffjan.

Gvern Nazzjonalista jiehu hsieb li jkun hawn enerġija skond il-htigijiet veri tal-pajjiż.

IL-POPLU MJASSAR MILL-PIKA U R-RAS IEBSA MINTOFFJANA



IL-POPLU MJASSAR MILL-PIKA U R-RAS IEBSA MINTOFFJANA

Issieheb fil-bidla

Ivvota PN

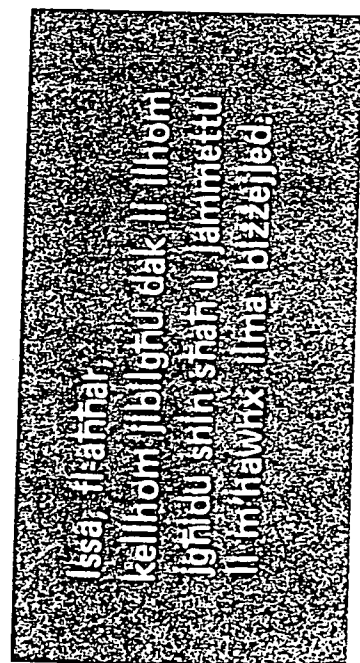
Figure App.3.7.6. Nationalist Party, 1981.

QALULNA

Kif riduh jifhem il-poplu, jekk għal snin sħaħ ippruvaw jgħadduh biż-żmien, jaqtgħulu l-ilma bl-iskuża ta' f'esarat?

Kif riduh jifhem il-poplu, jekk għal snin sħaħ qalulu li min f'aseb għall-ilma kien kapriččuż.

Kif riedu jifhem il-poplu jekk għal snin sħaħ qalulu li m'hawnx problema ta' l-ilma?



- * Biex ninħaslu fi f'it ilma
- * Biex nużaw l-ilma tas-sadid
- * Biex nifflaxxjaw bir-razzjon
- * Li se jħaffru iżjed toqob
- * Li l-għatx se jitqassam bil-ġustizzja

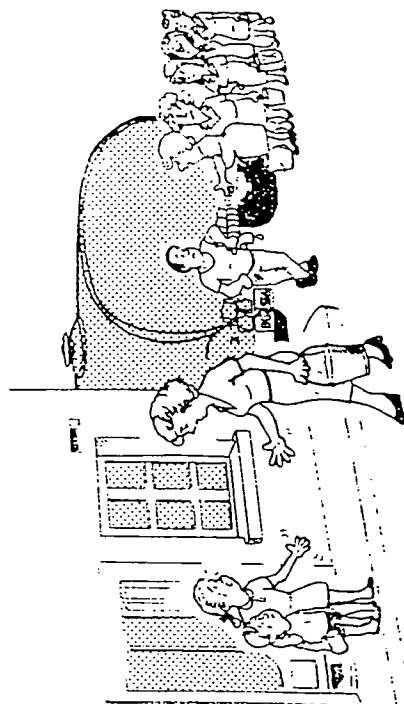


Figure App.3.7.7. Nationalist Party, 1981.

MA QALULNIEX

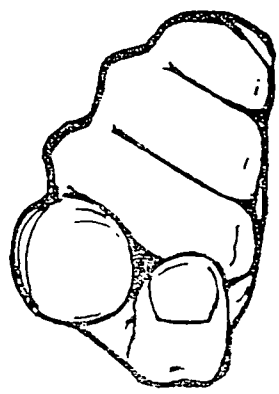
- * Li d-distillaturi li ġab Gvern Nazzjonalista qed jaħdmu b' kemm jifilfu u li allafhares ma kenux huma
- * Kemm hi s-salinita' (il-kontenut ta' melħ u minerali oħra) fl-ilma li qed itellgħu mit-toqob
- * LI NINSABU FIEK NINSABU GĦAX MINTOFF WEBBES RASU U MA KOMPLIEX FUQ IL-PJANI SERJI TAN-NAZZJONALISTI.

SE TIEHDU INT IT-TORT?
JEW SE TAGĦTIH LIL MIN HAQQU?

HU SEHEM FIL-BIDLA

LE BIDLA TRISSER ILMA FIL-VIT

M'GHANDEKX ILMA?



HEKK QALU
TAX-XANDIR U TAL-GVERN

F'intervista li Xandir Malta għamel lil tliet impjegati tad-Dipartiment ta' l-Ilma, ingħad li dil-problema ġiet fuqna għax xi wħud mill-poplu għadu ma fehemx kemm l-ilma hu problema kbira.

Figure App.3.7.8. Nationalist Party, 1981.

a

Call for Government statement on persistent water cuts

By a Staff Reporter

If it is of any consolation to the thousands of households suffering from persistent water cuts, Maltese travellers returning from Catania and other places in Sicily have reported that there too, waterless days are not uncommon, but that they nonetheless spoil your holiday fun.

The situation in Malta is different of course not only because households have had to put up with water cuts for at least these past five or six summers but also because despite official reassurances that supply by far exceeds demand, the situation seems to be getting worse with more localities afflicted by more or less permanent water cuts.

Yesterday, for instance, complaints from long-suffering "water-less" households reached The Times offices from Naxxar, Attard, Mosta, Balluta and Sliema.

What was worrying most of them was that whereas so far they had more or less resigned themselves to passing the entire day without water but fill up when the supply is resumed, at a trickle, at about 10.30 p.m., they are now not even getting the trickle.

One resident in the Tigné area, Sliema, said that for the past 15 days they did not even get a trickle, by day or by night.

Water is supplied, occasionally, by bowser but only two or three

days after a request is made — if at all.

The situation is also reaching intolerable levels at Naxxar, in Labour Avenue, for example, for the past two weeks they have had hardly any pressure at all.

Their plight seems to complement that of some areas in Mosta. A Naxxar resident remarked that whenever they were lucky enough to get some water, he knew that his sister in Mosta had to go without. The opposite happened when there was water at Mosta.

In Qui-si-Sana, where many residents live in blocks of flats, the pressure is so low that the water does not even reach the second floor.

One resident said he has been regretting making the move to Qui-si-Sana only a few weeks ago. He would not have moved had he realised the water situation was so bad.

What most of those hit by the water cuts find exceedingly annoying is that, officially, the water supply is more than adequate to meet demand.

According to the recently published Reports on the working of Government Departments for the Year 1983, water production reached 25,854,592 cubic metres in 1982 and 28,122,888 in 1983.

The consumption figures were 25,572,040 and 28,188,927 respectively, but production figures were supposed to be higher this year.

They also recall the Prime Minister, Mr. Mintoff, saying just after the last elections (with reference to the planned production of water from the reverse osmosis plants) that by the following summer, "Malta would be drowning in water".

Householders hit by the water cuts feel that a detailed statement, giving a clear picture of the situation, and what Government intends to do about it, is immediately called for.

b

LET'S HAVE THE WHOLE TRUTH

NOBODY knows what to believe in statements by the Government's Information Department to explain water cuts in areas which alternate or combine to cover wider areas day in day out, and week after week.

There are valid reasons for disbelieving what is difficult convincingly to explain after a Seven Year Plan followed by a Five-Year Plan and Malta still suffering from an extremely unreliable supply of water.

Explanations usually come in response to complaints by the public through the Press. There is no attempt, ever, to volunteer explanations with apologies for a failing water supply which should instead be a first-priority service for development.

Take last week as an example for this seeming official disregard of the plight of so many people finding themselves without water with a maddening regularity that is becoming an unacceptable way of life. Government's main concern seems to be to shield itself from criticism which it cannot escape no matter how hard it tries. Indeed the "easy" explanations given cannot possibly convince those daily facing the problem of no running water for home use.

The official reason given last Tuesday, for bone-dry pipes and empty roof-tanks, was damage to the principal main supplying Ta' Qali reservoir. This was supposed to comfort the sufferers in St Paul's Bay, Sliema (an area as short of water as its streets are full of pot-holes and deprived of street cleaners), Valetta and other areas.

Questions without number remained unanswered by that official explanation. Are all the dry areas supplied from that Ta' Qali reservoir? What sort of damage afflicted the principal main supplying this particular reservoir? Assuming that damage, of whatever kind, is immediately detected why aren't the people informed as soon as the damage is spotted? Why let the people find out the hard way, by opening up their taps to get only a whiff of air corroding their pipes as it rushes in to fill the vacuum created by the absent water? If damage is fully and truthfully explained, there is no reason to blame anybody for damage occasionally hits even the best kept piece of equipment. But if damage is due to lack of maintenance, or if power failure stalls the equipment, then the people have a right to know the truth. One thing is certainly true: such frequent failures were unknown in the past but have apparently become the scourge of the present. In this technological age serving with water a population inhabiting an island (leaving out Gozo which is supposed to help supply its sister island with water whilst parts of it also suffer from water cuts and frequent power failures) 27 kilometres long and 14 kilometres wide, should offer no problems unless the distribution system itself has become so prone to faults that it can no longer be relied on as a system.

The people will not be fooled

Whatever the damage to the principal main supplying Ta' Qali reservoir, it has been repaired, the people were officially told, last Tuesday, and the situation was expected to return to normal in the time it takes the water to resume its journey through the pipes. Water must have become exceedingly slow in this age of speed for throughout the week, in the same and in other areas, water was just as unavailable as before the said damage was officially said to have been repaired.

Because complaints came mainly from Sliema, the Information Division, on Friday, said that this was a sign of improvement. Are we supposed to believe that the Ministry responsible for water do not know which areas are daily finding themselves beyond the reach of the water supply? Can it be that they identify the dry areas, limited only to those reported in the press and then pretend that there is water everywhere else claiming wrongly, not to say misleadingly, that as an improvement and expecting to be believed? If this is the level reached in trying to fool the people then they must take the people to be fools indeed, which they are certainly not.

This time, last year, the people came close to being given the real truth when the Assistant Director of Public Works (Water Section) told the Press that water supply failures were due to power failures at the Reverse Osmosis plant at Ghar Lapsi and at pumping stations in different localities. Is that still the position?

When that public official gave a glimpse of the truth the responsible Minister tried to pass the (empty) buck to the officials as if they were the ones accountable to the people, which they are not. Witness the case of the Japanese Minister of Civil Aviation who has already promised to resign over the tragic crash of the Japanese Boeing 747 with the loss of over 500 lives. He is not shifting responsibility on to the dead pilot or hiding behind technical faults which he is trying to establish to the public's full satisfaction. If only our Ministers had the same sense of public accountability for the lack of such an essential public service as the supply of water!

Figure App.3.7.10.

a. The Times 17/8/84 p.7.

b. The Sunday Times 18/8/85 p.16.

a

WATERLESS DAYS

In 15 years of administering this country, the Socialists have, time and again, proved incapable of getting their priorities right. Since the electorate rejected them at the polls in 1981, instead of embarking on truly national priorities, such as tackling unemployment and creating investment opportunities, they wasted precious time and effort fighting useless "battles" against Church schools.

Instead of seeking to heal the wounds caused by the perverse 1981 election results, they made them bleed even more and are, to date, still dragging their feet over ways of ensuring that the will of the majority prevails at elections.

Instead of adopting the approach wisely taken by the previous Nationalist Government, namely strengthening the infrastructure and basic services for the people's needs, they neglected the infrastructure borrowing second-hand generating equipment and closing down the water distillation plants on the flimsy excuse that they were costing too much to run.

The Socialists' neglect of infrastructural services, particularly the water supply, has now finally caught up with them.

Certainly the water consumption needs of the Island are not the same as those of 1971. There has been a growth in population, a growth in tourism, and a growth in export-oriented industry and local manufacturing concerns which have all put an added strain on our limited water supply. But instead of utilizing the available natural resources to provide the Islands with an adequate water supply, the Socialists have tinkered with boreholes, delayed action over the replacement of faulty water mains and pipes, and only a few years ago decided to install a reverse osmosis plant.

Such a plant, we were assured by former Prime Minister Mr. MINTOFF, meant that we would henceforth "drown in water". This, as many residents in most areas know to their bitter experience, was far from being the case. Malta in 1986, in the sixteenth year of Socialist rule, is surely going through its worst year so far as the water situation is concerned.

The Prime Minister, Dr. MIFSUD BONNICI, speaking in Parliament on Wednesday, tried to defend his Government's efforts at finally coming to grips with the problem. The bowser service — a source of major irritation to householders at the end of their tether — would now be continuous, he promised, while Sliema and Gzira will be supplied directly by the new reverse osmosis plant at Tigne coming into operation within a week.

Dr. MIFSUD BONNICI's review of the areas hit by water shortage was far from exhaustive and the problem is not as limited as he made it out to be. The situation for many families has become simply intolerable, and nobody — least of all the Prime Minister — can blame them for resorting to such devices as extra water tanks or pumps at ground level to boost their water supply to the top floors.

All this of course has meant extra expense, not to mention the considerable amount spent on imported bottled mineral water — an expense which the consumer should never have been made to bear for a service which should be provided to him by the State, whatever the cost.

The general feeling, as thousands of households face yet another waterless day, is that however laudable these latest Government efforts are, they are too little and too late. On this score alone, the Socialists surely have lost the people's confidence.

b

Persistent shortage

The Minister responsible for a regular supply of water throughout the Maltese Islands must be having nightmares. No wonder. The appalling shortage of this precious commodity in various districts and for so long a time would indeed justify a frame of mind of deep anxiety and concern.

The Minister Mr. L. SANT must truly be deeply worried over this serious prolonged situation which has hit not only his constituents but consumers in general and, of course, our honoured guests, the tourists. A solution so far has proved elusive.

It was right that Mr. C. Spiteri, the Nationalist Party spokesman on public works, raised the subject once again at a meeting in Mosta over the weekend. The Government had for long failed to give a correct picture of the water supply situation, he said, and it was without any fanfares that it had become known that there were plans to expand the Ghar Lapsi reverse osmosis plant, another would be installed in Sliema, another was being planned for the north of Malta, and that water was being imported by the tankerload.

The interesting point revealed here is that the Government is planning to instal another reverse osmosis plant in the north of Malta.

Certainly consumers suffering from water shortage in varying degrees — and there are many of them — gain little consolation from speculating on how much better off they could have been had the Government adopted a different policy. This subject, in any case, has been amply treated by politicians, correspondents and media.

What consumers want now is to know for a fact when they are going to have a constant supply of water in their taps throughout the day and night no matter where they happen to reside. This calls for a ministerial statement to inform the public of the actual situation and of definite deadlines for completion of current works on the reverse osmosis plants.

The outstanding questions are: when is the Ghar Lapsi plant going to start giving the increased output following its expansion? When is the Tigne reverse osmosis plant going to start functioning? What is the current water position and does it require strict economy measures to prevent wastage?

It is important for the Ministry to take the public into its confidence. Thus, where supply is abundant, some economy can be exercised, such as in avoiding dripping taps, in less use of water for washing cars and in refraining from keeping water running when washing vegetables, and so on. Such measures would surely help to ease the load on the reservoirs and perhaps ease the problem in other areas where supply is either limited strictly to night-time or completely lacking.

In the case of the Sliema water plant, work must be expedited at all cost even if it means doubling the number of workmen or working day and night. There is no room for complacency in taking one's time about it for people are suffering, and that must stop. It is expected, therefore, that a ministerial announcement will also include the definite date when the new plant will be supplying water — in a matter of weeks if not days, we all hope.

We had occasion in the past to call for the building of more reverse osmosis plants at different parts of the Island's coast, blessed as it is with a clear, blue sea. The financing of the plants would be fully justified in view of the fact that present resources, including boreholes, galleries, reservoirs, limited distillation and reverse osmosis plants have clearly proved to be insufficient.

The people have waited long enough for improvements to the water supply and distribution situation. They have heard enough about plans and projects and work-in-hand. Now they want water.

Figure App.3.7.11.

a. The Times 7/7/86 p.12.

b. The Times 18/6/86 p.12.

a

Watery tribulations

The water shortage problem is getting more intractable as the summer heat takes its toll and the inflow of visiting tourists reaches its peak. It is no wonder that tempers are getting frayed. This induces the politicians to concentrate their minds on the problem.

The Prime Minister announced a whole series of new measures under way. The reverse osmosis plant in Sliema is coming imminently into service. Business establishments will be given incentives to install their own water supply plant. More water bowlers have been commandeered to supply areas in need of water. Repairs are urgently being carried out in certain reservoirs. More water is to be imported by tanker. He also spoke about the need to control households who installed pumps to fill their rooftop tanks.

This is all to the good — but the proof of success is in the water taps.

So far, no one has been making sensible, practical suggestions to avoid hardship while the crisis lasts. Why must water supplies be suspended during the day, only to be restored during the small hours of the night? In this way, the hardship of hundreds of households with no water during the daylight hours is compounded with a sleepless hard day's night. Could not the water service be turned on during more reasonable hours? And couldn't the supply of water be suspended in pre-announced areas by rotation? In this way, the Sliema residents would know that they miss just as many waterless days as, say, the Cospicua residents, and the St. Julian's residents will know that they are in the same boat as those living in Santa Lucia.

The suggestion that the Government will control water pumps is likely to cause no small disquiet. After all, substantial sums of money have been invested by people in distress, and this with official approval. People in high-rise buildings find themselves without supply because of lack of pressure. They arrange to install tanks on the ground floor to get their fair share of water. Are they expected to carry their water supplies up several flights of stairs instead of by water pump? Are old and infirm citizens expected to go up Calvary every day simply because Malta faces a water shortage it had never had to face before?

b

LETTERS TO THE EDITOR

WATER SHORTAGE PROBLEM

From Dr. Ant. P. Farrugia, LL.D.

Sir, — There can be little doubt that a governing authority which is worth its salt, and which has a full understanding of the service that it is duty-bound to give to the public, is anxious to achieve a record of high performance in certain fields of its activity.

Among such fields of activity one may count the alleviation of the sufferings, financial and physical, brought on by old-age, the attainment of improved conditions for workers of every class, the provision for the public of the most modern facilities in the pursuit of good health, the development of industry, organization and efficiency in all services, and in general the attainment of a high standard of living and social justice for all.

In Malta, this summer of the year 1986, we record a shortage or complete lack of water in many areas. A shortage that has plagued our people for many years. Since it seems that there are some who do not share or feel the plight of these areas — areas inhabited by free and equal Maltese citizens of all ages and from all walks of life — allow me to emphasise what this water problem means.

It means that old and lonely people who have worked all their lives are being constrained to toil away at all hours, carrying buckets and other receptacles that they should not be carrying, in order to have enough water to wash in, to cook in, to flush their toilets, and to do all things neces-

sary to lead a decent life. Others who have not the strength to do this, are forced to live in the indignity and lack of hygiene that a shortage of water will bring with it.

The water problem means that the working man or woman comes back home after a day's work in our heat and finds no water at home to wash away the perspiration of an honest day's work. It means that young mothers cannot sterilise linen and feeding bottles for their babies. It means that toilets cannot be flushed, clothes, dishes, utensils, and floors cannot be cleaned, and vegetables and fruit cannot be washed as the Medical and Health Department would have us do — joking apart. A far cry this from the traditional cleanliness of the Maltese household.

The water problem means that whether one can afford it or not, one is forced to spend money on the replacement of disused pipes, the installation of extra water tanks and pumps and on bottled drinking water — money which can be well spent on other, very real everyday needs. It means that tempers are fraying at home and at one's place of work, and efficiency is reduced because of lack of sufficient sleep on account of hours vainly lying awake for the water supply to return.

The water problem means that the tourist who leaves the comforts of his home and pays to enjoy the alleged comforts with which we lure him to our shores, finds that after basking in the sun and bathing in our sea as we would have him do, he cannot shower as he invariably needs to do.

It means that in 1986, Malta, a country smaller than most European cities, vying with the world to attract investment, is not sufficiently organized to provide a service as essential and as elementary as a decent water supply.

Unless and until the water problem is solved and with it the problems that accompany it, some of which I have tried to highlight, no government can validly lay claim to any form of success in the much vaunted dedication to improvement of the life and condition of the Maltese people.

c

Leakages rate above "tolerable" level

By a Staff Reporter

Mr. Carm Lino Spiteri, the Nationalist Party's spokesman on water, said yesterday that solving the water problem would be a primary objective of a Nationalist government. He said the party already had the know-how, and intended to solve the problem in the shortest possible time.

He was speaking at a Press conference at party headquarters in Pietà on the "World Water 1986" conference which he attended last month. The conference was held in London by the British Institution of Civil Engineers.

Mr. Spiteri said he was surprised the Government was not represented at the conference, because many of the discussion themes were of great interest to Malta.

One of the main themes was on experts' advice to developing countries facing water shortages. Among the many papers read and discussed were those dealing with safeguarding water quality, latest developments in the operation and maintenance of water distribution and catchment systems, disposal of water from industry, irrigation, controlling the water table, sewage treatment, the health aspects of water, the social aspects, predicting water production needs and training to control water pollution.

Mr. Spiteri said that among the suggestions made were that Governments should provide enough funds for the maintenance of water distribution systems so as to avoid losses through leakages.

He said leakages in Malta made up over 50 per cent of production, when the maximum tolerable was 20 per cent. Delegates discussed how to locate leaks and how to return the lost water back to the reservoirs.

Figure App.3.7.12.

a. The Times 2/8/86 p.24.

b. The Times 3/7/86 p.14.

c. The Times 2/8/86 p.24.

THE WATER SHORTAGE

GOVERNMENT NOT SUFFICIENTLY AWARE OF PEOPLE'S HARDSHIPS — DR. REFALO

By a Staff Reporter

Dr. Michael Refalo, Nationalist Member of Parliament, said the water problem in Malta had become so acute due to Government's wrong policy and was bound to remain one of the main reasons why the people would be voting against the ruling party at the next elections.

Dr. Refalo, who was speaking at a public meeting in San Gwann yesterday, said, with reference to a speech by the Prime Minister Dr. C. Mifsud Bonnici in Parliament on Wednesday, that to announce now that the reverse osmosis plant in Sliema would soon start operating, to speak now about leakage detection units and repairs to water reservoirs and to say that the number of water bowsters was being increased, did not alter the fact that the water crisis was the result of the Government's policy, mismanagement and intransigence over the past 15 years.

LOSS FROM RESERVOIRS

Dr. Refalo said that in Parliament he had accused the Government of the loss from certain reservoirs of a million and a half gallons of water a day.

The Prime Minister's reply to this was that the loss was not that much now. If the loss was of a million rather than a million and a half gallons, this was still a waste of the people's money, Dr. Refalo said.

The Nationalist MP went on to say that he too was aware that there were certain areas with no water problem, but the problem was hitting the greater part of the country and especially tourist resort areas.

If they wanted to promote the better-type class of tourist, as was indeed required, since this was the type of tourist providing the best earnings to revenue and to the people at large, the country must be in a position to provide the infrastructure the tourist expected, including water.

Instead of increasing, this type of tourism was going down and in this month of July the majority of de luxe hotels were empty, he said.

PRIVATE SOURCES

Dr. Refalo said he knew of one 400-bed hotel with fewer than 40 residents. Another hotel had lost hundreds of thousands of liri since the beginning of this year. Another was discharging staff on redundancy. Another was offering a week for about Lm80 and the fare from Britain to Malta.

To be able to compete, these hotels were reducing rates and had entered the second-class hotel market. Staff in other hotels were on a four-day week, he said.

Hotels had no water problem because they were buying water from private sources and not because they were well served by Government.

Holiday apartment owners were personally carrying jerry-cans to fill up the tanks serving their flats.

Dr. Refalo said the Prime Minister did not deny that the reservoirs were damaged. On the contrary, he said that repairs were carried out in May "when they were empty".

Why were the reservoirs empty, Dr. Refalo asked. Was it because water from these reservoirs had been lost because of damage? Or was it because in addition to a

faulty distribution system the country was also suffering from a shortage of supply?

Taking the Prime Minister's word, that everything depended on the water distribution system, confirmed that the reservoirs ran out and the water was lost because they were in need of repair, Dr. Refalo said.

WATER BOWSTERS

Why was the number of water bowsters at the disposal of the Water Department being increased now? Dr. Refalo said that all this showed how right he was in saying, and insisting, that the Government was not sufficiently aware of the people's hardships due to the shortage of water.

The Prime Minister did not exclude, Dr. Refalo went on, the presence of insects and larvae in water delivered by bowsters. He had only said that a Sliema resident, who had complained about the quality of the water, could have had her own tank infected.

In concluding his speech, the Prime Minister had appealed to the people to control the use of water as the country was spending a lot of money on water.

Dr. Refalo said that if water was available on opening the tap, clear water and not brown, rusty water, he too would make that appeal.

But what control could the people exercise if they had no water?

MAINTENANCE WORK

Dr. Refalo ended by saying that it would have been better had the Government tackled the problem more seriously in the past years

instead of criticizing the purchase of desalinators, cancelling orders for their purchase; if the Government had not lagged behind in maintenance work on the distribution system, burdening the people now with the extraordinary expenditure of importing water and the total replacement of all water mains.

Safeguarding democracy

Dr. Francis Zammit Dimech, another speaker at the meeting, said that irrespective of whether the Government reached an agreement with the Nationalist Party or not regarding the safeguarding of democracy, "we must all be prepared, at the next elections, to ensure that the people's will shall prevail."

The people had to determine the country's future and they would not tolerate any attempt at tampering with this most fundamental right, he said.

Dr. Zammit Dimech said it was only right and proper to express solidarity with the people of Chile, involved in a national protest strike against their dictatorial regime. Young people had been killed and hundreds, including Christian Democrat leaders had been jailed, but the Chilean people's struggle continued.

Similarly, solidarity should be expressed with the people of South Africa, suffering racial injustice, apartheid and minority rule, and with the Afghan people now struggling against Soviet domination, again backed by a minority ruling class.

Figure App.3.7.13. The Times 5/7/86 p.28.

a

Nationalist MP on water situation

(Cont. from page 3)

when they talked to the official in charge and the reason given, when asked for an explanation, was that as no bowzers were available, it was useless to answer the various enquiries on the phone.

Dr. REFALO also observed that in some cases the water from the bowser was filthy and full of bacteria. Due to the fact that the Government was not giving an adequate service, many residents had to engage private bowzers and pay Lm7 for a service which Government had the duty to offer: not many people could afford to pay Lm7 to fill their water tanks.

He referred to various incidents which arose whenever a bowser visited an area. Some days back, a woman, with twin babies in her arms, had to beg for some water from the bowser to be able to wash her two little children. The situation would have been comic, had it not been so tragic!

Many residents in most areas of Sliema have been through similar experiences. He appreciated their feeling and he hoped that Government would see to their welfare by providing what in many countries was taken for granted — water!

The problem, he continued, existed and could not be covered up. He accepted that certain measures had been taken in hand, such as the initiative to change all the water pipes of the affected areas, but the problem remained the same.

Dr. REFALO said that when pavements were taken up for the laying of the new pipes, instead of being covered with slabs, the pavements were simply given a layer of cement, which, he said, never lasted more than a couple of years before cracks started to

appear. He also queried the quality of the cement used: in St. John the Baptist Street in Sliema, the cement was brownish in colour — except in those areas where the residents took it upon themselves to lay a proper mixture in front of their homes.

FOREIGN YACHTSMEN

Dr. REFALO next dwelt on the need felt even by Government to attract quality tourists to Malta. He said that, among such tourists were those who came over in yachts, and he wondered why

Government was persisting in restricting the times at which yachts could berth and leave their moorings; owners of yachts should be allowed to move in and out of their berth when and as they saw fit.

Mr. WISTIN ABELA, Minister of Finance, said that this restriction had already been removed.

Dr. REFALO said that he was not aware of this, if this was so, he congratulated Government for finally taking a step in the right direction.

(Cont. Backpage)

b

Long Hot Summer

Eurowater for Malta

With summer fast approaching and a rather dry winter way back behind us, summer this year in Malta is expected to be an unbearable long, hot and very dry season.

As days roll by, the water situation is turning into an unbearable crisis.

Government's policy of over-pumping potable water from the underground water table, has caused irreparable damage to the water aquifer. And Government's decision to lay-up the water distillers, installed by the Nationalist Government, has denied the country of a regular provision of water. Lack of maintenance has resulted in millions of gallons of water being lost. In a final desperate effort, Government now appears to have decided to import water from Europe.

In fact water tankers are expected to arrive in Malta with potable water.

Steps are being taken to clean up the dry reservoirs in various parts of Malta to store the imported water. It is reliably understood that water reserves in Malta do not see us beyond July. Water levels in January and February have been the lowest ever for those months. Observers put the blame of the crisis squarely on the Government's shoulders, which once again put politics well before the people's needs.

Figure App.3.7.14.

a. The Times 3/7/86 p.4.

b. The Democrat 17/5/86 p.1.

The politics and economics of water have a bearing on the development of a country and shape in various ways the life of the people. Unfortunately the Maltese Socialist Government wastes more than a decade on a policy of partisan pique when it should have continued on the properly laid-out Nationalist plan which could guarantee enough water of good quality where and when needed. As a result of the Socialist nonsensical policy, our islands suffered undue hardships not only because of a shortage of such a priceless commodity but also because of a substantial lowering of the quality of the water produced.

WATER QUALITY

The quality of water would not be a big worry were it not for the importance to Gozo of underground water. In fact groundwater is providing the island with all its water needs in the home, in industry, including tourism, and in agriculture. A desalination plant built by the Nationalist Government has now been left lying idle for many years and had only been intermittently used before. As if to add insult to injury, the Government laid a submarine pipeline between Malta and Gozo and "on the 14th July 1981 water from Gozo started flowing to Malta." (Government Financial Estimates 1982 pp.116). Since then, hundreds of millions of gallons of underground water have been pumped to Malta.

All this — the disuse of the desalinator and the pumping of water to Malta — adversely affected the quality of water.

Thus in 1971, when the Socialists came to power, the average annual salinity of

underground water in Gozo was 339 parts per million (milligrams per litre). By 1981 this went up to 420 ppm, a deterioration in quality of 23.9 per cent in ten years. That worsening was due solely to the non-use of the distiller. Then by 1985 the average salinity rose to 527 ppm, a debasement of 25.5 per cent in four years. To such an extent has the pumping of groundwater from Gozo to Malta affected the quality of our water.

THE AQUIFERS

Groundwater is found in aquifers which are permeable saturated zones of rock that can be mined by wells. As the area of Gozo is only 67 square kilometres and as by the end of last year there were already 47 water-yielding boreholes — even if the areas which were drilled without success were not to be taken into consideration — it is quite obvious that the aquifers which underlie our island must necessarily be only tiny pockets. So they could be easily damaged by overdrilling.

The inland aquifers could be depleted in a short period of time. Others could have their water saturated with harmful natural salts, making it useless for drinking and irrigating purposes. Moreover, as Gozo is not only small but it is also an island, overdrawing an aquifer can shift the underground boundary between sea and fresh water, thereby drawing up salt water into drinking supplies.

POLLUTION

The geological structure of Gozo is both an advantage and

a disadvantage for the aquifers. In fact the strata of limestone and sand afford a slow but unimpeded passage of rainwater into them. However this same easy passage is also open to pollutants which do also actually leak into them. Leaking cesspits, broken pipes in the sewage network and sewer overflows from pumping stations following frequent power failures or any other breakdown, all contribute to the contamination of the aquifers.

To cite an example, it is a shame that sewage has been left for a long time to overflow into Xlendi Valley — at its upper part — and Wied il-Mielah.

Surely great harm is being done to our underground water by the seepage of sewage and the Water Department and the Works Department should see to it that no sewage is left to soak down into our aquifers. If the Minister responsible for the environment is concerned, and rightly so, about the contamination that could be caused on our islands by acid rain — this too could itself pollute our water-table — he must be much more concerned about the polluting effect of 'lost' sewage on our underground water.

The environment is not just the surface of the land on which we tread or the air which we breathe. What lies beneath the top-soil is also part of it and

we should take all the necessary measures to safeguard it. Prevention is always better than cure but in this case it is especially so. Once polluted, aquifers have a tendency to stay that way. Rainwater in our islands is scarce and it moves into the aquifers only slowly. On the other hand contaminants do not disperse into adjacent water where their effect would be diluted. Moreover, there is not yet a technological remedy for curing contaminated aquifers.

It is therefore a paramount importance to have a long-term policy that takes into consideration all the aspects of quantity and quality.



A farmer doing his best to use water wisely.

a

Water crisis threatens to dry up China's future

PEKING. (Reuters) — Dwindling water supplies are threatening to shrivel China's depleted reservoirs, parch its cities and throttle industry, Chinese and foreign experts say.

"Thousands and thousands of wells have dried up", said one foreign expert.

"There has been an alarming drop in groundwater in the northern plains, which are really the basis of China's agriculture. The drought could affect 100 million people".

The expert, who asked not to be named, told Reuters that China's plans to modernise industry could be "affected very seriously" within five years if the government does not enforce stiff conservation laws.

The government has already ordered factories to ration water this summer and says enterprises that exceed quotas face fines of

By David Fraser

up to 100,000 yuan (31,000 dollars). It has warned that 136 cities faced shortages running to 12 million tonnes a day.

Officials blame the crisis on shrinking natural water supply, sparse rainfall, poor development of resources and overuse and pollution by industry. New laws reward firms that save water while continuing stiff fines for abusers.

MEASURES

"The Chinese are sitting on a time bomb", one foreign analyst said. "There is massive waste, and little recycling of factory water — it's all poured into rivers and streams".

Factories throughout China spew tainted water into rivers while burying industrial waste at random, thus contaminating water sources, the official Press says.

The Government says stern measures have helped stem the waste, with 40 major cities saving 1.5 billion tonnes of water since 1983. But years of drought and pollution have quadrupled water

costs in some areas.

The China daily said a Peking power plant produced 20 million kilowatt hours less in 1983 than in 1982 because it had to clean polluted water.

The Press constantly implores factories to curb water use.

DROUGHT

One report said a Chinese foundry uses double the water required by a western plant to make a ton of steel. A Peking brewery suds in triple the intake of a Western beermaker.

News reports recently said a drought in the southern province of Guangdong last year affected one million people, paralyzed enterprises and helped produce a 36 per cent shortfall in electricity in the capital, Canton.

China Daily said drought this year had damaged crops in 12 per cent of China's arable land from the southwest to the north.

China has for centuries used waterworks, dams and canals along seven major rivers to cope with uneven water flow posing the threat of floods and droughts. In 1983, a 250-km (155-mile) long channel was dug to carry river water to the northeastern city of Tianjin.

Officials say chronic drought will leave Peking lacking 20 million litres (5.3 million gallons) a day by summer.

"The water crisis is acute", one told Reuters.

China's 25-year rush to industrialise has strained resources and lowered water tables. Chinese officials say. Since 1979, economic growth has been faster and demand has swelled even more.

Balancing precious supplies is a dilemma for Peking. One Western diplomat said shortages could pose social problems.

"They'll give priority to the economy at the expense of society", she said. "They can cut the supply (to industry) but they can't cut it drastically".

b

WATER: a crisis threatening the world

By A Correspondent

Considered by Unesco Member States as one of the organization's most vital intergovernmental programmes, the IHP (International Hydrological Programme) held the 7th session of its Intergovernmental Council from June 18 to 23 at Unesco Headquarters in Paris.

The 30 members of the Council examined the process of activities foreseen in the phase of the Programme which began in 1984 and will end in 1989. These activities are aimed mainly at a better understanding of hydrological processes, the training of specialists, and the development of a scientific and technological basis for the evaluation, planning and rational management of water resources.

The Council also considered a preliminary report on preparations for the fourth phase, IHP-IV, which will cover the period between 1990 and 1995. The content of this phase will be the main item on the agenda of the third International Conference on Hydrology and the Scientific

Bases for the Rational Management of Water Resources, to be convened jointly by Unesco and the World Meteorological Organization (WMO) from March 16 to 23 1987 in Geneva.

It was agreed that, during this next phase, emphasis should be placed on the interaction of climatic variability and hydrological processes. The consequences of these climatic changes, induced in part by human activities, and including such aspects as rapid rises in sea level, will be studied in depth.

In addition, the Council stressed the importance of comparative hydrology and called for the expansion of regional and sub-regional cooperation.

During the present phase, IHP-III, the Programme, among other objectives, aims at strengthening cooperation between scientists and engineers of different countries in order to improve the transfer of knowledge and technologies concerning the use of water resources in Africa, in Latin America and the Caribbean, in the Arab States, and in Asia and the Pacific. The goal of IHP is to develop systems for the collection and circulation of information on the rational use, conservation and protection of water resources in rural areas, and to encourage the development of technologies adapted to local conditions.

To contribute to an increase in the number of specialists and technicians, some 30 Unesco-sponsored postgraduate courses organized in all regions each year train about 300 specialists and 80 higher-level technicians, priority

being given to specialists from developing countries and, in particular, to women. At the same time, a major effort is being made to improve information for the public on the development, management and conservation of water resources.

The importance given to IHP was clearly illustrated by the unanimous support it drew at Unesco's last General Conference.

ence in November 1983 in spite of the difficult financial situation facing the Organization, due to withdrawal of the United States which contributed 25 per cent of the budget, the General Conference decided that the IHP allocation should be fully maintained, as opposed to other activities whose budgets have been cut by about a quarter.

(Cont. on next page)

Figure App.3.7.16.

a. The Times 10/7/86 p.9.

b. The Times 15/7/86 p.6.

INDIA TRIES TO GET TO GRIPS WITH ITS WATER PROBLEM

For a reasonable standard of living a person requires a minimum of 70 litres of water a day. Average consumption in the US is more than 300; in India most people are lucky to get 10-20 litres. New Delhi has spent millions trying to tackle the problem, but though 600,000 borewells have been sunk, huge numbers of others have run dry as a result of falling water tables. Now a Water Technology Mission has been established to get a grip on the crisis.

BY S. MUTIAH

MADRAS. A Water Technology Mission has been set up by the Indian Government in a bid to overcome water shortages that seem to have become endemic.

Although 22 agencies are represented, even the most hopeful aim no higher than providing 85 per cent of rural people with 40 litres of water a day each by the end of the century.

That would be a big improvement on the 10-20 litres of water which many individuals survive on today, compared with a daily minimum of 70 litres recommended by the World Health Organisation (WHO); per capita consumption in the US is more than 300 litres a day.

Although the government has spent heavily on water programmes in recent years — making drinking water available to 45 per cent of the country's tens of thousands of villages — the problem continues to grow. And worsening environmental factors are making the search for a solution more complex.

Since 1980, the government has spent more than Rs.25 billion sinking more than 600,000 borewells. Water diviners, geologists and well-boring equipment have become common sights in rural areas.

But the more money and effort poured into water supply schemes, the more acute the problem seems to become. Even villages that never had a problem before are now experiencing shortages.

Six years ago the government reported that 290,000 out of 300,000 "problem villages" had been provided with drinking water. But since then 100,000 villages have become waterless. Drought-stricken Maharashtra state spent Rs.3.5 billion supplying water to 12,000 villages, but the list of those with shortages has nonetheless grown to nearly 23,000. Drought-free Uttar Pradesh provided 27,000 villages with water; now it has 19,000 new problem villages to deal with.

STRAIN

India's growing population is increasing the strain. Fuel and food demands are greater, increasing the need for water-depleting irrigation schemes.

Since 1980 more than one million irrigation tubewells have been sunk. About 25 per cent of the available groundwater is already tapped by farmers and agricultural use is expected to grow 15 per cent in the next five years.

In addition, more and more trees are being cut down to meet demands for fuel and shelter in growing urban areas. More than 13 million hectares of forest is felled every year. Once thickly forested areas in Maharashtra and Madhya Pradesh are now like deserts.

Decreasing tree cover means less water is being trapped. Wells are not being adequately replenished, but consumption is increasing. In Rajasthan, the water table has dropped more than 20 metres. In other states it is down 10-15 metres.

Borewells in several states are now above the water table; Maharashtra reports that a quar-

ter of its 80,000 borewells have run dry, a lost investment of Rs.500 million.

So wells have to go deeper. Whereas 20-30 feet was once normal, the search for water now sometimes runs to depths of several hundred feet.

As the crisis worsens, Prime Minister Rajiv Gandhi has begun talking less about India's dawning 'Computer Age' and more about wastelands, deforestation, borewells and water for the millions.

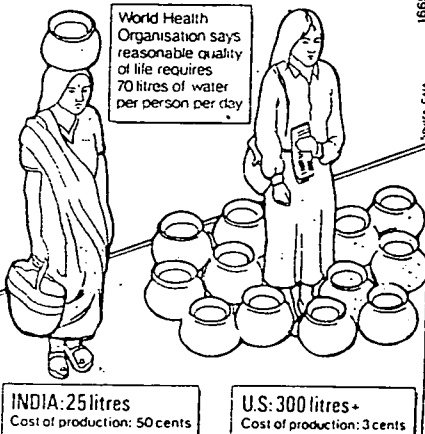
EXPENDITURE

Past expenditure on drinking water programmes was minimal — less than 1 per cent of overall spending. Priorities were unbalanced, too, with emphasis being given to urban areas. Madras, India's fourth-largest city with 3.3 million people, has received Rs.500 million since 1981 to improve its water supply; the rest of the state has received less than a tenth as much. The country's five largest cities plan to spend Rs.20 billion improving water supply.

Despite this expenditure, the booming cities are almost as badly served as most villages, with supplies often available for only a couple of hours every few days. The affluent buy tankerloads of water for Rs.200 a tanker, most of the water coming from rural areas. Those with no direct supply queue for hours at public water-taps and hand-pumps. Those in line are usually women, who spend several hours a day fetching water.

Who's using the water

Average domestic usage per day



The overall situation has been aggravated by the failure of expected rains. The past two monsoons have been poor and, with scorching summers following, have left half the country reeling under one of the worst droughts ever. States like Karnataka and Maharashtra, Gujarat and Rajasthan are virtually disaster areas; parts of other states, like Tamil Nadu and Madhya Pradesh, may soon follow.

The scramble for water means that it has to be eked out: bathing and clothes-washing become luxuries. Sanitation suffers, with the result that water-borne diseases like diarrhoea, and guinea worm are taking a heavy toll. WHO estimates the annual cost of medical treatment and production losses due to such diseases at Rs.4.5 million. Over 1.5 million children die from water-borne diseases every year.

Figure App.3.7.17. The Times 4/8/86 p.7.

a

New \$2m contract signed for water plants expansion

By a Staff Reporter

The Government is planning to expand water production facilities at the Ghar Lapsi and the new Tigné reverse osmosis plants by the end of this month, Mr. Joseph Sciberras, Parliamentary Secretary responsible for water and ports said yesterday. The Tigné plant went into production only on Thursday.

Addressing many of the 1,200 employees of the Water Works Department at the Auberge d'Italie in Valetta, Mr. Sciberras announced that last week the Government signed a two-million US dollar contract with Polymetrics Inc. to continue expanding the plants at Ghar Lapsi and Tigné.

Polymetrics Inc. of San Jose, California, supplied the reverse osmosis plants at Ghar Lapsi and Tigné and another at Marsa, as well as the technical knowhow.

At present, the Ghar Lapsi plant, which was expanded some weeks ago, is producing over five

million imperial gallons of water a day.

Mr. Sciberras said the first train of the Tigné plant started producing water last Thursday. The second train, which would bring the total daily water production there to 800,000 gallons, would start operating on August 15, he said.

During his meeting with the employees, Mr. Sciberras called for cooperation when he announced a reorganization exercise in the Water Works Department. This was aimed at generating greater efficiency. Such a reorganization, he said, was needed to tackle current problems, including leakages, more effectively. The reorganization, he said, would also involve changes in the Department's district boundaries and its various sections.

He said that, necessarily, such a reorganization would bring with it a redistribution of some of the personnel which may also mean inconvenience to those affected. But, he added, the Department would do its best so that such inconveniences would be minimal.

Mr. Sciberras also dwelt on the duties and responsibilities of employees and stressed that irresponsibility in one's duties would not be accepted. He urged employees to take immediate action on reports of burst pipes resulting in leakages, irrespective of district boundaries.

He also complained about what he described as "the inexistent public relations at the Department".

One could understand the stress on Department employees who had to do with continuous



calls from a public complaining that they had no water, but employees had to understand the people's problems and should not be brusque with callers.

Mr. Sciberras referred to Press reports about imported water which was found to be contaminated with oil when stored in a reservoir.

Without giving details on the circumstances leading to the contamination, Mr. Sciberras said that following tests, it was found that the water was good for drinking. But a decision had yet to be taken on whether the water in question should be passed for public consumption, used for industrial purposes or thrown away, he said.

Water Works Department employees who attended the meeting called by Mr. Joseph Sciberras MP, the new Parliamentary Secretary responsible for water, yesterday.



MR. JOSEPH SCIBERRAS

b

WATER PLANT EXPANSION

By a Staff Reporter

Water production by the Ghar Lapsi reverse osmosis plant is expected to be halted temporarily from today to allow work to be made to increase production capacity by 20 per cent, reliable sources confirmed yesterday.

The stoppage is expected to last about two days and it is expected officially that the water situation — which is for many a terrible ordeal, with no running

water at home — will not get worse.

To make good for the halt in water production, water has been imported in tankerloads from Sicily.

The equipment being installed to increase capacity was received last month, together with equipment for a new reverse osmosis plant at Sliema.

The Ghar Lapsi plant produces about four million gallons of water daily.

Figure App.3.7.18.

a. The Times 2/8/86 p.11.

b. The Times 10/6/86 p.24.

REVERSE OSMOSIS PLANT AT SLIEMA TO START OPERATING THIS MONTH Prime Minister on Government's efforts to ease water problem

By Our Parliamentary
Correspondents

The Prime Minister, Dr. Carmelo Mifsud Bonnici, announced on Wednesday that the "first train" of the new reverse osmosis plant at Tigne' would come into production by the second week of this month, while mobile units, providing 100,000 gallons of water a day would start operating on July 15.

Dr. MIFSUD BONNICI, who was speaking on the Adjournment of the House of Representatives, was replying to Nationalist MP Dr. Michael Refalo, who spoke the previous day about the water situation, particularly in Sliema.

Dr. MIFSUD BONNICI said that he was about to speak in his capacity as Acting Minister of Works (the Minister, Mr. Lorry Sant, is abroad). He denied that Government was insensitive to the water problem. The people, he said, were being made to forget all the efforts put in by Government to ease this problem. Only harm would result unless the water shortage was not considered objectively.

Malta always had a water problem, Dr. MIFSUD BONNICI continued, while many other countries experienced the same situation. The people of those countries had accepted the problem and had also accepted the measures resorted to in order to solve it.

Referring to what Mr. Carm Lino Spiteri, the Nationalist MP, had said about the loss of water from reservoirs, attributable to lack of repairs and maintenance, the Prime Minister said this information was not correct. Repair work had in fact started in May and one reservoir had been emptied of its water for repairs to be carried out. Some water was being lost from the Fiddien and Qrendi reservoirs, but repair work was under way.

Dr. MIFSUD BONNICI also denied that a quantity of the water imported from abroad had been lost when it was stored in the Fiddien, Qrendi and Luqa reservoirs. In fact these reservoirs had not been used to store imported water. This water had been stored mainly at the Kordin reservoir, where it was known that no leaks existed. Dr. Refalo had been incorrect on this point.

AVOIDING WASTAGE

Dr. MIFSUD BONNICI admitted that the water problem was a national one, but it had not affected national proportions. In fact, it did not affect the whole Island but only certain areas. The reasons for water shortage in these areas could be ascribed to lack of supply and to shortcomings in the distribution system. Most of the Island was unaffected by the water shortage, and only some areas were affected for a considerable length of time.

The Prime Minister explained that there were various reasons

which militated against the use of a water-rationing system for the whole Island. Thus, when the water supply was cut for even a very short time, damage could be caused to the distribution system. Again, when the public was forewarned of water-cuts, they would rush to store large quantities of water, which resulted in a lot of wastage. It could also happen that this water would be wasted or thrown away as soon as the water supply was restored. Besides, some people might forget to turn off the taps, and more water would be wasted as soon as the supply was resumed.

ROUND-THE-CLOCK BOWSER SERVICE

The Prime Minister said it was not right for the bowser service telephone lines to be unavailable, and added that steps had already been taken about this. Dr. MIFSUD BONNICI admitted that the number of bowsers available was not enough to meet the demand and that immediate steps had been taken to remedy the situation. As from Thursday (yesterday), he said, the bowsers of the Police and other Government departments would be used, while privately-owned bowsers would be engaged by the Government to provide a constant water distribution service.

Dr. MIFSUD BONNICI said it was very important to ensure that the water supplied to these bowsers was pure and that the bowsers were clean. It was therefore vital to ascertain the source which the bowsers used to fill up with water. Government was making Ta' Qali reservoir available for both Government and private bowsers, as the water of this reservoir was constantly checked by the Health Department.

The Prime Minister promised that the service would be continuous and would not be confined to normal working hours.

Dr. MIFSUD BONNICI said there had been only one case involving the discovery of insects in bowser water. This case involved a certain Mrs. Catania from Sliema. It had however been ascertained that this water had not been supplied by a Government bowser but by a private one. Moreover, there were some doubts as to whether the insects had been present in the bowser or had already been in the householder's tank. This was because no-one else had complained, although this water had been distributed to many other people. The Prime Minister added that the prices for each bowser trip would be controlled by Government.

TIGNE REVERSE OSMOSIS PLANT

Dr. MIFSUD BONNICI then spoke about the reverse osmosis plant at Tigne' which he had

visited recently. According to the information he had, the Prime Minister said that the "first train" of water production would be in operation in the second week of this month. Mobile units had also been acquired by Government, and these would provide about 160,000 gallons of water per day as from July 15. He also explained that the "first train" would produce 400,000 gallons of water a day, while an additional 400,000 gallons of water a day would be produced by the "second train" when the plant became fully operational. This water would be pumped directly into Sliema, Gzira and the University area. The use of boosters, the Prime Minister said, was taking a very large portion of water from the mains. This was, in fact, one of the main reasons for the lack of water.

PAVEMENT SURFACING

Dr. MIFSUD BONNICI said that it was no longer possible today to construct pavements out of coralline limestone (tal-qawwi), nor was it practical to surface pavements with concrete slabs instead of concrete, as the former involved a lot of extra work. The use of liquid concrete to surface pavements was easier and more practical.

Dr. Refalo had also stated that the colour of the concrete used varied from one place to another. The Prime Minister observed that different types of cement and sand had been used. These products were imported from different countries, hence the difference in colour. However the difference in colour need not cause any worry as to the quality of the concrete used.

AFFECTED AREAS

Referring to the areas affected by the water shortage, Dr. MIFSUD BONNICI said these were Sliema, a small part of San Gwann, parts of Msida, and the University area. Saffi was also affected, but the situation was expected to improve with the sinking of a borehole. The water cuts at Rabat and Naxxar were caused by the occasional diversion of water meant for these districts to Sliema and other areas.

The water situation in Mellicha and Ghadira would improve as soon as water from Gozo could be piped there. Dr. MIFSUD BONNICI continued. Parts of Kalkara and the upper part of Cospicua had also been affected. The situation in Cospicua had been remedied last year and the problem was not now so acute. Other areas suffered from problems of a different nature, namely problems in the distribution system. This was the case with a small part of St. Andrews, while the situation at Zabbar and Marsascala would be solved by the sinking of new boreholes. A part of Qormi also suffered shortages, but the reason was because there existed certain problems in the distribution system involving the Luqa reservoir. Shortages were not uncommon here.

Referring to the Nigret and Zurriq areas, Dr. MIFSUD BONNICI said the problem here was rather serious. The shortages were caused by the defects in the mains and in Nigret's elevated position vis-a-vis Rabat. Steps had already been taken and new equipment was being installed.

INCENTIVES FOR REVERSE OSMOSIS

The Prime Minister added that incentives were being given to encourage the installation of reverse osmosis plants; the rate of interest on the capital outlay involved would be subsidised. The

cost of electricity used in the operation of the plant would be reduced, while the acid necessary for its operation would be supplied by Enemalta at cost price.

PRODUCTION FIGURES

Dr. MIFSUD BONNICI then gave some water production figures. He said that 10.7 million gallons of ground water was pumped every day from boreholes and by the pumping stations. The distillers gave an average of only 900,000 gallons of water a day. The total amount produced, by these distillers varied because of frequent breakdowns. The Gozo distillers were not being operated as they were very expensive to maintain and run. The Ghar Lapsi reverse osmosis installation produced 4.9 million gallons a day, while the Marsa plant produced 800,000 gallons daily. This gave a total of 17.3 million gallons of water per day. Plans were under way to upgrade production at the Ghar Lapsi and Marsa plants by 300,000 gallons per day each. Besides, there were the mobile units and the Tigne reverse osmosis plant referred to earlier.

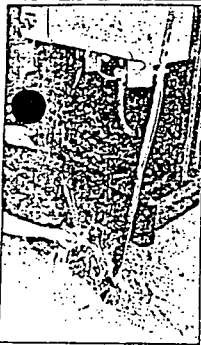
Dr. MIFSUD BONNICI said that water had been imported (from Sicily) to make good for the shortages which would result from the closure of the Ghar Lapsi plant for two days. In fact the residents of Cottonera did not even notice this transition. Water was again being imported and stored at Kordin to provide for any eventuality.

The Prime Minister finally appealed to all to use water sparingly and carefully. The country could no longer use up more water than what was being used at present. Water production cost the country large sums of money.

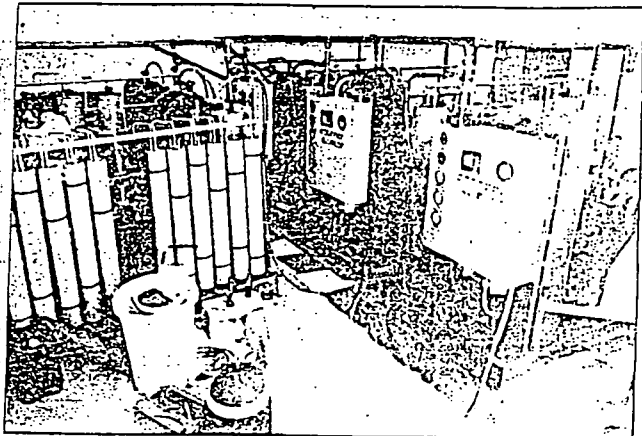
Dr. MIFSUD BONNICI said he would reply to Dr. Refalo's comments on the Casino employees at some other sitting.

l-orizzont

IL-HAMIS, 17 TA' LULJU, 1986



Lemna: parti mill-Mobile Units li qed jahdmu għall-produzzjoni ta' l-ilma f'Tigné. Xellug: ilma bahar mibdul f'ilma tajjeb għax-xorb.



JIBDEW JAHD MU 5 MOBILE UNITS GĦALL-PRODUZZJONI TA' L-ILMA

— TLIETA OHRA
JIBDEW JAHD MU
FI TMIEM IL-GIMGĦA

● VALLETTA, l-Erbgħa. — Twettqet wegħda oħra tal-Gvern Soċjalista. Kif kien habbar il-Prim Ministru Karmenu Mifsud Bonnici fil-Parlament, il-bieraħ fil-ghaxxja bdiet il-produzzjoni ta' l-ilma mill-mobile units li ġew installati f'Tigné. S'issa ġew installati 5 minn dawn il-units waqt li sa tmiem din il-gimgha jibdew jahdmu t-tlieta l-oħra li b'kollox se jipproduċu 160,000 gallun ilma kuljum għal konsum f'Tas-Sliema u l-inhawi.

Fil-Parlament il-Prim Ministru Mifsud Bonnici, waqt li kien jikkellem dwar l-is-

forzi tal-Gvern Soċjalista biex isolvi l-problema ta' l-ilma kien qal li dawn il-mobile units se jibdw jahdmu fil-15 ta' Lulju. Mill-bieraħ beda jimitela l-gibjun biex ikun jista' jittqassam lill-konsumatur.

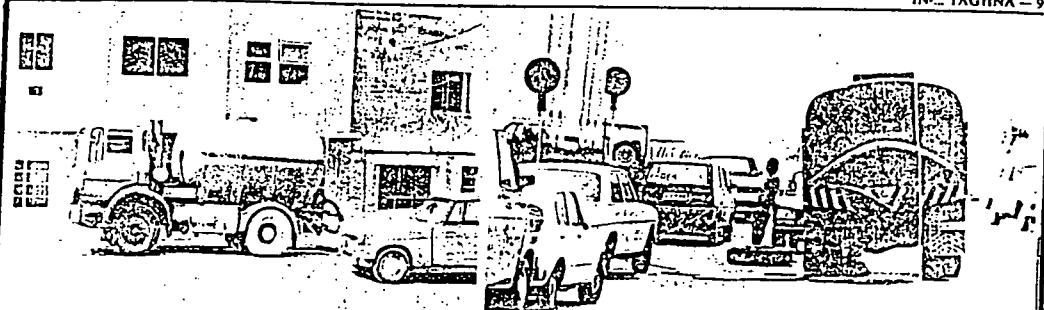
Biex dawn il-mobile units seighu jibdew jiffunzjonaw tħaffru zewg gibjuni, wieħed li jimitela b' ilma bahar biex imbagħad, wara li jgħaddi mill-units u jkun tajjeb għax-xorb, jiġi ppumpjat fil-gibjun l-iehor u wara dritt

għad-distribuzzjoni.

Sal-lum għadd ta' had-diema u inginiera kienu għadhom jahdmu fuq il-tliet mobile units l-oħra li għadhom jibdew jiffunzjonaw fi tmiem din il-gimgha. Barra minn dan qed tkompli wkoll il-hidma fuq l-impjant tar-Reverse Osmosis ta' Tigné li

meta jkun lest fl-ewwel fażi tiegħu fl-aħħar ta' dan ix-xahar jibda jipprovdi 400,000 gallun ilma kuljum.

L-istess aministrazzjoni ta' glalen għandhom jizziedu mat-tlietja tat-tieni fażi tal-proġett, li dan ifisser li mill-impjant wahdu, se jibdew ikunu prodotti 800,000 gallun ilma kuljum.



Is-sitwazzjoni ta' l-ilma f-Tas-Sliema

Għadha dizastruża

Minkejja dak li qalet it-Taqsima tat-Tagħrif ta' Kastilja tard nhar it-Tlieta fil-ghaxija hafna residenti minn Tas-Sliema f-bierah ċemplulna u qalulna li s-sitwazzjoni għadha ma tiddlitz.

mhux talli hekk, talli whud li fil-granet ta' qabel kellihom ilma matul il-lejl, fil-lejl ta' bejn it-Tlieta u l-Erbgha ma kellihom assolutament xejn.

L-istqarrija tat-Taqsima tat-Tagħrif li habbret li mit-Tlieta wara nofsinar bdiet il-produzzjoni ta' l-ilma mill-Mobile Units li kienu installati f'Tigne u li għandhom kapacità ta' 20,000 gallun ilma kuljum kull unit. Kienu installati hames Mobile Units u Tlieta oħra se jkunu installati fil-granet li għejn.

It-Taqsima tat-Tagħrif ziedet iġid li fl-aħhar ta' Lulju mistennija tidda l-produzzjoni ta' 400,000 gallun ilma kuljum mill-ewwel fażi tal-proġett tar-Reverse Osmosis f'Tigne.

Bhalma qal dan il-gurnal il-bierah, il-Prim Ministru, kien qal fil-Parlament li r-Reverse Osmosis ta' Tigne kienet se tidda l-produzzjoni tagħha fil-15 ta' Lulju. Minn dak li qalet it-Taqsima tat-Tagħrif dan issa gie mtawwal għall-aħhar tax-xahar.

Il-bierah go Tas-Sliema reġghu deħru kwantita kbira ta' bowsers jagħtu l-ilma lil djar u lukandi. Ir-ritratti f'din il-paġna tliedha l-bierah wara nofsinar.

STQARRIJA TAZ-ZIHN

Sadattant, li stqarrija għall-istampa, iż-Żgħirażagh fladdiema Nsara (ZIHN) jkkundannaw il-vjolenza li twelt- qet waqt id-dimostrazzjoni dwar Filma f-Giungħa li għadha.

Il-ZIHN qal li din il-graġja kienet hi ripetizzjoni tal-kurad-dritt għal- liberta' ta' espressjoni kif kien gara fu-23 ta' Novembru, 1985, fil-kaz tal-protesta favur l-ambjent.

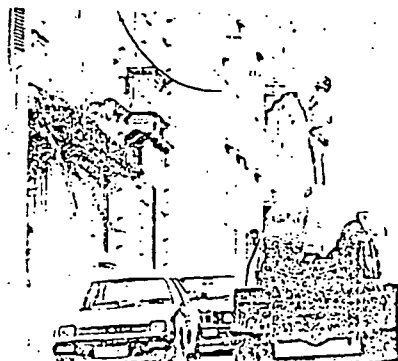
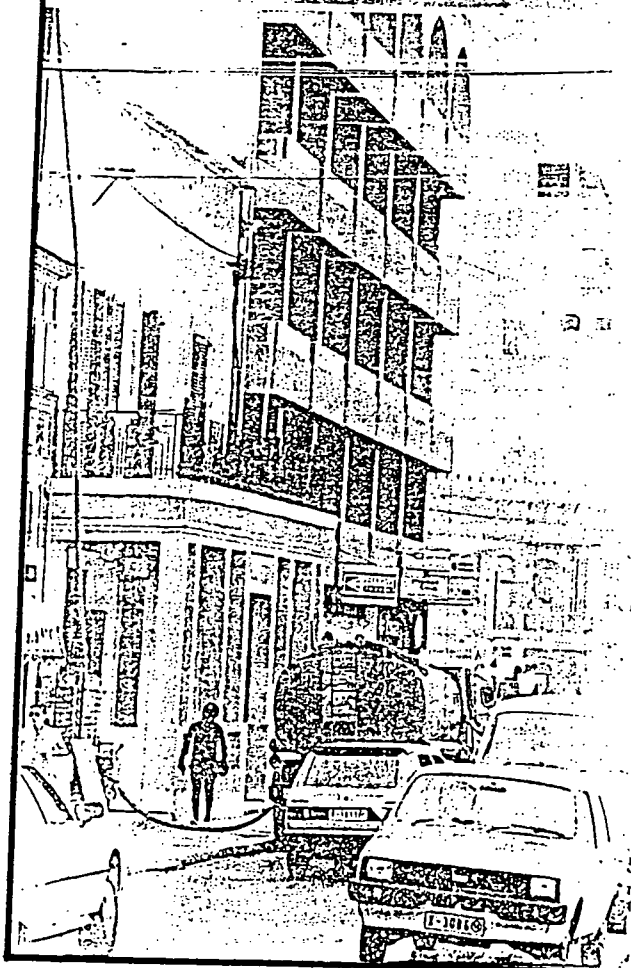


Figure App.3.7.21. IN-... TAGHNA 17/7/86 p.9.

Developments too fast for Nationalists to keep pace...

SO KEEP DREAMING

THE Nationalists have promised everybody that if — a great if — they are elected to form Government, they will provide everybody with work. They themselves have in fact already set the pace by developing a publicity campaign which must be costing thousands of pounds and earning thousands of pounds to various select newspapers which are running their advertisements. In the background, they must have a "think tank" which is responsible for origination of ideas, design, blurb, art-work, presentation, etc. In all, quite a massive, if not well-thought-out campaign.

Why not well thought out? Well, because in their usual vein, the Nationalists are not a band of people who show any particular promise to graft, originality or detail. In fact, in studying their campaign, particularly in the glib blurb content, one is sorely struck by the fact that much of the preparation must have been carried out months ago, and now that the advertisements are appearing, many are outdated, and their content does not conform to present-day developments.

In other words, the Nationalist Party has fallen behind the pace which the Socialist Government has set; or otherwise they are too sloth to either deviate from their original ideas and cannot be bothered to catch up

with what is happening around them. A classic case concerns the "water problem" from which Malta suffered acutely 24 months ago, but which today has almost disappeared.

The NP "think-tank" had based a whole attack on water shortages and alleged inefficiencies and the discomforts these were causing. One of their expensive advertisements reads: "16 Years of Empty Taps and Empty Promises", whilst another remark: "Water flowing from the tap — the music of my dreams!"

•MUSIC

Well, for a start, the latter genius who coined the phrase has had his prayers answered and he (or she) can hear as

much music as he/her dreams will permit. This whole water campaign was recently dashed by Parliamentary Secretary Mr Joe Sciberras when he announced that now Malta has a record of water reserves which totalled no less than 90 million gallons of water at the latest count; the latest count because the volume of water reserves is ever-increasing and the problems ever-diminishing.

These problems have been mostly created by the Socialist Government itself for so upping the standard of living in recent years, and as resul-

16 YEARS OF EMPTY TAPS AND EMPTY PROMISES

iserva ta' 90 miljun gallun ilma

KUNSIJA GHAL-ISTUDENTI TAL-UCO: Iktar laqgħat mod-Diremur ta'

Water flowing from the tap — the music of my dreams! In your home, at work, you cannot feel safe

By Phoenix

tantly many people have been initiated into the virtues of greater cleanliness, thus requiring greater volumes of water. Additionally, the Government's housing programme has been so fast and so successful, that more and more households have required supply.

•WATER

In other words, besides supplying all of Malta's greatly increased demands, Mr Sciberras' Ministry has also managed to build up water reserves and will continue doing so, besides replacing many old and unsuitable installations, the majority emanating from the time of the slipshod Nationalist Government and the indifferent Colonial Government which never envisaged a race of Maltese colonial na-

tionalists wanting to wash too frequently. It was after all a British Tory Prime Minister in the shape of Lord Wellington who opposed the development of rail travel and the dawn of the cheap train ticket.

Such development, he pointed out in the Mothers of Parliament, would encourage the working classes to travel about the country, and that, Lord Wellington — veteran of much bloodshed and slaughter at such famous places as Leipzig and Waterloo — could not stomach. Just imagine a smelly worker sitting in a railway carriage with the likes of Lord Wellington!

In the meantime, the Nationalist Party can carry on with their opium-like reverie of dreaming. After all, dreams are free and do not really hurt anybody.

MINISTER EXPLAINS WATER SITUATION

By a Staff Reporter

The rate of decrease of Malta's water reserves under the Socialist administration would have left the Island without water in mid-June, the Minister of Development of the Infrastructure, Mr. Michael Falzon, said in a written answer.

He was replying to a question by Mr. Joseph Sciberras (MLP) who asked what were the amounts of water reserves in Malta and Gozo on May 12 and July 24 this year.

Mr. Falzon said that on May 12 there were 59.84 million gallons in reserve in Malta and 11.20 million gallons in Gozo. On July 24 the figures were 32.53 million gallons and 2.30 million gallons.

According to figures collected by the previous administration, the rate of decrease of water reserves between April 19 and May 23 this year was of about one million gallons a day. This had now been reduced to about 200,000 gallons a day only.

At the rate of decrease bequeathed by the Socialist administration, Mr. Falzon added, the country would have ended without water in mid-June this year.

Bowser service

Replying to another question by Mr. Sciberras, who wanted to know how many requests for the bowser service were being received by the Water Department every day, Mr. Falzon said that in the last two months, between May 24 and July 24, there had been an average of 47 requests daily. Up to July 12 the average had been 28.

The increase in the average figure had occurred after the damage found recently, including the damage to the Ghar Lapsi pipeline, and to the principal mains in Marsa and the limits of Zurriq, caused by the absence of maintenance on the mains these last years.

A substantial portion of the requests came from the Bugibba area. The area had been neglected by the Socialist administration which had not done any maintenance work on the main carrying water to Bugibba.

The present Government, Mr. Falzon said, had immediately taken this problem in hand. Work on the new water main of 12 inches which would feed Bugibba and other surroundings, was in its final phase.

Water treatment plants

Over Lm1.2 million were spent on seven water treatment plants only two of which produced water in 1986, Mr. Falzon said when replying to a question by Nationalist MP Mr. Louis Refalo.

Mr. Refalo had asked how many treatment plants had been built, what each had cost and what water had each produced.

Mr. Falzon said one plant at San Gakbu/Sta. Lucija had cost Lm232,000 and produced 3,912,480 gallons in 1986; another at St. Helen's Gate, Cospicua, had cost Lm142,000 and produced nothing; another at Kordin cost Lm20,000, and also produced nothing.

At Gargenti, Lm21,000 and at Manoel Island Lm323,000, each producing nothing; at Torri Cumbo, Ta' Qali, Lm195,000, producing 5,049,403 gallons; and Mgarr, Lm101,000, producing nothing. Silica sand had cost Lm180,000 and other equipment Lm70,000.

Of these plants, Mr. Falzon said, those at Manoel Island and Mgarr had never operated. The Manoel Island plant had been fitted with machinery but there was no water to purify because the main had not been provided. It had been planned to purify water from Msida but this was found to be contaminated with drainage and high nitrates which could not be removed with the machinery available at Manoel Island.

At Mgarr, the machinery had not even been fitted to the plant — it had been left lying around and had rusted. A large sum would also have been needed to get the plant functioning.

Mr. Falzon said that all this showed how seriously deficient was the planning of the Socialist administration in the water sector.

Hardships

Labour MP Mr. Joseph Sciberras, who was Parliamentary Secretary responsible for water in the Socialist administration, said that hardships this summer because of the lack of water would have been far less had the new Government not lost its head.

He claimed that the Government, after the election, had wasted two months transferring Labour supporters from the Water Works Department and those replacing them had had little time to get used to their job.

This third train, at the Tigne reverse osmosis plant should have started operating in the first half of June but actually did so in the first week of July, meaning a loss as a result of this of at least half a million gallons of water a day.

When the train became productive, moreover, its water was directed to Sliema distribution and the Government must have been told that this was a waste.

The reason for this, Mr. Sciberras said, was that Sliema did not need more than one million gallons of water a day, and secondly because the Sliema distribution system could not cope with almost 1.5 million gallons of water daily. As a result, more damage had been done to water pipes, Mr. Sciberras said.

There had also been delay in completing work on the pipeline between Tigne and the Misrah Lewza reservoir. As for the Marsa II project, this had been finalized but had not been used last winter because all the reservoirs were overflowing and there was no more capacity where to store water.

Production

Mr. Sciberras said the Government boasted of increasing water production by almost one million gallons a day in the last two months, but in fact in two months it would not even have been possible to prepare the tenders for such projects.

It had been claimed that the Socialists had neglected the distillers. In fact it had been agreed to rehabilitate one of them on trial, to decide on the others. As for the treatment plants, these did not produce water in summer, they purified rainwater from the overfull valleys in winter, to store it for summer.

Mr. Sciberras said the Nationalists criticized borehole water extracts. He said the Nationalists should stop this extraction, even if only for one week, to have proof of what they were saying.



Remember....

This booklet (IL-BIDLA.... 'the change-over') appeared in the run-up to the 1981 elections. 'No change (in government)... no water...' thus reads the caption below the dripping water tap. We could have published this advert some weeks ago when the water crisis was at its worst... when the few drops of water shown in this picture would have filled thousands with joy.

We did not... because we agree with In-Nazzjon Taghna's editor Mario Schiavone that "the solution to the water problem lies with showing more responsibility. Government by offering solutions and implementing them. Opposition by helping with solutions and not exploiting the situation". We felt that appealing to citizens' anger would have been irresponsible and opportunistic. We prefer to appeal to reason rather than to emotions.

Now that the mercury of the thermometer has fallen by a couple of degrees, we ask you to judge the picture above... rationally and objectively.

Figure App.3.7.24. *The Times* 17/9/93 p.29.

Government accused of bad planning in water distribution

Parliament on Monday started to debate the Water Services Corporation's estimates, covering the period from January 1, 1992, up to September 30, 1993.

Moving the estimates, Mr MICHAEL FALZON, Minister of the Environment, said that this was a period of transition, from the Water Works Department to the Water Services Corporation, which required a change in mentality and culture.

The corporation would eventually manage everything which related to water, including sewage. So far it had only taken over the functions of the Water Works Department.

The structure within which the corporation would function had been determined although it had not, so far, been put into operation. The corporation would operate on a commercial basis and be housed at the former Country Hotel in Laq.

Mr FALZON said water production last summer reached a record 43.7 million gallons per day, which had, however, failed to meet demand during the peak summer months.

Since then works on improving the distribution network had resumed, and the Pembroke reverse osmosis plant was being extended to increase production by two million gallons per day.

Maltese workers were being trained in reverse osmosis plant technology to do away with operational maintenance contracts with the plant suppliers. Contract on capital management and leakage detection were also being organised.

Nothing that the cost of water production from sea water was very high, Mr FALZON said that this could be reduced through better use of second class water, where possible.

Over the past years priority had been given to water production, he said, but the emphasis was now shifting to the distribution network. Problem areas would be identified and would be solved according to priorities.

A major pipeline connecting

Parliament on Monday started to debate the estimates of the Water Services Corporation. Environment Minister Mr Michael Falzon spoke on the corporation's progress since its setting up and said measures were being prepared to discourage waste and theft of water. The opposition criticised the government for bad planning, particularly with regard to the water supply for the south.

Qrendi reservoir with the south of Malta would be completed by year's end, and plans for the building of another reverse osmosis plant in the south of Malta was being considered.

UNACCOUNTED FOR WATER

Turning to unaccounted for water, Mr FALZON said that this was due to three main causes: leakages, theft, and under-registration by water meters.

Although leakages were not as high as had been thought, theft was substantial. Strict regulations were being prepared to punish offenders. Current regulations were inadequate and bordered on the ridiculous, Mr FALZON said.

As for defective water meters, a pilot project involving new meters was already under way.

Mr FALZON said that anyone extracting underground water had to report the matter to the corporation.

A substantial amount of this water was not being used for irrigation purposes, and was being used instead for commercial purposes, he said. The situation could not go on unchecked.

Extraction from sea water aquifers had to decrease by 100 per cent for present tap water quality to be maintained, and it had to decrease by 45 per cent for less salinity to be achieved.

The government, Mr FALZON concluded, was committed to increasing water production, but one had to understand that this limited resource needed to be carefully managed.

Mr CHARLES RUHAGIAR, Opposi-

tion spokesman on the environment, criticised the fact that the estimates covered a 24-month period, and said they had been prepared in a simplistic manner and were bereft of detail, despite a recurrent and capital expenditure in excess of Lm41 million.

Mr RUHAGIAR observed that the two sources of water production in Malta were the aquifer and reverse osmosis plants, of which there were five.

Daily water production was some 28 million gallons, and the percentage of water produced by reverse osmosis was significantly larger than that extracted from the aquifer. Moreover, while water produced by reverse osmosis cost 45 cents per cubic metre, water extracted from the ground cost only 16 cents per cubic metre.

Production by reverse osmosis in the less populated northern part of the island was 10.5 million gallons daily when, in the more populated and industrial south, it was only six million daily.

The south was more dependent on boreholes, and since rainfall was less than average this year, large areas would suffer severe water cuts.

The RO plants had not been sized according to population needs. Reservoirs were not interconnected and better distribution of excess water was therefore not possible.

Water production, averaging 50 gallons per person per day, was very high, compared to between 28 and 30 gallons per person per day in Britain.

WATER SHORTAGE

Mr RUHAGIAR said production from the three reverse osmosis plants in the north was pumped to San Gwann reservoir, which had a capacity of only 1.25 million gallons. There were various occasions when RO trains had to be turned off to avoid spillage. This was certainly not good planning.

One of the Marsa RO plants had worked for only two months in a year as its first water was contaminated on account of drainage

works carried out by the government in the vicinity.

It was irresponsible to have such equipment idle when people in the south continued to suffer water cuts.

The government should encourage the use of well water and seek other ways to replenish aquifers, such as better channelling of run-off water.

Mr RUHAGIAR asked how many inspections of wells were being carried out and whether reservoirs were being built in housing estates to store run-off water. If the answer was in the affirmative, was this water being used?

DAMS

Construction of dams across valleys was also important. In 1980, the "Risq il-Vidien" project had seen the construction of many wells at a cost in excess of Lm1 million. Several dams were built and valleys cleared. How much had been spent by this administration on the construction and maintenance of dams and catchment areas?

Referring to the extension of the Pembroke RO plant, Mr RUHAGIAR said that it was in the south where production needed to be increased. A pipeline was being laid in the south, but when would the water come from?

The first phase of the pipeline construction was supposed to have been completed by February, 1993, but this target had not been met. The minister should give a realistic deadline on the expected time of completion as well as an up-to-date estimate of the costs, which must have increased on account of delays.

Production figures showed that the distribution system was not efficient. This was a major problem. The solution for the water shortage problem in the south was either to build a reserve osmosis plant or to interconnect reservoirs. This latter option was however not practical.

Water wastage had increased dramatically, from 51 per cent in 1989 to 61 per cent in 1991. This was a serious problem, considering that water production was so costly.

The minister had identified leakages, faulty meters and theft as the

sources of wastage. Little, however, was being done to solve the problem.

The renewal of water mains had been reduced from 18 km in 1985 to 14 km in 1991, and under-registering meters were not being replaced.

The theft of water was also being encouraged by the government, through the installation of meters in agricultural areas, where it was a known fact that water was stolen for irrigation.

Mr RUHAGIAR asked what the government was doing to combat water wastage. The Water Services Corporation, which was given the task of solving the problem, had so far only drawn up a comprehensive plan for water conservation, he said. This should be implemented as soon as possible.

WATER QUALITY

Turning to the quality of water, Mr RUHAGIAR referred to the GEM Foundation report on water quality in the south of Malta, saying it had shown that the presence of nitrates was ten times the recommended amount, while the presence of sodium chloride was 150 parts per million. This represented a health hazard.

The Water Services Corporation was aware of the high presence of these chemicals but it was doing little to bring the situation under control. The Corporation seemed more intent in the conversion of the Country Hotel into its headquarters.

Perceived holding back managerial posts in the Corporation were preventing salaries in excess of those previously paid by the Water Works Department, he said.

Furthermore, overall costs for the installation of water mains had increased six fold when road tunnelling works were accounted for.

During 1992, over 40,000 telephone calls had been made by subscribers who had requested the bowser service to fill water tanks.

Concluding, Mr RUHAGIAR said that the government was not tackling the water problem seriously, and consumers were either being offered bad quality water, or no water at all.

(Continued on page 11)

a

Sant forecasts worse water crisis

The water shortage problem will be worse this summer than last year, Labour Party leader Alfred Sant warned yesterday.

Instead of trying to stop water wastage, the government was saying there was no problem. But everything pointed to an even worse water crisis this year, he said.

Dr Sant was replying to questions put by mayors, local council members and the public during a Broadcasting Authority television programme yesterday evening.

He said a future MLP government would permit

citizens to run local councils themselves and end political divisions already adversely affecting local councils.

Dr Sant said the civil service should again become a "noble service" and emphasised the need for discussions with civil servants and the public.

Discussing the Malta-Gozo ferry service, Dr Sant said there was need for performance measuring of the service provided by Gozo Channel.

The existing system should be improved and the possibility of introducing competition considered, he said.

b

Government hiding reality – Sant

MLP leader Alfred Sant said the prime minister had failed to give a satisfactory explanation as to why the water supply situation was still so bad after so many millions had been spent on water production.

It appeared that plans to increase water supplies had fallen short of their target and the government was not even giving an account of what was happening.

Dr Sant, who was addressing women at a social activity in Marsaxlokk, accused the government of hiding reality.

Referring to comments made by the prime minister when he addressed PN committees on Thursday, Dr Sant said that it was evident from the way he spoke, that the prime minister was unaware of the low morale among civil ser-

vants. These had expected better treatment by the government.

Dr Sant said that the prime minister was not surprised by the EC Commission's *avis* on Malta's application for EC membership.

Representatives of EC member countries agreed that the *avis* was a clear sign that the government should stop talking and start restructuring the Maltese economy, he said.

c

The problem of water supply is more serious than what government makes it out to be. Government is in possession of information which it is not revealing to the people. The situation is more serious than it has ever been, and this is due to the wrong decisions taken by government since 1987"

Dr. Sant addressing Vittoriosa MLP Club supporters

d

Whilst normally the price of any item is higher when the product has been upgraded, in the case of water, the Government wants to raise the price when the country is experiencing the most serious water crisis in these last years.

Charles Buhagiar, MP (Lab.), commenting on Environment Minister Michael Falzon's statement on new water rates, 20 September.

Figure App.3.7.26.

a. *The Times* 24/3/94 p.48. b. *The Times* 12/9/93 p.4.

c. *The Malta Independent* 29/8/93 p.8.

d. *The Malta Independent* 26/9/93 p.6.

MLP to monitor water situation

The Labour Party is to start keeping a record on water shortages with the cooperation of the public.

Households affected by water cuts are being asked to send in a form to the MLP which said this first initiative, being coordinated by Mr Charles Buhagiar, main MLP spokesman for the environment, was aimed at creating a national conscience about the problem.

Through the form, the party explained, it would be possible to understand better the extent of the problem. The public is also being requested to comment about the service, such as the quality of water, and to make suggestions on initiatives that could be taken.

INCREASING PRODUCTION

The information would also enable it to draw up its future policies on this important sector.

It said that as summer was approaching, the water problem was again becoming more serious in various localities. This was because the government persisted in its mistaken policy of increasing production instead of improving the distribution system.

Instead of increasing production for the southern part of Malta, which had been experiencing shortages for many years, the proposed increase of production was at the Pembroke reverse osmosis

plant, which supplied the northern part of Malta.

In a counter statement, the Parliamentary Secretary for Water and Energy, Mr Ninu Zammit, said the Pembroke plant was linked through the distribution system with the southern part of Malta and therefore water from that plant could easily be pumped to the south.

The Pembroke reverse osmosis plant is to produce an additional two million gallons of water daily.

He said the Water Services Corporation has already made plans for the immediate future to increase production and to strengthen the distribution system.

Mr Zammit said a lot still had to be done in this sector and projects which are planned required a heavy investment.

He also pointed out that water is heavily subsidised. In fact, the government spends Lm9 for every Lm1 spent by the consumer on water.

He also appealed for a genuine effort by everyone to avoid wasting water.

Water production since 1987 had increased by 10.7 million gallons daily and during the same period the distribution system in the southern part of Malta was also strengthened.

a

Repairs to water distribution system will now cost Lm100m – Sant

Labour Party leader Alfred Sant said yesterday it would now cost Lm100 million to repair Malta's water distribution system.

He said that the water shortage had never been so bad as it is today.

Since 1987, millions of liri had been spent on reverse osmosis plants and for a time it had appeared that the problem was easing.

Ivan Fenech

But then wrong decisions were taken. Water was being pumped at greater expense into a deteriorating water distribution system.

Sixty per cent of the fresh water produced was now being lost, he said.

Priority should have been given to the distribution system. The

government has now been told that it will cost Lm100 million to fix the water distribution system, he said.

Dr Sant was speaking at the MLP's club in Vittoriosa where he had earlier announced that his party's television station, Super 1 Television, had started test transmissions on Friday night.

The MLP has an application for a television licence pending before the Broadcasting Authority.

But hardly had Dr Sant finished his address and called for questions when one angry housewife rose to comment on the water shortage.

When shall we hold a protest? she asked.

Dr Sant was cautious.

Organise a protest yourself and you shall have the party's full support, he assured her.

But do not expect the party to act as a screen for anyone, he said, going on to remark that he had attended protests where the people who had invited him did not turn up.

It was later agreed among the
(Continued on page 2)



b

Government has "failed completely"

LABOUR deputy leader George Vella told party supporters in Xlendi yesterday it was becoming increasingly clear that the government had failed completely.

No sector was making any progress in spite of six years of boasts and promises, and even in the simple matter of coping with a small oil spill the government had not been able to provide adequate means.

Millions spent

Dr Vella said millions had been spent on the Water Services Corporation but the water shortage was ever present. Millions more were spent on the Management Systems Unit which to date had not yielded any results in civil service organisation or efficiency.

Tourism was suffering, with fewer and poor quality tourists coming to Malta because of the daily criminality, thefts, rapes and hold-ups. Even sectors which did not usually speak out were criticising the government, such as the Chamber of Commerce, which has accused the government of not having made sufficient studies of how various sectors would be affected if Malta were to join the EC.

Dr Vella urged his listeners to be more inquisitive, to ask more and speak out louder, and democratically show their anger at the government.

c

Water supply policies ineffective – MLP

The Labour Party has strongly condemned government plans to raise water rates next year.

MLP spokesman on the environment, Mr Charles Buhagiar, accused the government of trying to hide its ineffective policies by raising rates.

The government should have planned the Lm65 million capital expenditure more efficiently because no satisfactory results had been achieved in this sector.

Mr Buhagiar also claimed that the country was facing one of the worst water supply crises ever and supplies were being rationed.

Figure App.3.7.28.

a. The Times 23/8/93 p.1.

b. The Sunday Times 8/8/93 p.2.

c. The Times 30/7/93 p.22.

a

Water problem still far from being solved – AD

Consumers have been urged by *Alternattiva Demoratika* to contact its Citizen SOS service about water cuts.

Complaints would be forwarded to the Water Services Corporation and where no satisfactory explanation was forthcoming its legal advisers could ask for a *pro rata* reduction in the meter rental.

AD called on the government to bring pressure to bear on heavy water users, such as car washes and pointed out that although reverse osmosis plants used up 22 per cent

of energy production the water problem was still far from being solved.

Potable water was being used also for agricultural production and although the water shortage situation had been in existence for years there had not been a collective effort to teach consumers about prudent water use. There should also be emphasis on this in tourism complexes.

Consumers were asked to contact the AD service on tel. 240334 between 10 a.m. and 12.30 p.m. Mondays to Saturdays.

b

Complaints line for water

Alternattiva Demokratika (AD) is urging those with complaints about water cuts and shortages to contact their SOS Cittadin *Alternattiva*.

AD will be taking note of complaints and will forward them to the Water Services Corporation.

If explanations from the corporation are not satisfactory then AD's lawyers will be asking for a decrease in the meter rate for those people who use a lot of water after being deprived of it for a long time.

AD says water problems are the result of inefficiency.

Figure App.3.7.29.

a. *The Times* 9/8/93 p.20.

b. *The Malta Independent* 8/8/93 p.3.

a

MLP calls for resignation of Ninu Zammit

By a Staff Reporter

The Opposition yesterday gave notice of a motion to the clerk of the House of Representatives asking for the immediate resignation of Mr Ninu Zammit as Parliamentary Secretary for Water and Energy and Member of Parliament.

The Labour Party spokesman on the environment, Mr Charles Buhagiar told a news conference yesterday that the MLP had no faith in Mr Zammit, especially in view of the widespread water and electricity cuts over the summer months.

Mr Buhagiar said that during the summer months the water situation in Malta had worsened, and many localities in Malta and Gozo had been without water for long periods.

"The party has noticed that these water cuts occurred after years of spending millions of *liri* on investments, aimed at keeping the Nationalist Party's promise to provide tap water," he said.

He accused the government of investing money wrongly by increasing water production, but without seeing to its proper distribution.

Mr Buhagiar remarked that Mr Zammit had not only failed as parliamentary secretary responsible for the production of water, but had also allowed the loss of more water from the system.

Mr Zammit, was explaining away his failure by placing the blame on the people, whom he accused of wasting water and not paying enough for it.

"However how can people waste water when they rarely have it! When they do, they save it," Mr Buhagiar said.

The MLP spokesman on industry

and energy, Notary Charles Mangion, said that during the summer months there were also a number of power cuts all over the island. But the public had been given no reason for the failures.

Notary Mangion referred to what he called on the "suspicious administrative cases" which fall under the responsibility of Mr Zammit.

These include, among others, the resignation of Enemalta's chairman, alleged interference with internal Enemalta examinations, and irregularities regarding the purchase of a 132KVA cable.

Ninu Zammit's reply

Referring to the motion, Mr Zammit said in a statement last night that he had already replied outside parliament to the totally unfounded allegations which have been made against him.

Mr Zammit challenged the opposition to make the allegations outside the House of Representatives because, he said, it was obvious that the opposition was exploiting parliamentary privilege to raise issues which have already been replied to.

Replying in parliament yesterday to a written question by Dr Joe Psaila Savona (PN), Environment Minister Michael Falzon said monitoring and leak detection exercises showed that up to 22 per cent of water was lost through leakages.

The Water Services Corporation expected this figure to go down to 12 per cent by 1996, Mr Falzon said.

b

Ninu Zammit rebuts call for his dismissal

WATER PRODUCTION rose by 66 per cent in the last six years - from 18 million gallons a day in 1987 to 30 million gallons this year, thanks to new reverse osmosis plants, while the electricity supply rose by 65 per cent from 250 megawatts in 1987 to more than 400 MW this year.

These figures were given yesterday by Mr Ninu Zammit, Parliamentary Secretary for Water and Energy. He was replying to a statement by *Alternativa Demokratika* issued earlier in the day, in which they called on the Prime Minister to dismiss Mr Zammit from his post.

Alternativa said that despite the Nationalist Party's capital expenditure in this sector, and boasting that the situation had improved, concrete facts showed Mr Zammit's failure.

As the parliamentary secretary responsible for water and energy for the last six years, Mr Zammit can no longer blame the situation on the shortcomings of the previous administration, AD said.

In his reply, Mr Zammit said that in the past six years work to improve water distribution had been carried out all over the island, including Bugibba, Sliema, and Birzebbuga, while the first phase of the distribution project for the south had been completed, with the laying of new mains from the Qrendi reservoir to the Ghaxaq reservoir.

These mains were to become operational last week, but because of

faults in the power supply this had to be postponed by a week.

Thanks to the new distribution system, the water supply in the southern part of the island will be greatly improved.

Mr Zammit said that at present the south had a most inefficient distribution system consisting of a one-foot main made in 1954, with water from 20 boreholes fed directly into the system. This now will be superseded.

As for the power supply, Mr Zammit said that faults, such as those which occurred last week, were inevitable.

The power supply

However, the power distribution network had been considerably improved, with the capacity of distribution centres going up from 150 MVA in 1987 to about 400 MVA this year - an increase of 166 per cent. This besides the new Marsa distribution centre of 100 MVA which was completed recently and the large number of new substations and circuits added to the distribution network.

He had explained the reasons for the latest power failure last week.

As to the intention behind the statement of "power-hungry people like *Alternativa Demokratika*", Mr Zammit referred to the report made by the Guze Ellul Mercer Foundation last April, where on page 24 it is stated that: "One is heartened to read an official report by the Parliamentary Secretary for Water and Energy (Zammit 1991) that it seems that finally, in this country, we are nearing a sensible type of solution to the water problem."

Mr Zammit said that work remained to be done, as in these two fields one can never stop. For example, Enemalta was about to embark on the second phase of the Delimara power station with the installation of more boilers and turbines.

Work on a major project, consisting of 132 KV cables between Marsa and Mosta is about to start shortly. This will ensure an adequate power supply with stable voltage, he said.

Meanwhile Mr Charles Buhagiar, Malta Labour Party spokesman for the environment, rebutted the statement made by Mr Zammit on Thursday that the recent suspension of the water service was due to damage at the Lapsi reverse osmosis plant.

This was because various localities which are not supplied by the Lapsi plant were also without water.

It was not the first time that localities getting water from this plant were left without water even though the plant was functioning properly.

Mr Buhagiar said that the government did not want to admit the inefficiency of the corporation which it created to manage the water services.

The water crisis was a direct result of the mistaken policy of the government in this sector, he said.

Figure App.3.7.30.

a. The Times 28/8/93 p.32.

b. The Sunday Times 29/8/93 p.1.

a

61% of water production unaccounted for

The Labour Party spokesman for the Environment, Mr Charles Buhagiar said the Auditor's Report for 1991 showed how mistaken were the government's policies on water distribution.

It results from the report that from a total of 44.7 million cubic metres produced during that year, only 17.4 million cubic metres reached the consumer.

This meant that 61 per cent of the water was unaccounted for, he said.

Unaccounted for water has been

on the increase since 1988. That year it was 52.4 per cent of production and in 1990 it was 59.1 per cent.

Mr Buhagiar said the Labour Party has been urging the government to change leaking old mains but instead it persisted in increasing production with the consequence that more water is lost because of higher pressure.

He urged the government to act immediately to solve the problem of unaccounted for water which, he added, had cost it Lm6.6 million

b

Expensive repairs

LABOUR LEADER Alfred Sant last Sunday said the government has been informed that repairs to the water distribution system will cost Lm100 million.

Millions were spent on reverse osmosis plants in the last six years but water has been pumped into the deteriorating pipelines, with 60 per cent being lost on the way, he claimed.

Mr Ninu Zammit, Parliamentary Secretary for Water and Energy, asked Dr Sant to explain how he had reached the Lm100 million figure.

c

Water cuts to continue – Dr Sant

WATER CUTS in the north and south of Malta are set to continue for weeks to come, Labour leader Alfred Sant said yesterday evening.

The government has blamed last week's widespread water and electricity cuts on Monday's bad weather. But the water cuts have been going on for two months, Dr Sant told a social activity in Ghajn Tuffieha.

Accusing the government of squandering money, Dr Sant said despite boasts that the water supply will increase in summer, there were indications that water reserves used to operate Malta's water supply system were reaching alarmingly low levels.

The water supply was becoming increasingly dependent on energy. A power cut is creating water crises overnight, he said.

The government did not appear to have made any provisions against seawater contamination close to reverse osmosis plants, as happened last week.

This was a matter of national security which should have received priority, said the MLP leader.

Figure App.3.7.31.

a. *The Sunday Times* 30/10/94 p.6.

b. *The Sunday Times* 29/8/93 p.4.

c. *The Sunday Times* 10/4/94 p.1.

Problems identified in 1527 water resources report remain unsolved

By a Staff Reporter

When in 1527 a commission was sent to Malta by the Knights of St John to draw up a report on the islands, they described local water resources as salty and sedimentary.

The sweeter springs to be found around the islands, the commission noted, mostly came from wintry showers. Their source was not deep, for in summer they frequently dried up and diminished.

Mr Antoine Riolo, chief executive, and Mr George Cassar, professional officer with the Water Services Corporation, think that this description graphically summed up the major problems which still afflict Malta today - insufficient supply and water quality.

In a paper entitled "Engineering solutions to water supply problems", which they presented at a national conference organised by the Chamber of Professional Engineers in Rabat, the two corporation officials said that early man had to toil hard to store rain water. As the years rolled on, in the context of industrial and touristic develop-

ment and a rising standard of living, desalination and other technologies were found to be a god-send.

Yet, Mr Riolo and Mr Cassar said, when managing local water resources it was not just a matter of importing solutions in use elsewhere and applying them, unthinkingly, to the local situation.

Was it right, they asked, to build large reservoirs at the highest elevations possible to store water when it was known that the country's water resources - whether at the water table or produced by desalination - lay at sea level?

Was it right to build large fresh-water storage reservoirs on land when it was known that the sea was the country's reservoir, with 55 per cent of supplies coming from the desalination of sea water?

OPTIMUM BALANCE

It was better to study the optimum balance between desalination plant and storage to achieve the highest security for the least possible investment in a situation where there was significant seasonal peaking.

Mr Riolo and Mr Cassar said that now that the immediate supply problem was under control, they were looking for other technologies for the desalination and polishing of water other than reverse osmosis. Apart from favourable economics, RO was a restricted technology whereas other technologies could offer a greater degree of self-reliance to the corporation, they said.

Was it right to desalinate over 15 million gallons and polish another 10 million at a high cost and to EC standards - some 80 gallons per

head a day - and then distribute the lot through one distribution system, providing first class water for purposes for which sometimes second or lower class water could do?

Dual systems could be feasible in certain localities where density of use was high. Also, were there other selective distribution methods which could be employed, they asked.

Desalination and reverse osmosis, Mr Riolo and Mr Cassar continue, were to the man in the street the engineering solution to Malta's water problem.

This attitude, they argued, needed to be changed. The heavy subsidies to most consumers on the price of water encouraged this misconception. As a result, water demand in Malta seemed to be ever expanding.

"It is therefore difficult to convince people that though it may be technically possible, within limits, it is certainly not economically sustainable to proceed along the path of satisfying unlimited demand," they wrote.

Energy consumption at such plants was high, with 11 tons of fuel burnt to produce one million gallons of water. Fifteen per cent of the energy produced at the power station went for water works, the bulk going to desalination.

One item causing increasing concern was the high point load being exerted on Enemalta's grid by the large plants - Lapsi required a steady five megawatts, Pembroke phase one at present accounted for 4.5 megawatts and when completed, it would require 15 megawatts.

Referring to distribution, the paper said that the corporation must distribute the water it produced efficiently and with minimum losses.

There were many misconceptions on this. Fifty per cent of losses through leakages was often alleged while a wholesale replacement of mains was often advocated. Reality, they added, was different.

The water supply system was a complex one, growing piecemeal

over the last 100 years. Over the years, as resources increased, the system had degenerated and a redesign of it was never attempted.

Consequently, there were many defects in a system which consisted of small diameter pipes that have been extended and extended again. The principal main lines often supplied a string of villages with the ones at the end being very susceptible to supply problems.

Boosters have been introduced into the system and an estimated 60 per cent of consumers were either totally dependent on direct pumping or are booster assisted. This tended to favour leakages and damages and also caused supply problems when the electricity supply was interrupted.

The trunks in some areas needed to be redesigned. In the south of Malta, the present main should be downgraded to serve as a collector main for boreholes while a properly designed ringmain is installed.

As to the 50 per cent discrepancy, the paper said it can be attributed to various causes including meter under-registration (foremost) and leakages.

A third area the two corporation officials think should be given great attention in the future - as Malta moved closer to the EC - was water quality.

The causes of the main contaminants in Malta's water were not difficult to identify, particularly in view of the island's long coastline when compared to its size.

There were several options available. In the case of groundwater, consultants were about to finalise a report indicating the best available technologies to deal with the various pollutants.

But already, the paper added, some trends were available. Reduction of the present extraction by some 35 per cent was called for on technical grounds. This would have to be offset by additional desalination.

The paper also mentions other methods, such as blending, which would obtain an overall improvement in water quality.

MALTA is renowned for its very hot summer months and it is during these months that the demand for water peaks. The Water Services Corporation is responsible for the production and supply of water. The Corporation supplies 28.5 million gallons per day but it happens that sometimes demand exceeds this supply.

The water production and supply bill tops the Lm17 million mark yearly. The government subsidy on this amount is close to Lm15 million. There is no need to point out that these are public funds.

For this reason it is important that the water which each and everyone of us uses is not wasted. Great care should be taken so that our water, which is so expensive to produce, is used wisely and with care.

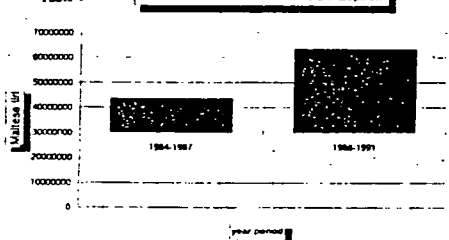
The government has invested and is investing heavily in order to improve both the quantity and quality of the water we use. The upgrading and expansion of the Tigné reverse osmosis plant as well as the new Cirkewwa and Pembroke reverse osmosis plants mean that today 55 per cent of our water production is produced by reverse osmosis methods.

Table 1 in fact shows that the government investment in water has increased by about 46 per cent over the last four years when compared to the preceding four-year period.

Water production

Water production has also increased during these last five years. In fact the increases have been sizable.

Table 1

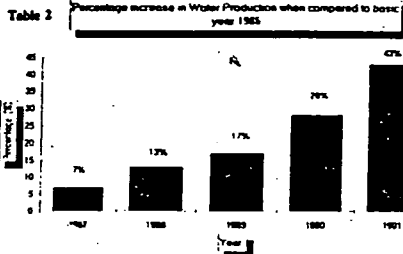


THE WATER SITUATION



by Ninu Zammit
Parliamentary Secretary
for Water and Energy

Table 2



increase in water production compared with 1986.

It is important to note that the reverse osmosis plants account for this increase in production. In 1986 the amount of water produced by means of the reverse osmosis process was 7 million gallons daily. By early 1992 this figure had been increased to 17.7 million gallons per day. This is an increase of 152% over 1986.

The Water Services Corporation has not resorted to pumping water from the aquifer to increase water production. This was done in the past by the last Labour administration as a cheap way to increase production, with very adverse effects on this natural underground water store.

Consumption

The standard of living of the Maltese has improved considerably over the last five years. This is obvious to everybody living in these islands. A higher standard of living creates new needs. We have seen that water production has risen in these last five years due to the fact that demands have also grown. The consumption of water has risen during the last five years.

Table 3 shows the yearly consumption of water from 1986 to 1991.

The figure for 1992 is worked out over seven months till the end of July. Figures show (Table 4) that the consumption in the first seven months of this year is 16 per cent higher than the consumption for the first seven months of 1991.

The figures also show that consumption of water in the first seven months of this year has increased by 64 per cent when compared to the consumption in the first seven months of 1986. There are two conclusions which can be drawn here. This figure indicates the magnitude of the water crisis in the last year of the Labour administration. It is also a valid indicator of the ever improving standard of living over the last five years.

Statistically each person is using around 40 gallons per day. In other countries this figure is generally less. A part of this increased consumption can be attributed to increased tourist arrivals. One however must note that the population of these islands has not increased significantly over the past five years.

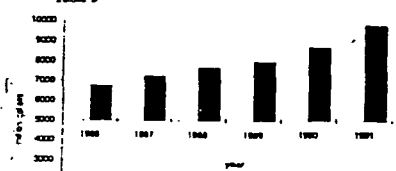
Various sections of the press are saying that more could have been done in the past five years. However, no one can deny that the government has worked and generally succeeded in meeting the demand. This demand is always growing and will continue to grow as the inevitable improvement in the standard of living will happen. It is obvious that the situation in Malta would have been much worse had this investment not have been made. The production of water is expensive, however.

Conservation plan

The government will continue to improve the service by investing in new production plants and towards improving the distribution network further. The Water Services Corporation has drawn up a five year business plan which will cater for the future needs of the country. A comprehensive Water Conservation Plan

Table 3

Consumption of water (1986-1991)



crops or other plants with tapwater. Rooftanks should be kept in good condition to prevent wasteful overflows. Rainwater is usually drained into wells from our roofs. It is important that these are kept clean so that rainwater can be used. Wells should be inspected regularly for cracks which allow water to seep away.

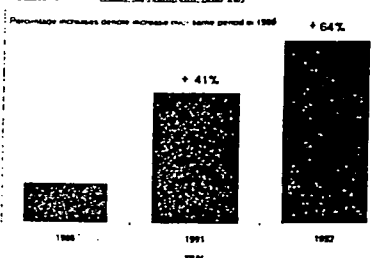
It is our duty to be responsible citizens. In other countries, including Italy and England, where rainfall is more plentiful than in Malta, a strict penalty is imposed on whoever misuses or wastes water. The motivation to use water wisely and well should be born out of a sense of solidarity with each other and our country.

In our islands 45 per cent of our water supply comes from the underground aquifer. The rest is supplied by means of desalination, which is an expensive process. The government is subsidising water production to the tune of about 90 per cent. In other words the government is forking out Lm9 out of every Lm10 spent on water production.

We as citizens have to do our part as well. Wastage of water must and has to be avoided at all costs.

Table 4

Water Consumption (Lm-40)



From Mr. Ninu Zammit, BA (Arch.) B.Arch. (Hons.), A&CE, MP, Parliamentary Secretary for Water and Energy.

THE WATER SITUATION

SIR, — With reference to Mr. Henry Grech's letter (*The Sunday Times*, September 13) regarding the water situation, it must be pointed out that the amount of water lost through leakages and damaged pipelines is much less than half the amount of water produced. The actual amount is in the region of 15-20 per cent of the total water produced, which is also the norm for most countries.

Mr. Grech is no doubt aware of the large amount of work done to improve the distribution system in Malta and Gozo.

However, some localised problems still remain and St. Margherita Estate in Mosta, or rather, a small part of it, still has a distribution problem. This area has seen new buildings and new residents moving in during the last years. The four-inch main supplying this area is old and cannot meet today's demand in that area.

Recently this area has begun to be supplied from other nearby mains and supply has improved by 250 per cent according to recent tests done by the Water Services Corporation. Further improvements are being studied in order to solve the problem once and for all.

At the moment residents in the four streets at the highest level of St. Maria Estate are affected by low pressure.

As Parliamentary Secretary responsible for water I am in constant consultation with the Water Services Corporation's managers regarding all water problems in the island. Therefore the inference regarding my fellow Minister Mr. Michael Fenech's problem is not understood nor can it be relevant to the problem in question.

Finally, my article of September 6, as well as all relevant statistics and graphs, were pertinent to all Malta and Gozo, and not to "another country" as Mr. Grech insinuated. I gave this information as part of my public

duty to keep the public aware and informed on the water situation. I feel that just because I had to do so does not justify Mr. Grech's sarcasms.

Water has always been a problem in Malta since time immemorial. With present methods it is now also expensive to produce enough water to meet the ever growing demand. The article I wrote was meant to make consumers more aware of the problems and the way they have been tackled.

Contrary to what Mr. Grech says, the graphs and statistics give the actual picture... a picture that a lot has been done and much more has to be done in order to cater for the demands of all consumers whoever they may be. The article also highlighted the amount of subsidy (about 90%) that the Government is forking out annually in the water sector. As such the article underlined the need to eliminate water wastage.

I would also like to refer to Miss Ileana Curmi's letter carried in the same issue.

The fact that I stated that nobody should use tapwater to wash cars, house façades, etc. is enough. I invite Miss Curmi to go round the island and see for herself what happens every day in these islands!

I mentioned wells to stress the point that well water should supplement the public water supply. Furthermore well water does not have any production and distribution costs attached to it!

Miss Curmi is incorrect in stating that the knights enacted a law whereby all buildings should have a well. The knights made a regulation whereby all buildings being built in the then new city of Valletta should incorporate a well. It was only by means of the building regulations of 1854 that all new buildings were required to have a well.

This regulation is still in force today. Besides breaking the law, those who do not incorporate a cistern in

Letters to the Editor

a new building would thereby be creating hardship for themselves apart from the fact that they would also be imposing an unnecessary strain on the public water supply.

I am sure Miss Curmi realises that what I wrote reflects the consensus about our water supply. The article in question gives similarly concerned readers a good idea of what is being done and what remains to be done as regards the water supply.

It also highlights the fact that water is expensive to produce and is heavily subsidised by the government (i.e. by the taxpayer). I would like to stress again that wastage of water should be avoided at all costs.

Finally I would like to remind Miss Curmi that the locality in which she lives used to suffer from long and frequent water shortages during the past Socialist administration. Today the situation is completely different. The public water supply in the Sliema/St. Julian's and surrounding areas has improved considerably since 1987.

Yours truly,
N. ZAMMIT
Valletta.

From Mr. Paul J. Mifsud,
SIR, — Mr. Ninu Zammit's article was interesting from a statistical

point of view. He highlighted the increase in water production and consumption, the government's heavy investment and subsidisation of 90% of water costs, the Water Corporation's refusal to resort to pumping from the aquifer, the conservation plan in the pipeline and finally gave a series of practical hints on how the consumer can reduce wastage.

Surprisingly, however, he made no mention of the considerable amount of water lost due to leakages and damaged pipes.

Another omission concerns the mysterious reason why certain localities in the South, particularly Xghajra, Marsascala and Zejtun, are being deprived of a mains water supply for weeks at a stretch forcing them to depend on the bowser service for their daily requirements.

If, as Mr. Zammit states, it sometimes happens that demand exceeds supply, it is fair to have the same localities always bearing the brunt of the water cuts while other localities get by with an occasional and hardly noticeable water cut?

If rationing must be resorted to during peak demand periods, then surely a more equitable system of cuts ought to be introduced.

One does not expect any miraculous, overnight changes in our water supply that would provide what the

average consumer expects to receive by right. After all it must be emphasised that this problem has been with us for almost 20 years due to an outdated mains distribution system.

However it is time that serious action be taken to remedy the situation. What is being demanded by right is the bare minimum, namely enough water pressure to fill our ground-floor level tanks by night to permit the electric pumps to transfer the precious liquid to the rooftop tanks.

Taking into consideration the number of phone calls made, the time wasted trying to contact the bowser section and the spectre of waterless days, would make anyone realise the frustration caused by this inhuman situation.

By all means, let us have higher water rates, even hefty ones, on condition that this would entail a return to a normal situation where a direct supply is available, 24 hours a day, at the turn of a tap.

Yours truly,
P.J. MIFSUD
Xghajra.

From Ms. Karen M. Zammit,

SIR, — I have been residing in Sliema since March 1989. I find it unbelievable that since the inauguration of the reverse osmosis plant at Pembroke we have had more water cuts than ever before!

Yours truly,
K.M. ZAMMIT
Swieqi.

Opposition spokesman's views

From Mr. Charles Buhagiar, BE&A (Hons.), A&CE, MP, main Labour spokesman on the environment.

SIR, — Reading through the article "The Water Situation" by the Hon. Ninu Zammit (*The Sunday Times*, September 6) one gets the impression that Government's effort during the past five years has generally resulted in solving the water problem in Malta.

Of course, as everyone knows, this is absolutely not true. In various villages water is being rationed, with regular water cuts on one or two days a week. In other areas, especially in the South of the island, water cuts stretch for weeks while in other parts of the island the quality of the water reaching the taps is so bad that one cannot use such water for drinking purposes, even after boiling.

Mr. Zammit has boasted of how much money Government has invested in water production and, as a result how much water production has increased. Repetition of this argument only confirms that Government is persisting in not tackling this problem in the correct manner.

In his writing Mr. Zammit mentioned that each person in Malta uses circa 40 gallons per day. Such a demand is considered to be the maximum for societies enjoying an extremely high standard of living. For comparison one can mention that in the UK this standard is assumed as being 32 gallons per person. Therefore on the basis of actual production there should be no water crisis in Malta.

We know that the reality is totally different. One therefore concludes that the solution to the water problem does not consist in increasing the water production.

The water problem in Malta is being caused by various factors.

The main factor is the distribution system. During 1991 nearly 60 per cent of the water produced was unaccounted for, i.e. it was not metered. This means that there must be an unacceptable percentage of water losses due to leakages. Mr. Zammit usually blames unaccounted for water on faulty metering. If this is correct why has Government not embarked on a process to change all old water meters? Surely the revenue generated by correctly metering water would justify such action.

In my opinion to eliminate or at least to decrease the percentage of unaccounted for water to an acceptable level one must embark on a process of changing all old water mains.

In various areas (especially in the South) some of the water mains are more than 50 years old. With the passage of time they surely must have deteriorated considerably, thus giving rise to leakages.

This problem is further compounded by the fact that once production is increased and hence the volume of water through these old pipes is increased there is a pressure build-up in the pipes which would lead to more leakages in old pipes. Thus increasing production of water would be counter-productive.

Government has also stated that the continuous production system for water supply is being used. This

means that rather than storing water in reservoirs and then distributing this water, water being produced by the RO plants and from the boreholes/galleries is pumped to the reservoir and distributed in the mains immediately.

Since there is very little water storage in the reservoir, once there is a breakdown in any RO plant this plant would stop supplying water to the reservoir, with the result that the supply of water from this reservoir would stop, giving rise to water cuts in the localities supplied by that particular reservoir. Considering that like all other mechanical systems, RO plants are subject to faults, then working on a continuous system with no storage is surely the wrong policy.

Another factor which has been giving rise to concern in various localities is the quality of the water. When one considers that the RO plants can produce water with a negligible salinity content then the fact that there is a high salinity content in the water of various localities (sometimes more than three times the maximum set by WHO for health reasons) shows that something must be very wrong.

One must therefore conclude that in spite of the heavy investment made by Government to increase water production the water problem has not been solved. People still have their water rationed if not altogether cut off and the water produced is of an inferior quality.

No amount of statistics can cover up this day-to-day reality. The water problem is causing extreme hardship to the population of various areas as well as giving rise to serious health hazards due to the inferior quality of the water.

I do agree with Mr. Zammit that people must be taught not to waste water. The implementation of a conservation plan is most important although it is already five years too late. However Government must also do its part. Thus, for example, when people report leaking water through damaged mains, action has to be taken immediately. Government has to ensure that all buildings have a well (including the ones built by Government) as required by law.

The installation of water meters in rooms in fields must be discouraged for in nearly all cases this water is used to water crops (this practice was discontinued by the previous Labour administration and water meters in fields were removed; the present administration has resumed this practice).

To solve the water problem, citizens have their part to do. But Government also has to do its part by implementing the correct policies and giving the right example.

Yours truly,
C. BUHAGIAR
Attard.

THE WATER PROBLEM:

Judging facts, rationally and objectively

The Malta Labour Party has been spending money to buy space in *The Times* for an advertisement reproducing the cover of the fourth issue of the publication *Il-Bidla* (The change-over) which used to be published by the Nationalist Party in the run-up to the 1981 elections.

This particular issue contained an item about the water problem and sported the cover which has been reproduced in the MLP advert.

As the person who was the officially registered editor of *Il-Bidla*, as well as the actual writer of the article about the water problem which was published in that issue, I feel I have to point out that the article in question was written way back before the Socialist Government reluctantly and belatedly decided to opt for reverse osmosis technology to produce potable water and so admitting that desalination was a *sine qua non* for our water needs.

Incidentally, this decision was taken in contrast to what had been declared about our water

needs in the 1981-85 development plan published in June 1981 – about the same time that *Il-Bidla* was being published.

The article had explained in layman's language the technical limitations of groundwater extraction.

It explained that experts had warned the previous Nationalist Government that one could not extract as much fresh water as one wanted and how over-extraction would cause infusion from the underlying sea-water.

When in Opposition, Prime Minister Mintoff had criticised the use of distillation in the power station built by the Nationalist Government.

In government he had declared that the solution for the water problem lay in drilling more boreholes as all that had to be done to avoid the predicted damage was to draw water from different areas.

The article pointed out that Malta had such a small area that this theory could not hold true. Considering Malta's size, the

MICHAEL FALZON, M.P.
Minister of the
Environment

drilling of more boreholes would not mean anything except extracting more water from the same reserves, i.e. over-extracting.

For a long number of years the Socialists had stuck to this policy in spite of warnings by the Nationalist Party – warnings that were referred to as incitement (tixwix).

The article further explained that the Socialist PM was still insisting that the country could do without desalination without, however proposing any serious alternative, thus damaging the underground water reserves – a damage which needed a long number of years to be made good.

Mr Mintoff had just dreamt of projects like *Riġ il-Widien* and the building of stone tanks on roofs – projects which were

amateurish and still-born.

The article also referred to the then proposed investment in the Gozo-Malta pipeline to bring water from Gozo when in Gozo there was also a water problem.

Indeed, this part of the article gives a clear indication of the time when the article was published.

The article went on to explain that the borehole programme could not solve the water problem because this was similar to increasing the number of pipes drawing water from the same well as if what really mattered was not the quantity of water in the well.

The trouble that we were in at the time the article was written was the result of hard-headedness on the part of whoever thought he knew more than the experts. Mr Mintoff had defied known science and the Maltese people were bearing the consequences.

What was written in that article was certainly not exploiting the situation in an irresponsible and opportunistic way.

It was not an appeal to emotions but it was an appeal to reason. So much so that the decision to opt for desalination was taken by the Socialists after that article was published and in spite of what had been written in the development plan. This fact alone justifies that article – even by hindsight. Indeed as, the saying goes, the proof of the pudding is in the eating.

Mr Mintoff and his government had driven themselves into such a corner on the water problem that the change-over to the anti-desalination stance to investment in reverse osmosis plants could not even wait for a change in government.

These are the hard facts of history and it is with this background that the article in *Il-Bidla* must be judged. I challenge the MLP to prove that there is any one sentence in that article appearing in *Il-Bidla* No 4 which was irresponsible and opportunistic.

I challenge them to show where that article was not rational and objective.

b

Bid to ease demand for water

The Government is about to launch two major initiatives in an attempt to narrow the gap between the supply and demand of water. So far the emphasis has always been on increasing production and supply. Now efforts will be made to cut down on demand.

The Water Services Corporation will launch a public education campaign within the next few days laying stress on water conservation. And next year water will become more expensive – "pinching the pocket" is being seen as one of the most effective ways to reduce consumption (See article on page 16).

"This is the last year of cheap water," Environment Minister Michael Falzon said in an interview with *The Malta Independent*, as he outlined government plans to introduce a new water tariff structure by January 1994.

Mentality

"The prevailing mentality is that so long as people have water in their taps they do not care about conservation. Water is there to be wasted. This is the harsh truth. Without cutting down on demand we will never have an adequate supply."

"Today's supply would have been adequate seven years ago. But why do we use more water now? Simply because we have



"This is the last year of cheap water"

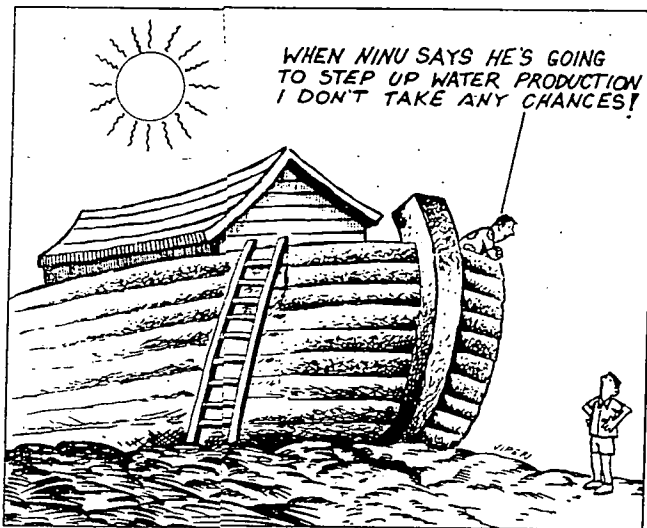
Environment Minister
Michael Falzon

more water available, and we keep on wasting it, as if it costs nothing."

The government subsidises the cost of water to the tune of 90 per cent. But this figure is set to plummet once the new rates are introduced – a good part of the costs will be passed on to the consumer.

The new rates will work on a quota system. A given volume of water will be allocated to every individual in a household at rates "not much higher than what they are at the moment", said Mr Falzon. But commercial rates will be charged for water consumed over and above that quota.

A major upshot of the new system is that industry will stop paying for its water at subsidised rates.



"This will have to stop. The only people who are paying rates which are roughly equivalent to what it costs to produce and distribute water are the hotels."

"Their rates will not increase, although I am afraid there are abuses in this sector. Commercial entities will not have a quota – the system only applies to households."

But the minister refused to divulge figures. He would not say what the quota or the rates were likely to be, or how much the Government is set to save

under the new scheme, saying a Cabinet decision on the details has still to be made.

Proposals

"There are different proposals and possibilities, but I would rather not say any more at this stage. A decision has only been taken on the principle."

Mr Falzon was a little more generous on other details. Every consumer will have to decide which meter will be registering his/her quota in cases where more than one house is owned

or more than one meter is used.

Households will be billed in full by the Water Services Corporation, but the applicable discount, related to the relevant quota, will be subtracted.

"That way the consumer will know how much the Government is actually forking out," the minister said.

The WSC will be operating on a commercial basis and will have to stand on its own feet, he said. Subsidies to make up for reduced rates will be forwarded to the corporation by the Government.

Figure App.3.7.35.

a. *The Times* 23/9/93 p.5.

b. *The Malta Independent* 25/7/93 p.15.

The summer of '93

The telephone was ringing again practically as soon as the receiver was back in its place. Saturday morning, the beginning of a long hot weekend and the localities with a suspension in the supply of water seem to have suddenly increased.

Many were taking what they thought to be a short cut for a solution to their problem by ringing the minister himself at home. No big problem, really, I am by now accustomed - or shall I say resigned - to this quaintly Maltese aspect of the ministerial role.

The Water Services Corporation has had to suspend the water supply from Ta' Qali. The mains must have been closed for some 24 hours and Msida, and parts of Birkirkara, Hamrun and Qormi would be waterless. When the water level in a reservoir is very low it makes more sense to close up supply for a day to give it enough time to recuperate and restore the necessary pressure. With demand exceeding supply, this sort of emergency action - euphemistically dubbed as management of water reserves - is resorted to almost weekly.

The practical result of the exercise, however, is not that all taps dry up for 24 hours a week. In the low lying areas the water supply practically never stops: there is enough water left in the pipes to keep these areas happy even when the sluices are shut. Other areas are not so lucky: being at a higher level, their water supply is cut off when the sluices are closed, but is not restored immediately they are opened. The water pressure takes time to build up.

I try to explain this simple fact to all those who ring up complaining about water cuts. Some grudgingly accept my explanation. Many probably think I am just a politician dishing out excuses by shifting my apparent incompetence to the workings of the laws of gravity.

It is obvious that this situation cannot go on. What has hap-

Stemming demand rather than increasing production should be the priority in our water policy, maintains Michael Falzon

pened again in 1993 to put us almost back to the situation where we were six or eight years before? What has happened to those reverse osmosis plants which have cost so many millions of liri? They are producing the declared increase but the fact remains that production is not satisfying demand. Not having increased our water productivity for just two years, has apparently put us back to square one.

Increasing demand

If the demand for water today was the same as it had been six years ago we should have no problems. But increases in demand have continuously outstripped increases in production. Add to this the perennial problems of unaccounted for water, i.e. water which is produced but is never metered as consumed by anyone. This is not simply a matter of leaks - that is only a small part. It is mostly under registration by old meters and an alarmingly increasing rate of stealing for irrigation and commercial purposes.

This year another two trains will be installed at the Pembroke RO plant. Another two million gallons a day would of course help but I am sure that next year the demand would be for more than whatever we can produce.

The underlying problem is really one of culture. First of all the fact that this small island, with its geographic and geological characteristics cannot naturally have the water resources to maintain a third of a million people with an ever bettering quality of life plus a million tourists annually.

This is, of course, old hat. That is why we have reverse osmosis technology now producing more than half the water we use. But old hat or not, I believe that a lot

of people still do not understand and fully realise the seriousness of this situation.

This is more evident when one sees how water is used - or abused - when it is available at the turn of a tap. See how people use it to wash cars or to clean the dust from their front gardens! When Malta is the country with the most expensive water in the world, the mentality that water is cheap has to be eradicated. There is no way to do this without educational programmes and without a revolutionary change in the water tariffs structure. There is no better way of making people become aware of a problem than making it pinch their pockets.

The water tariffs structure as it is today is ridiculous. Ask any person whether he is prepared to pay 50 cents (the price of a packet of 20 cigarettes) a week to have water in his taps and he will probably say yes.

Check how many households are paying less than Lm26 a year for their water. The answer is a shocking 94 per cent. The water demand-production spiral is obviously the result of that well known economic maxim: "when supply is for free, demand is infinite". The time has come for new priorities in our water policy. Increasing water production cannot be a priority for ever but stemming demand must be, by tackling the unaccounted for water problems and by putting a realistic price on water.

This country cannot keep on spending millions of liri to produce water to give to consumers who then use it indiscriminately just as if they have some God-given right for an infinite amount of water at 10 per cent of its cost.

The author is the Minister for the Environment, and is responsible for water and energy.

Figure App.3.7.36. The Malta Independent 25/7/93 p.16.



THE WATER SITUATION Problems and solutions

FACTS OF LIFE offer little cheer when people, yours truly among them, open the tap and find no water once a week or more during the peak summer months.

But there would have been even less cheer and unprecedented exasperation had this Administration not tackled the perennial water problem with indefatigable effort and substantial costs. As *The Times* editorial of August 12 put it, "One shudders to think what the situation would have been had the Government not taken immediate steps to embark on an extensive water production programme on taking office in 1987."

Nine million gallons more daily

The current shortage of water persists despite the fact that Malta is producing between 26 and 29 million gallons of water daily. This is nine million gallons (30%) more each day than in 1986. Without this increase in production - which comes from a new reverse osmosis (RO) plant at Cirkewwa; another at Pembroke; and an extension of that at Tigné - Malta would have been in a nightmare situation.

When taking office in May 1987, this Administration found no long-term plans whatsoever to increase water production.

It only found plans to extend the Tigné RO plant. Neither did it find any plans for more electric power, which is vital for RO plants. The need for the new power station is evident.

Health considerations

Health considerations are a priority to this Administration. While total water production increased by 30% in less than five years, the production of water from the mean sea level aquifer, the culprit for salinity and all attendant hazards, has virtually remained the same. But the percentage of groundwater has been reduced from 63% in 1986 to 43% this year.

by **MICHAEL FALZON**
Minister for the Environment



Government could have thrown quality and health considerations out of the window and pumped more water from the 183 boreholes drilled by the previous socialist government. That would have merely stitched up a problem, avoided puns, demagoguery, as well as some legitimate complaints. But this would not have helped solve the long-term problem, nor take into consideration water quality aspects.

The damage caused by 183 boreholes drilled during 16 years has permanently maimed nature's diligent work over centuries since the beginning of time. Borehole production, which had become an obsession, could not continue to increase.

The fears of this administration shared also by other people who used to go unheeded by the champions of boreholes, have now been confirmed scientifically by French experts.

We must not only refrain from increasing groundwater extraction but must also reduce it to avert even more serious damage to the natural aquifer equilibrium.

It must be pointed out that one of the advantages of the new Qrendi pipeline is that when the second phase of this project is completed, direct feeding of borehole water to consumers will be eliminated. The old pipeline will be used as a collector main to ensure that all borehole water is fed to reservoirs and blended before distribution to consumers through the new pipeline.

The tables accompanying this contribution spell out the salient parameters which contributed to water shortage this summer - dismal rainfall; 23,000 more household units over six years; higher influx of tourists; changing lifestyles and more water consumption gadgets. The information clearly highlights the dimensions of the problem and gives an indication of the action taken to overcome it.

40-year-old pipes

There are several other measures which have been taken but are not referred to in the tables. By now an expansion of the Pembroke RO plant has increased production by 1.8 million gallons daily. An underwater pipeline was laid in 1989 from Tigné to Valletta, thus greatly improving water distribution to the capital city. The first phase of a 26 km pipeline linking Qrendi reservoir to the southern part of Malta will soon be completed. This link is at present served by 40-year-old pencil-wide pipes.

In 1992 alone 19 km of water supply pipes were renewed. These vary in diameter from three inches to four inches, are of durable ductile iron and lined with cement. The Socialist administration largely restricted renewal services to two-inch galvanised pipes which rust, clog, bend and puncture very easily.

Several electricity substations and laying of cables were among other non-grandiose but essential work done in the resolute pro-

gramme to solve problems. Control of water supply has since 1988 been more evenly spread throughout the country to ensure equity in supply and inconveniences as is technically possible.

Since people are interested in solutions rather than lamentations over past mistakes, I will not bore readers with history. Let me simply say that Malta is paying a heavy price for suspending its desalination programmes which began in the late 1960s and which were then abandoned for several years.

The work ahead is to further curb waste, theft and leakages. Work will continue on renewal and expansion of distribution systems. Production from boreholes must be reduced while another RO plant in the south of Malta must be actively considered. Government and others must promote awareness that this vital source of life is precious when it flows from the tap as well as when - as the song goes - the well runs dry.

While working at this we must be conscious of our limitations and bear in mind that only Gulf countries swimming in oil have, proportionately, higher sea-water conversion production than Malta.

We have abundant seawater but no oil, although we are stubbornly searching for it. But this administration's solutions do not rely on wishful thinking. We rely on facing the problems with what we have now and with what we can realistically have tomorrow.

We are far from a panacea for the water problem, but considering our country's resources, the measures we have taken and will keep on taking indicate quite a different story from complacency.

Salinity:

DRILLING OF BOREHOLES

Over-pumping of boreholes and galleries is the main culprit for the high salinity content in drinking water. Excessive extraction from the mean sea level aquifer disturbs the natural equilibrium, and damages permanently the quality of the water it contains.

Yield of the aquifer is related to rainfall. In fact this year the aquifer is yielding 0.75 million gallons per day less than the corresponding period last year.

This table shows the number of boreholes drilled for direct water extraction over the years:

1943 to 1970:	45
1972 to mid-1987:	183
mid-1987 to 1990:	0

Daily production (July averages) of water from boreholes, pumping stations and springs stood at 11.1 million gallons in 1986 and edged up slightly to 11.5 million gallons in 1993. But the percentage of borehole production out of the total decreased from 63 per cent in 1986 to 43 per cent in 1993. The effort to decrease the salinity problem is evident.

Other Data:

•**RAINFALL:** 1993 has been one of the worst years in terms of rainfall:

1986	737.6 mm
1987	861.6 mm
1988	657.7 mm
1989	518.4 mm
1990	602.9 mm
1991	555.0 mm
1992	490.7 mm
1993	175.9 mm (Jan to July)

•**RESERVOIRS:** The total capacity of man-made reservoirs in Malta and Gozo is 100 million gallons. This is only equal to three and a half days' supply. Reservoirs do not contribute to increased supply. Existing reservoirs are never full. Since only 45% (at best) of our water comes from natural sources, the main utility of reservoirs is to tidy us over periods when desalination plant is out of action. This presupposes additional plant to rebuild the reserve.

•**NUMBER OF HOUSEHOLDS:** The number of domestic services in Malta and Gozo increased from 165,147 in 1986 to 188,640 in 1992 - an increase of 23,493 units.

•**CARS:** Since 1987, the number of new motor cars on the road increased by an average of 11,000 a year. The number of vehicles on the road is now around 160,000. Just consider the increase in water consumption if one uses five gallons of water to wash the car every fortnight. Consumption shoots up with the use of pressure pipes.

•**ELECTRICITY TO PRODUCE WATER:** While in 1986 Malta and Gozo used 9.83% of total electricity production to produce water (RO plants, boreholes, etc) the percentage rose to 16% in 1992. Without the new power station, water production in Malta would have been substantially less.

Average daily water production (over a year)

	Reverse osmosis and desalination plants	Boreholes/pumping stations	TOTAL
1986	6.1 million gallons	11.1 million	17.1 million
1992	14.7 million gallons	11.8 million	26.5 million

Daily water production during July (average in millions of gallons)

1986	17.1
1993	26.6

There were days in July when production reached 29 million gallons. This was however in conditions of distorted demand and with the new Qrendi pipeline not in use.

Daily production from new RO plants since 1988

Cirkewwa (began 1988)	3.52 million gallons
Pembroke (began 1991)	3.37 million gallons
Tigné	2.93 million gallons
Sub-total	9.82 million gallons
Pembroke (1993 extension)	1.8 million gallons
Total	11.62 million gallons

The water problem

THE ARTICLE "The Water Situation" by Minister Michael Falzon (*The Sunday Times*, August 22) provides little comfort to those who are having their water rationed on a regular basis, or worse still, who have had their water supply suspended for days, weeks, months or even years.

Nowhere in his article was there an indication of a period at the end of which Government plans to solve this problem. One only finds the reasons (excuses) given by Government spokesmen for this problem for the past six years, i.e. bad planning by the previous Labour administration, waste of water (by the uneducated population), theft of water and leakages. By means of various sets of statistics Minister Falzon tries to blame everybody for this problem except the present administration.

If one analyses the figures given by Minister Falzon one finds that:

i) Daily production of 29 million gallons, from which one deducts 2.5 million gallons for use by industry and taking into consideration tourist arrivals, gives a daily production figure of 64 gallons per person.

This is far above the standard required by societies which enjoy a very high standard of living (40 gallons a day per person) and more than twice the British standard (30 gallons/day/person).

Therefore an increase in the number of households, or in the number of new cars or a betterment of the standard of living surely should not result in creating a water problem.

ii) No new boreholes were drilled by the present Nationalist administration. This does not mean anything, since the salinity in the water is not a result of the number of boreholes but of the volume of water pumped up from these boreholes.

The French consultants have recommended that the volume of water pumped up from the aquifer be reduced. Not only was this not done but the Water Services Corporation (WSC) has actually increased the amount of water being pumped out of the aquifer from 11 million gallons in 1986 to 11.8 million in 1992.

iii) The water production which has increased from new reverse osmosis plants feeds only the North of the island. This means that water is not being distributed justly with the consequence that the South is suffering from a major water crisis.

Distribution

The Labour Party for the past five years has been stating that the major problem in our water system is that of distribution. The percent-

by Charles Buhagiar, A&CE, MP (Labour)

UNACCOUNTED FOR WATER

Year	1987	1988	1989	1990	1991
Percentage	52.8	52.7	51.1	59.1	61.0

age of unaccounted for water over the years has reached the incredible figure of 61%. This means that we do not know what happens to six out of every ten gallons of water we produce.

If one considers the cost of producing water, this unaccounted for water is costing the taxpayer the sum of Lm6.84 million annually - literally money down the drains.

One must note that the percentage of unaccounted for water is increasing with the increase in production. This is due to a build-up of pressure in old mains which tend to fracture and leak more with an increased volume of water.

Government usually explains the

(source: yearly budget estimates) indicate that the length of mains being rehabilitated is decreasing and not increasing and hence very little is being done to eliminate leakages in the water distribution system.

As regards water theft it is true that this is happening especially in rural areas for agricultural purposes.

But even here Government is showing its inertia in tackling this problem, for during the past three years very few persons or nobody at all was arraigned in court and charged with stealing water.

One must therefore conclude that Government is doing very little to solve the problem of unaccounted for water. Now the minister has announced that to stop waste of water Government will be increasing the water rates.

If that is so who will pay for the wastage of 61% of our water? Will it be the Water Services Corporation or will the taxpayer be asked to pay for the inefficiency of this corporation and the bad policies pursued by Government in this field? At the end of the day no amount of figures or statistics will hide the truth. Malta is in the grip of a serious water crisis. The tap is opened and nothing comes out. In spite of all the talk about money spent it is clear to one and all that this money has been invested badly.

If the hardship caused by this problem were not so serious, the Nationalist Party's 1987 electoral pledge that water will be available to all must surely qualify as one of the best jokes of the century.

RENEWALS OF OLD MAINS

Year	1985	1986	1987	1988	1989	1990	1991
(km)	18	21	17	18	14	10	10

figure of unaccounted for water as being due to undermetering, leakages and theft.

If undermetering was indeed the problem due to faulty meters then government should have unbarked on an exercise to change all old meters.

From the table below it results that Government efforts to carry out this exercise peaked in 1989 but then decreased to such an extent that the number of meters changed in 1991 is lower than that for 1985.

Government also says that part of the unaccounted for water is due to water leakage. Obviously one would therefore conclude that Government needs to start replacing old mains as quickly as possible.

The figures in the above table

OLD WATER METERS CHANGED

Year	1985	1986	1987	1988	1989	1990	1991
Amounts	10869	5172	7354	11212	12644	11139	9802

a

MLP finds rise in water rates 'unacceptable'

The new water rates are a financial measure intended to increase the government's revenue, the Labour Party spokesman on the environment, Mr Charles Buhagiar, said yesterday.

Instead of increasing its efficiency and cutting down the losses made through the poor distribution system, the government was increasing rates to make up for the inefficiency of the Water Services Corporation.

This is unacceptable, said Mr Buhagiar in a statement, particularly since for many people the corporation's service was either non-existent, suspended or of low quality.

The new rates will also continue to increase the cost of living, he added.

In announcing the new rates, the Minister of the Environment said they were necessary to cut down on waste.

But Mr Buhagiar said families did not receive a regular service and could hardly waste what they did not have.

Also, some 40 per cent of Maltese families paid only for the water meter and not for water they consumed either because they were careful or did not have much to start with.

The allowance of free water per family - 27 cubic metres every four months - is to be removed from next January.

Through the new rates, revenue from water will increase from Lm3 million to Lm6 million.

The government lost 60 per cent of all water produced, said Mr Buhagiar. The remaining 40 per cent, which did reach the consumer, was costing Lm4 million to produce.

The revenue will be equal to the cost, said the MLP spokesman.

b

PARLIAMENT

Adjournment

Sant receives Lm2,285 water and electricity bill

Accuses WSC of systematic over-billing

Opposition leader Alfred Sant on Monday accused the Water Services Corporation of systematic over-billing and said he had received a water and electricity bill for Lm2,285.78c for his private residence in Triq il-Vitorja, Birkirkara. The bill covered five months between August 18, 1994 and January 7, 1995 and included no arrears.

His case, Dr Sant said, was not an isolated one, but part of a systematic process of over-billing which was proving to be a burden on many families.

Dr Sant said over-billing, especially for water, was becoming a serious problem for many families and pensioners with middle to low income.

Such over-billing was not a coincidence but was part of an overall government strategy to increase its revenue.

The Water Services Corporation had projected an increase of 250 per cent in its revenue. This projection was being reflected in the exaggerated bills being received by many families.

The problem was aggravated by the fact that many of those involved were being told shouldered when they complained.

Dr Sant said that his was the most exaggerated case that he had come across.

Speaking on a point of order, Environment Minister Francis Zammit Dimech asked for a copy of the bill and promised to investigate the case. He denied that over-billing was part of any systematic campaign.

Dr Sant insisted that these "errors" were systematic and that he did not want any privilege because he was an MP. He did not want to give the impression that he was taking up the adjournment with his personal case. The problems which such bills caused to many families were worse than his personal case, Dr Sant said.

Figure App.3.7.39.

a. *The Times* 24/11/93 p.52.

b. *The Times* 29/3/95 p.9.

a

PARLIAMENT

Ninu Zammit also receives wrong water bill

Investigation on Dr Sant's mistaken bill

The Parliamentary Secretary for Water and Energy, Mr Ninu Zammit, said in parliament on Tuesday that an inquiry was being carried out at the Water Services Corporation over a mistaken water bill issued to opposition leader Alfred Sant. Mr Sant complained about the bill during the adjournment on Monday and accused the WSC of over-billing.

Mr Zammit said that he had also received a mistaken water bill, with the quantity of subsidised water being miscalculated.

Mr Zammit said he referred the bill to the Water Services Corporation where it was revised and duly corrected.

The mistake could be better understood when one considered the fact that data was collated from three different departments and wrongly inputted into the

computer. The corporation was now carrying out new calculations in an effort to solve the problem.

Mr Zammit referred to queues at WSC customer care desks which Dr Sant had mentioned and said the largest number of people in the queues were there to query the number of people in the household in relation to the subsidy. Yet forms were available at local council offices for claims on the number of persons in a household to be made.

Dr Sant had also said that the WSC had increased its revenue. This was a good thing, but the increase in revenue was not coming from over-billing but because the rate of unaccounted for water was being cut down and great amounts of water were being billed in view of the introduction of more sensitive water meters, Mr Zammit said.

As for Dr Sant's bill, Mr Zammit

said a clerical error was made in the input of the number of units consumed. This error was due to a combination of factors and the opposition leader could have easily had his bill rectified had he lodged a proper complaint. Moreover, an internal investigation was going on in the WSC to establish who was responsible.

Before summer 1994, Dr Sant had warned of serious water problems yet summer had come and gone with little to no problems.

The opposition had also claimed that the subsidy on 20 gallons of water per person per day were not sufficient. Yet according to Dr Sant's own bill, the two persons in his household had consumed an average of eleven gallons each. Thus, 20 gallons could not be considered as being insufficient, Mr Zammit concluded.

b

Sant on water, electricity bills

Labour leader Alfred Sant said yesterday he had not made public the huge mistake made in the water bill sent to him so that a witch hunt would be launched, but to highlight problems people were having to face.

The Parliamentary Secretary for Water and Energy would have done better to heed the justified complaints people were making

about high water and electricity bills, Dr Sant said.

On the other hand, Parliamentary Secretary Ninu Zammit said an inquiry has been launched not to punish people but to establish how the mistake was committed. Such an inquiry was held in all similar cases, not just into the case raised by the leader of the opposition, Mr Zammit said.

Figure App.3.7.40.

a. *The Times* 30/3/95 p.9.

b. *The Times* 30/3/95 p.10.

Water Services Corporation

Minister outlines challenges ahead

Water supply has for the first time exceeded demand, Dr Francis Zammit Dimech, Minister of the Environment, told Parliament on Tuesday when introducing the estimates of the Water Services Corporation.

The estimates which started being debated in the morning were approved in the evening with the opposition voting against.

Moving the estimates, Dr ZAMMIT DIMECH said the corporation was now transformed from a supply driven enterprise to one which was demand driven meaning that the water supply was no longer restricted to the country's needs.

Daily water production had reached 30.79 million gallons with the inclusion of the added capacity from the Pembroke plant.

Reverse osmosis plants accounted for 17.9 million gallons a day reaching 23.3 million with the Pembroke plant in full capacity spread as to 4.8 million from the Ghar Lansi plant, three million from the Tigne plant, four million from the Cirkewwa plant and 1.5 million from the Pembroke plant in full capacity.

Speaking on the Pembroke plant, Dr ZAMMIT DIMECH said it had started in 1991 with four trains which were progressively increased by five in 1993 and another six this year.

Problems relating to noise level had been eliminated with the introduction of the last six trains and what happened last summer when the noise level was acute was due to the forced use of spare trains which were not technologically sophisticated. The new trains which were now installed were supplied with acoustic shields with a modern system of soundproofing.

The corporation which was set up with a mission to achieve a more rational water supply and demand giving due attention to the environmental protection element could now tackle other problems.

But today and for the first time the country was less dependent on groundwater which was a significant fact in itself. Recurrent problems which had become a yearly occurrence was the contamination of groundwater after heavy rains which blocked pumping stations with no spare resources.

Dr ZAMMIT DIMECH said the corporation was faced with a total shutdown of pumping stations as recently as last October when 100,000 gallons were lost. Despite this the water supply was not affected as a result of the spare capacity which could and did in fact make up the shortfall.

The position now was the inverse it was before in that an adequate water supply was no longer dependent on water being supplied from Gozo. The cycle had turned full circle with water supplied from Malta to Gozo reaching 21 million gallons up to this year.

Referring to Phase 2 of the Qrendi pipeline, Dr ZAMMIT DIMECH said it had eased dependence of water production from boreholes which supplied localities such as Marsaxlokk. The supply used to stop whenever there was a power failure and besides the water quality was not

good.

A situation had been reached where debate over quantity but quality, he said.

And in this respect the government was aware of its international obligations to supply good quality water in line with WHO and EU directives.

The corporation was studying a pilot project which envisaged a two tier water distribution system which would supply good quality water for drinking and a lesser quality for other purposes.

Inroads had also been achieved in water blending, Dr ZAMMIT DIMECH said. This was an important facet considering the high grade of salinity existing in groundwater sources.

More acceptable international blending levels needed to be attained although improvements had been registered after water production from reverse osmosis plants was increased.

The monitoring of water samples had also been taken in hand with 4,364 samples for analysing water quality having been taken in the period October last year to July this year.

The corporation was after an efficient and cost effective service and its aim was to reach standards defined in International Standard Order 9002.

Other plans in the pipeline consisted in tapping less water from groundwater sources, to protect the aquifer, collect groundwater in reservoirs to achieve better blending, improve the quality of distilled water and better the distribution system.

The corporation was also monitoring indicators derived from an improved standard of living which had brought about an increase in the importation of water-related domestic appliances particularly dishwashers and washing machines.

Imports of the latter type of appliances had, as at 1992, increased by 200 per cent while it had increased to a staggering 1,540 per cent in relation to the former totalling 16,449 and 162,000 respectively.

The corporation had furthermore embarked on a drive and had taken various initiatives to boost its image as a demand management oriented enterprise. It had, for example, carried out a campaign for water conservation and had introduced a new billing system.

In this, Dr ZAMMIT DIMECH said, the corporation was motivated by considerations that despite supply was adequate production costs were high at 75 cents per cubic metre. Instigated by its social commitments the corporation had undertaken a scientific study. This had shown that the daily normal consumption per person was 10 gallons which was in fact being subsidised by the government by as much as 90 per cent bringing down the cost of 67.5 cubic metres of water to 7.5 cents.

And subsidy was also being given to the next 10 gallons which from an actual cost of 56.2 cents was billed at 18.08 cents with the full rate being applied on water consumed in excess. These rates, Dr ZAMMIT DIMECH said would now be

reflected in water bills.

Another problem area the corporation was looking into was that of unaccounted for water which was due to the piping system.

Turning to the human resource element in the corporation, which the minister described as its greatest resource, Dr ZAMMIT DIMECH said the corporation employed 1,356 employees.

Average earnings had increased to Lm70 from Lm65 a week and training programmes as an ongoing process were being set up.

An institute of water technology

The corporation has taken various initiatives to boost its image

ogy in collaboration with the university had been set up and courses covered also computer studies.

The challenges ahead were for the corporation to achieve greater effectiveness and efficiency and be more consumer conscious and the projected building of a reverse osmosis plant in the south to compensate for the Tigne plant which would give way to the development of Manoel Island.

Opposition spokesman on the environment, Mr CHARLES BUHAGIAR, said the corporation's objective, as brought out in its mission statement, was to achieve a more rational and economic use of water.

But where these objectives being attained, he asked, adding that this was what the minister should have spoken about instead of providing a lot of statistics.

The minister had ignored how the corporation should operate and had instead emphasised on its commercial aspect.

But even in this field, Mr BUHAGIAR said, the corporation had failed miserably as its expenditure exceeded revenue by some Lm1.2 million.

The corporation had sustained its biggest loss from unaccounted for water which had reached disproportionate levels. It was 52.4 per cent of total water production in 1988 progressively increasing to 59.1 per cent in 1990, 61 per cent in 1991 and 62 per cent last year.

Figures given by the corporation for this year showed that water production had reached 24.5 million cubic metres of which only 8.5 million were billed which resulted in a further increase in unaccounted for water of five per cent reaching 65 per cent of total water production.

The government was on its part justifying this loss as to 31 per cent to mistakes in meter readings, nine per cent in thefts and 20 per cent in leakages. But notwithstanding, the problem of unaccounted for water had not been solved, he said.

Speaking on the theft problem, Mr BUHAGIAR said the corporation was saying that controls had been intensified. But information given by the corporation and the minister was contradictory. For example figures on the number of cases brought up before the courts did not tally.

The corporation needed also to see to the problem of leakages

which represented a high incidence of unaccounted for water. The figure given by the government was not credible and it was higher, he said.

Leakages had increased with increases in water production which showed that they were due principally to house connections.

Speaking on accumulated losses, Mr BUHAGIAR said that over a period of one year 20 months the corporation had incurred some 25 million in losses, five million of which were incurred in the period 1993/1994 and twenty million in the preceding twenty months.

The minister, Mr BUHAGIAR said had also referred to an increase in water production. But for the past years production had not been a problem. The country was currently producing 60 daily gallons of water per person which begged the question if an increase in production was justified.

The real problem was the absence of an effective and sound distribution system in the sense that the water would effectively end up in reservoirs.

Even the quality was not good, he said, and this both with regards that extracted from boreholes and that produced by reverse osmosis plants which were not being properly maintained. Contrary to what the minister had said blending was not being effected and the quality was of the most inferior.

The corporation was now saying it would next year carry out its largest project to date which was the building of a reverse osmosis plant in the south. This, Mr BUHAGIAR recalled had already been proposed last year. Was it such a large project after all when it merely consisted in transporting the Tigne plant to one in the south, he asked.

The dismantling of the Tigne plant will continue worsening the water problem in Valletta and Floriana particularly to apartments in high-rise buildings and more so as the Marsa 2 pipeline was only sporadically utilised, if at all.

Could a small country like Malta afford to keep plants which did not function and what solution did the minister have to improve water supply in the Valletta and Floriana area, he asked.

Another factor giving rise to unaccounted for water and which the corporation had so far ignored was water acquired from unlicensed shafts. In this area, Mr BUHAGIAR said there were no controls and bowlers were allowed to carry such water with impunity despite that no licences for shafts had been given.

Neither was the corporation giving due attention to rain water. This was a wastage of a natural resource which was not justified when costs of water production were so high. Not only where there were no systems to manage rain water run-offs but those which had been planned by the Labour government had been abandoned.

There were irregularities in the granting of promotions and these had de-motivated employees and brought about inefficiency in the corporation.

Employees were also not being provided with proper equipment to do their job. There were cases

when workers could not install water meters before consumers came up with the necessary tools.

If the corporation wished to work efficiently it had to win the people's support. The people were after all, subsidising the corporation and expected to be given a good service. The corporation had to manage the country's resources in an effective manner, he concluded.

Mr NOEL FARRUGIA (MLP) said it was worrying to hear the minister and parliamentary secretary claiming that the corporation was providing an efficient service and could cope with demand.

Despite the millions of liri spent and the propaganda that had been made, there was still a crisis in the water sector and consumers were not satisfied with the quality of tap water.

The government had to realise that there could be a social problem in the future as the cost of water was bound to increase further. The crisis would worsen if the quality of drinking water did not improve.

More attention was needed to prevent excess groundwater extraction and the danger of groundwater contamination, Mr FARRUGIA said.

A sewage overflow at Biskett was contaminating nearby wells, for example.

While more studies needed to be made on preserving groundwater, consumers should be further encouraged to save rain water.

And a proper study would also show that tap water was not suitable for drinking purposes or for other domestic uses such as for cooking.

Farmers had no alternative but to build shafts because water was contaminated

and those who wanted to have good quality water had to import to imported bottled water, he concluded.

Mr EVARISTO BARTOLO (MLP) said the problem was one of quality not quantity.

People now expected to have better quality water particularly because they were paying more for the product and technological advances had been made in the production of water.

But despite inroads in technology sources of contamination had increased and the quality of water had not improved.

Water bills had in the meantime become three times more expensive from what they were previously and the consumer was not getting a good quality product for his money.

Water salinity was high and in some places reached 3,000 milligrams per litre while in others it was 1,000 milligrams per litre when the recommended level according to the World Health Organisation should not exceed 250 milligrams per litre.

And the quality needed to be improved not only with regards tap water but also with regards bottled water. Unfortunately when a local newspaper had, some time ago, published the salinity content in bottled water, bottling companies had threatened to withdraw all adverts and the matter was abandoned.

(Continued on page 8)

Inroads has also been achieved in water blending

Dr. Portelli still contends local tap water is a hazard to health, despite DOI denial

Dr. Frank Portelli, a Nationalist candidate who, following various tests on local tap water has reached the conclusion that it is not suitable for drinking, still maintains that local water is a hazard to one's health, despite Government's claim that Dr Portelli's conclusions were baseless and "could cause panic among the general public."

Dr Portelli was asked to comment on a letter which Mr P. Milsud, Government's Principal Public Relations Officer sent to The Democrat in reply to a report on this subject which appeared in our issue of July 2, 1983.

Mr Milsud's letter says:

"Dr Portelli has every right to analyze tap water and express his opinion about the subject. But it is unfair to publish this opinion in such a way as if it were an authoritative report made by an expert in this field, especially so when this report is baseless and could cause panic among the general public and in particular among mothers of new born infants. The Department of Health and the Water Department categorically deny the allegations made by Dr Portelli and declare unequivocally that tap water is not dangerous to health."

Samples

In his report Dr Portelli said that in six samples of tap water analysed, the salinity level should give cause for alarm. By coincidence all six samples resulted in high levels of salinity. I can mention other areas where salinity is equivalent or even below the maximum of 400 ppm recommended by WHO and these include Siggiewi 400 part per million, Guda 260 ppm, Mgarr 400 ppm, Mosta 150 ppm, and Imqabba 350 ppm, and other areas where the quality of water is steadily improving.

It is true that there are still localities where salinity in water exceeds that recommended by WHO, but it is also true that this has been the case for many years and nobody had ever expressed any concern.

However, since the installation of the Reverse Osmosis Plant which is producing more

than 4 million gallons a day of good quality water, progress has been registered in the level of salinity. In fact since a year ago a substantial decrease in salinity in tap water has been registered. It is also expected that when the Reverse Osmosis Plant at Marsa goes into production later on this month the quality of tap water will improve even more.

It was not fair on the part of Dr Portelli when, after dealing with water salinity, he continued to state that from the medical point of view excessive salt intake is harmful in particular for those patients suffering from heart conditions and high blood pressure without mentioning the fact that by far the highest intake of salt comes from food like bread, pasta, vegetables and even fish which is recommended to those on a diet.

In diseases, such as hypertension and congestive heart failure where salt restriction is advised, tap water forms only a small amount of food containing salt which is restricted. Patients suffering from these diseases are advised first and foremost to reduce foodstuffs known to have a high content of salt such as bread and to avoid adding extra salt in cooking or at the table.

More competent

In fact doctors certify that the chloride content of tap water has no direct effect whatsoever or any possible health hazards to consumers, nor on patients suffering from congestive heart failure and hypertension. I am sure I do not have to say all this to Dr Portelli who is definitely more competent in this field but I feel I should point this out to your readers who might have been misled by this report.

The worst part of Dr Portelli's report was the reference that tap water allegedly harms babies and his recommendation that no one should bottle feed their babies from tap water in diluting milk powder.

Dr Portelli quoted health organisations only where it suited him. He should have said that in the report, published in 1979 by the WHO Working Group on sodium, chloride and Conductivity in Drinking Water, on page 28, it is stated "The consensus of opinion among the Group was that it would be psychologically harmful, and liable to undermine public confidence in the water supply, if advice were to be given, generally or locally, not to use tap water for children."

Finally one notes that whereas last year harsh criticism was levelled against the government in Malta and abroad because there was a scarcity of water, now that there is an ade-

quate water supply there is criticism about the quality of tap water and that it is a health hazard. This baseless criticism, apart from the fact that it could cause panic among the public, is damaging the tourist trade at a time when the country needs help and not hindrance in this sector."

Exact

Dr Portelli told The Democrat that his initial report on tap water in Malta was indeed exact.

The tests performed, he added, were made on water taken from Sliema, Rabat, Attard, Fleur-de-lis, Balzan and Birkirkara, taken at random and tested by four separate laboratories. Not one single sample was within the recommended level. One sample contained five times the maximum recommended level of salt.

He added that as Mr Milsud claimed that this was coincidental he analysed five more areas at random and the results were: Gharghur - 1250 parts per million Chloride; Hal Far - 2220 p.p.m. Cl; M'Scala 1480 p.p.m. Cl; San Gwann 1100 p.p.m. Cl; Orendi 1360 p.p.m. Cl. The salt content in all eleven areas was alarmingly high and that of Hal Far nearly six times the maximum recommended level of 400 parts per million.

It is to be noted that water containing 400 parts is classified as class 3, and it has been agreed by various health authorities that no one should drink water containing more than this amount of salt.

"Mr Milsud has to write what others tell him, whether it is right or wrong. My report is scientific; it is not a political opinion, but merely a statement of facts," Dr Portelli added.

He also explained that water containing 2220 parts per million of chloride contains 3.5 grms of salt in 1 litre. A 2 litre intake of water - which is nec-

mal for daily body function in the case of a 70kg man - means that one living at Hal Far is ingesting 7.2 grms of salt in his water daily.

No doctor worth his salt added Dr Portelli, is going to state that this amount of salt has no effect on patients suffering from high blood pressure or heart disease. "Recently it has been noted that high blood pressure has become a predominant disease in Malta, little wonder," he said.

Dr Portelli referred to what Wilkinson, an authority on this subject says about the amount of salt a bottle-fed infant should be given daily. According to Wilkinson, a mother's milk contains only 6 mequivaleints of salt and he recommends that a bottle-fed infant should not be given more than this amount, i.e. 0.3grms of salt daily.

A bottle-fed newborn requires some 500ml of water daily. In hot weather, Maltese tap water may

contain 1.8grms of salt in 500ml of water. This is six times more than nature envisaged.

Dr Portelli added: "On the available medical facts I must say that my warning on tap water in Malta stands. Tap water in Malta may damage your health and in particular it is bad for people suffering from high blood pressure or heart disease. No one should bottle-feed newborn infants on tap water, bottled or otherwise."

We have identified a problem. We should attempt to solve it not hide it. As I said in my original report, I am studying Nitrate levels and when the results are complete, a further report will be issued to encourage a general awareness to these problems. Meanwhile, all should take my warning seriously.

"One last word to Mr Milsud: you can take a horse to the water, but you cannot make him drink, especially if it is salty," concluded Dr Portelli.

Drinking water in south of Malta too salty

Joanne Cocks

The problem in the quality of water in the south of Malta is excessive salinity.

According to a report by Dr Alfred J. Vella, a senior lecturer in chemistry at the university, in the worst case at Marsascala, salinity reached 13 times more than the level given as a guide by a Council of Europe document.

In Zejtun, it is six times higher. In the report, commissioned by the Guze Ellul Mercer Foundation in collaboration with the Friedrich Ebert Stiftung, Dr Vella suggests that consumers who are supplied with water having a high salinity content should pay less for it.

Dr Vella said the people in the south were always paying more for their water, not only because of the fact that it was of an inferior quality, but also because of the environmental impact the production of water was causing.

The report concentrates on the quality of drinking water in Birżeb-

buġa, Marsascala, Marsaxlokk, Żabbar and Żejtun.

Between February 25 and March 1 this year, Dr Vella took two tap-water samples from a home in each of the five urban centres.

The samples were analysed some days later for acidity, conductivity and content of chlorine, sodium, potassium, calcium, magnesium, iron and nitrate.

From the tests carried out, it was concluded that the problem in the quality of all tested samples was excessive salinity.

It appears that salinity was primarily resulting from the heavy content of sodium chloride in water.

Dr Vella, explaining the report to reporters on Wednesday, said the Council of Europe document does not establish the maximum permissible level of chloride.

However, the document points out that when the concentration of chloride in drinking water

lysed samples exceeded 1,000 ppm," he said.

Dr Vella touched on the maximum permissible level of sodium - 150 ppm - based on recommendations of the World Health Organisation, which says that total consumption of the mineral should not exceed six grammes per day.

"The water in Marsascala has eight times more the amount of permissible sodium."

The report, which carries a number of tables, shows that the levels of acidity, calcium and, as a whole, iron, were acceptable.

In the case of iron, the content increased to an unacceptable level because of the presence of rust which comes from the distribution system pipes.

Although the water in the south is very salty, its nitrate levels are low.

Dr Vella remarked that the quality of the water varied because of the way it was distributed.

The southern part of Malta gets its water directly from the main sea level aquifer or the water table.

An ideal solution to the problem

was to have one large central reservoir where the water from various sources is mixed before being distributed to the consumer, he said.

However, the most realistic solution, he said, was to have a number of reservoirs serving as blending rooms.

The proposed solution is similar to that which the Parliamentary Secretary for Water and Energy, Mr Nini Zammit had made in his official report in 1991.

Mr Zammit's report divides the Maltese islands into seven regions. Each region would have a principal reservoir, where water from different sources is blended and then distributed to the consumer.

Dr Vella's report will be discussed at a public forum to be held at Żabbar parish hall today, weak at 6.30 p.m.

The panel will be made up of Dr Vella, Mr Antoine Riolo, from the Water Services Corporation, Architect Mario Sacchina, from the Planning Directorate, Mr Anthony Liveri, from the Żabbar Civic Council, and Major Toni Abela, a Żejtun resident.



ALFRED J. VELLA

exceeded 200 parts per million, there could be some biological effects.

"I do not think that one could have one's mind at rest when the amount of chlorine of all the ana-

Figure App.3.7.44. The Times 16/4/94 p.18.

A safe long term investment: the generation of clean water

Prof. Scoullas divulged that in the Mediterranean, "water is already a very scarce, limited resource, and in the coming 30 years, if experts' projections are correct, we'll have tremendous shortages. We might have something like double the demand in the northern countries and about 400 per cent increase in the demand for water in the south coast of the Mediterranean. This is because of the higher rate of the population in the South and the present poor conditions."

The situation is such that "even if we reduce this to a 50 per cent increase, it is still a problem because of overpumping and the salinisation of the ground waters in many of the southern European countries, which in turn changes the productivity of land, affecting agriculture, and so on. So we are talking about a very important and very crucial issue."

Prof. Scoullas is currently in Malta

In an interview with 'The Malta Business Weekly', the president of the Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO), Prof. Michael J. Scoullas D.Sc., Ph.D. of the University of Athens, spoke about the great scarcity of water in the Mediterranean and described the action currently being taken to deal with this worrying situation.

to chair the Pollution Committee of the 34th congress of the International Commission for the Scientific Exploration of the Mediterranean (CIESM). The CIESM congress, which ends tomorrow 31 March, commenced on 27 March and is being held at the Mediterranean Conference Centre, Valletta. He also delivered the opening address at the round table on 'Freshwater Management in the Maltese Islands' organised at the Sa Maison Hotel, Pietà, by the Malta Ecological Society (ECO) on 28 March.

Water campaign

Almost a year ago, the contracting parties of the Barcelona Convention decided to launch the Mediterranean Water Year, with the support of the EU, to initiate an ongoing campaign about water. This led to the organisation of two conferences - in Rome and in Athens - and a string of 20 round tables around the Mediterranean, with the round table held this week in Malta being the last of the series.

The campaign launched last year aims at tackling the water issue, and is based on four main points raised by the MIO, on which the whole campaign focuses.

"The first step is to realise how limited water is, and to stress this so that everybody, both the public and the authorities, international and local, will realise that," said Prof. Scoullas. The second point emphasises that all our policies on water cannot be addressed only to the economy of water, because there is a limit there. "Most governments try, through pricing or through campaigns about saving water, to reduce its consumption. All these should be continued and strengthened but we cannot find a solution only by approaching the issue that way," Prof. Scoullas revealed.

"We have to study in depth the hydrological cycle from the generation of water, rainfall, the retention of water by the plant cover, the enrichment of the ground water, and so on, and we should try to gain and generate more water. At the moment we are losing water because we do not have proper policies, at least in the production part of the water cycle. So, for example, by increasing the plant cover of an area, by protecting an



Prof. Michael J. Scoullas.

area from forest fires, you increase the ability of the soil to retain water. The micro climate in turn helps for more rain and so on. This is a long-term investment but it is a safer one because you may invest a little now and gain more in the future."

Yet one wonders who is going to invest. Prof. Scoullas is of the opinion that right now, "in most cases, things can only be done through public expenditure. I would say that the more the demand for water increases, the more private industry will invest in the generation part of the water cycle."

Common policies

The third point concerns national policies and strategies on water. Prof. Scoullas disclosed that "through the round tables, we discovered that we don't have any common policies or strategies for water in the Mediterranean, and there are no national strategies in most of the Mediterranean countries." He also mentioned that

it is useless having large quantities of water if the quality is poor; in the words of an ECO spokesperson, "quality means quantity."

One possible solution is the process of desalination, in which Prof. Scoullas views Malta as a pioneering country. "Obviously, several parts of the Mediterranean will follow the same example and we have a lot to learn... I think that there should be an independent assessment of the large-scale application of desalination in a country and learn about that. If we are asked to do so, IMO would be very happy to participate in such an assessment," Prof. Scoullas announced.

The fourth point in the campaign states that "nothing can be done without the understanding and participation of various partners: economic partners, social partners and non-governmental organisations must also play their role in stimulating action, campaigns and policies in their sectors to cope with the water problem." Any action to solve the problem of water scarcity should result from "efficient international cooperation, perhaps with the help of CIESM."

Prof. Scoullas emphasised that "any action needed should be urgently discussed at regional level, and the funds which will become available next year through the EU's Mediterranean Fund should be devoted to drafting and, mainly, implementing regional and national

policies which should be ambitious in the sense that they should tackle issues that have not been tackled until now, and this is the generation of water."

Simple remedies

A good indication of how to achieve this can be found by looking to the past, where "there were practices that were useful in generating water, for example the terraces in fields, which are not used any longer due to modern machinery, were effective in increasing the time that the water was in contact with the soil before reaching the sea."

Prof. Scoullas believes that such simple strategies would be easy to implement, however, he envisages a problem in that "such simple things are a kind of investment that

most governments do not like because they do not easily show progress or results within the period of the elections, usually four to five years."

"It is difficult to invest for your children as a nation. These are the types of activities that should be included in an action plan for the future. We also need experts. But all who deal with water need to be trained how to do so in a more efficient way. For example, in the coming months, we shall be holding 10 work-

"Such simple things are a kind of investment that most governments do not like because they do not easily show progress or results within the period of the elections."

shops in Greece, organised by MIO for those who work in the tourist industry to promote ways in which water can be used in a more sustainable way and to teach them how to approach clients to do so too. This is a short term end and is important, but we also have to secure more water in the long term."

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The ECO round table on freshwater management.

a

Water quality

From Ms Anna R. Grech
Following my numerous complaints to the Water Services Corporation, even through your daily, regarding the poor quality of water, I am very pleased to write that my dream has now become reality.

This is thanks to the intervention and personal interest shown by Mr J. Mercieca, the corporation's public relations officer, who left no stone unturned to help find a solution to my problem.

Mr Mercieca should be highly commended for his efficiency and dedication.

A.R. GRECH,
Ta' Xbier.

c

■ The water supply situation in the Xghajra part of Zabbar, which was in a disastrous state some weeks ago, has now been brought back better than it was. Residents who had complained in this column now report a water pressure they have never experienced before.

d

■ The Water Services Corporation has often been the cause of complaints in this column. The San Gwann district office however deserves public commendation for its willingness to help at any time. And they do it quickly too.

b

Weekend without water

From Mr Paul Fenech, Swieqi councillor

MOST of the residents in Lower Swieqi have had to endure a long weekend without water. This was due to a burst mains pipe. On Friday, June 17, the Water Services Corporation had to shut off the mains. When the burst main pipe in the valley leading up to San Gwann was replaced and the water supply turned on, the pressure resulted in another mains pipe bursting in Swieqi road corner with Triq il-Malbat.

It took over 12 hours of non-stop work by the emergency repairs group to carry out an engineering feat that required skill, teamwork and considerable hardship. When the supply was turned again for the second time, we had the same results and the same pipe burst again, this time in the middle of Swieqi Road. Another team of emergency repairs worked through the night till the small hours of the morning. On Sunday morning the water supply was turned on gradually to avoid further damage.

I want to take this opportunity to thank the excellent members of the Water Service Corporation's emergency teams. Praise should be given

where due. I was impressed with their technical knowhow. They are highly skilled persons who work with little or no supervision. They are a credit to their corporation.

I must also remark that these gentlemen should be given a lesson in safety. They wore no protective gloves or headgear. To add insult to injury they waded through the mud in sandals. Surely these employees should be encouraged to look after their own safety. They are a liability to themselves.

Finally a word of thanks to those residents who gave their full support in providing power supply when the compressor broke down.

I also appeal to all the Swieqi residents to exercise patience when emergencies happen. They should have faith that all council members will do their best. It takes time to get a job done.

Thank you, Water Services Corporation for doing your best. Well done to the highly skilled workers who were a joy to work with. They deserve the respect of all of us.

P. FENECH
Swieqi.

e

Action on water leaks

From Capt. J.M. Wismayer
THE Water Services Corporation deserves a pat on the back for its persuasive campaign to save water. The beautifully coloured strip cartoons appearing on the media and similar slots on TV and radio show that the Corporation is determined to curb water wastage.

Some three weeks ago, I noticed water coming out of the road in front of my house and I reported this at the police station, as I realised there had been a leak in the mains.

The police duly passed on my

report to the emergency section stationed at Portes des Bombes, who took immediate steps and within two or three hours tapped the fault - and blocked my water supply in the process. Since they did not bother to inform the Water Services section at San Gwann, I was left without running water for about five days for my pains.

Seeing that no one came over from the WSC, and with the level of my auxiliary water tanks getting dangerously low, I went to the San Gwann water section who with commendable

speed changed my corroded bend under the road but in the process discovered a water pipe gushing water which up to the time of writing is still watering the foundations in the area.

I was told that a man with a water-detector had to pinpoint the source of this rogue water pipe but although I have phoned the WSC several times to solve this little problem and thus save water and avoid further damage to property, nothing has been done about it.

J.M. WISMAYER,
Slimga.

f

Water Services Corporation

I READ in your Column (March 26) that my case with the WSC is still pending.

Please be informed that, through the good offices of the Department of Consumer Affairs, the main pipe supplying my street and the surrounding area was changed. After further insistence my service pipe was finally connected to it.

This nine-year saga had a happy ending and I am now enjoying clear water. While I thank you for your help I ask you to consider this case closed. (Lina Debatista)

Indeed a considerable number of cases referred to me have also been referred to the Department of Consumer Affairs and resolved to the consumer's satisfaction as a result of the department's intervention.

Figure App.3.8.1.

- The Times 3/3/95 p.4.
- The Sunday Times 26/6/94 p.16.
- The Malta Independent 1/1/95 p.11.
- The Malta Independent 12/3/95 p.11.
- The Sunday Times 20/11/94 p.16.
- The Sunday Times 9/4/95 p.59.

ECOWATER SYSTEMS



UNDERSINK REVERSE OSMOSIS DRINKING WATER SYSTEMS

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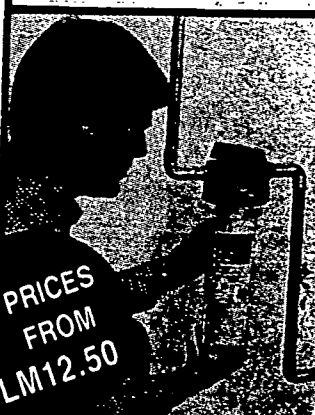
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Figure App.3.8.2.

ARCHITECT & CIVIL ENGINEER

Situation Vacant

Applications are invited for the post of Architect and Civil Engineer for the design, preparation of tenders and site supervision of the construction works of a Reverse Osmosis Plant to be built in the South of Malta.

Qualifications to include a University degree in Architecture & Civil Engineering, a warrant to practice in Malta and at least 5 years working experience, preferably in major construction works. Initiative and the ability to co-ordinate works on site are essential, as are good communication and management skills.

Duties will include:

- Preparation of the architectural, structural and civil engineering design of the building.
- Preparation of the tender documents, participation in adjudication and final contract negotiations.
- Site supervision.
- Enforcement of conditions of contract, quality control and performance.
- Attendance at meetings with project managers, contractors, staff.
- Upkeeping of records of work and project progress.
- Correspondence on the project
- Preparation of the final bill of quantities.

The contract is initially for a period of 18 months. The Corporation will review and extend as necessary.

Salary is negotiable based on experience and qualifications and shall be regulated generally by conditions of employment currently in effect with the Corporation.

Applications, accompanied by a comprehensive C.V., should be addressed to the Chief Executive by no later than 8 July 1994.

Water Services Corporation

Qormi Road, Luqa, LQA 05. Tel: 249851/7

SITUATION VACANT

DRAUGHTSMAN

Totally committed to achieving its corporate goals,

Water Services Corporation

is currently recruiting for a Draughtsman to work in its Civil Engineering Branch.

Applicants should

Possess a Certificate as Draughtsman (Civil Engineering) or Assistant Architect and Draughtsman.

Have obtained 5 'O' Level/Matsec passes with at least two of the subjects being Mathematics, Physics, Technical Drawing or Graphic Communications

Proficiency in the use of CAD would be considered an asset.

Applications, including a detailed CV, should be addressed to:

The Chief Executive,
Water Services Corporation,
Qormi Road, Luqa.

Closing date: 29th July, 1994

Water Services Corporation

Qormi Road, Luqa 05. Tel: 249851 (7 lines)

ETC permit N° 145/94

Figure App.3.8.3.
Source: WSC.

Totally committed to achieving its corporate goals

The Water Services Corporation
invites applications for two key positions:

Financial Controller

Prospective applicants must possess:

- a recognised accountancy qualification such as ACCA, ACMA, BA Hons (Accountancy) or equivalent qualifications
- substantial experience in a similar position
- excellent communication and inter-personal skills
- proven ability to successfully manage, control and supervise human and financial resources

Accountant

Prospective applicants must possess:

- a recognised accountancy qualification such as ACCA, ACMA, BA Hons (Accountancy) or equivalent qualifications
- excellent communication and inter-personal skills
- a desire to take responsibility for the management of staff within the Finance Department

A detailed list of duties for these posts can be obtained from the Personnel Department, Head Office, Luqa.

Applications should include a detailed CV and be addressed to:

**The Chief Executive, Water Services Corporation,
Qormi Road, Luqa LQA 05.
Tel: 249851/7 Fax: 223016**

CLOSING DATE: 7 OCTOBER 1994

Water Services Corporation

ETC N° 290/94 ETC N° 294/94


WATER SERVICES CORPORATION

CALL FOR APPLICATIONS

The Water Services Corporation seeks to recruit a

CHEMIST

to manage the laboratory

The main functions of the appointee will be:

- the management and control of the activities and staff of the laboratory.
- the provision of analytical services, particularly those related to monitoring of water quality in order to supply wholesome water to the community in accordance with the established health standards.

The prospective applicants must:

- hold a good B.Pharm (Hons) or B.Sc. (Hons) Chemistry and Biology degree.
- preferably have experience in a laboratory environment in research related to quality control.
- be willing to undertake training both locally and abroad.

Applications together with a detailed c.v. should be addressed to the:

**Chief Executive,
Water Services Corporation,
Qormi Road, Luqa LQA 05**

Closing date: Friday, October 8, 1994

ETC Permit No. 180201

Figure App.3.8.4.
Source: WSC.



Water Services Corporation

Situations Vacant

• Laboratory Technicians •

The Laboratory Division of the Water Services Corporation is aiming to achieve the NIMAS Accreditation Standard. This has created the need for the recruitment of two (2) Lab Technicians in Malta and one (1) in Gozo.

The main functions of the appointees shall be the collection and testing of samples and the operation, calibration and maintenance of laboratory apparatus as well as on site field work.

Prospective candidates should:

- be in possession of six (6) GCE 'O' Level passes or equivalent. Passes must be 'C' grade or better and must include English Language, Mathematics, and two (2) Science Subjects
- be in possession of an Advanced Level pass in Chemistry and any other Science Subject or the Science Laboratory Technician Certificate of the City and Guilds of London Institute.
- preferably be in possession of a clean and current driving licence.

Candidates should possess good organisational and administrative abilities.

Applications together with a detailed C.V. are to be sent to:

The Chief Executive
Water Services Corporation, Gormi Road,
Luqa LOA 05.

Closing date: 7th April 1995

ETC Permit:
NY 301/94
199/94



Water Services Corporation

Situations Vacant

As a result of an ambitious computerisation program, the Management Information Systems Branch of the Water Services Corporation is recruiting applicants to fill two (2) key positions:

• Analyst/Programmer •

The main functions of the appointee shall be the participation and assistance in the development and support of computer systems by designing, developing and implementing programs and, when necessary, modifying existing programs.

Prospective candidates should:

- be in possession of an IDPM qualification or equivalent
- be experienced in software development using professional fourth and third generation languages, preferably Oracle and C
- have a working knowledge in standard development methodologies, preferably SSADM

• Computer Technician •

The main functions of the appointee shall be to carry out preventive maintenance on all hardware peripherals and install and maintain networks.

Prospective candidates should:

- have completed the Fellenburg course in micro computer technology or possess an HTD in a related subject
- possess excellent communication skills and be able to work in a demanding and busy environment

Applications together with a detailed C.V. are to be sent to:

The Chief Executive
Water Services Corporation, Gormi Road,
Luqa LOA 05.

Closing date: 7th April 1995

ETC Permit:
NY 301/94
199/94

Figure App.3.8.5.
Source: WSC.




PEMBROKE - MOSTA PIPELINE PROJECT

The Water Services Corporation wishes to apologise for any inconvenience caused during the laying of the pipeline through

St. Andrews Road

This work is expected to be completed within the next few days.

Water Services Corporation
 Qormi Road, Luqa Q5, Malta. Tel: 249851 (7 lines)




DISTRIBUTION NETWORK PROJECT

The Water Services Corporation wishes to apologise for any inconvenience caused during works on the distribution network at

Żejtun and Marsascala

This work is expected to be completed by July 1994.

Water Services Corporation
 Qormi Road, Luqa LQA 05, Malta. Tel: 249851 (7 lines).




LEAKAGE TESTING ON MAJOR RESERVOIRS

The Water Services Corporation has again embarked upon an intensive programme of leakage testing of all major reservoirs.

These tests require the closing off of all outlets of the reservoirs and, in some cases, may cause interruptions in the water supply to consumers. However, where and when possible, the Corporation will by-pass the reservoir under testing in order to reduce inconvenience to consumers.

Date	Reservoir	Supply Suspension	Timings
27/09/94	Kordin A + B	Senglea	0800 to 1400hrs

Water Services Corporation
 Qormi Road, Luqa LQA 05, Malta. Tel: 249851 - 7

Figure App.3.8.6.
 Source: WSC.

PUBLIC ANNOUNCEMENT

QRENDI PHASE 2 PIPELINE

Leakage Testing & Cleansing Programme

Water Services Corporation wishes to announce that, in order to ensure that a supply of first class water is delivered through the Qrendi Phase 2 Pipeline, which has been extended to Zabbar, Marsascala and Cospicua, a programme of leakage testing and pipeline washing will take place during the coming days. A number of locations will be affected by large amounts of water flowing from washout valve points in the following areas :

ZABBAR

Hompesch Road, Labour Road, Sanctuary Street and Wied il-Ghajj Road

MARSASCALA

Zabbar Road and Zonqor Area

COSPICUA

Cottonera Road to San Klement Area



Water Services Corporation

Qormi Road, Luqa 05, Malta. Tel: 249851 (7 lines)

Water Metering Trials

Water Meter Replacement Exercise

The Water Services Corporation intends to carry out additional meter readings, on certain consumer premises, over and above the normal 4 month meter reading cycle.

The Corporation has carried out intensive investigations into the 'unaccounted-for water' problem and now intends to carry out a number of exercises in order to confirm its diagnosis and the solutions proposed. For this reason, a number of pilot areas have been identified by the Corporation for complete meter replacement and subsequent evaluation.

The Corporation will be carrying out additional meter readings in these areas solely for assessment purposes, and these readings will have nothing to do with the billing of consumers.

The areas in question are:

Senglea • St. Lucia
St. Julians • Marsaxlokk
Kirkop

The public is requested to co-operate with the Corporation in this exercise.



Water Services Corporation

Qormi Road, Luqa LQA 05, Malta. Tel: 249851 - 7

Figure App.3.8.7.
Source: WSC.

Upgrading The Water Distribution System

TENDERS

The Chief Executive, Water Services Corporation, notifies for general information that sealed tenders will be received by the Director of Contracts at the

Department of Contracts
Notre Dame Ravelin, Floriana.

up to 10.00 a.m. on Thursday, 9th February, 1995 for

**INSTALLATION AND / OR
REPLACEMENT OF CONSUMERS'
WATER SERVICES PIPEWORK
MALTA**

A fee of Lm25 will be charged for each tender document

**INSTALLATION AND / OR
REPLACEMENT OF CONSUMERS'
WATER SERVICES PIPEWORK
GOZO**

A fee of Lm15 will be charged for each tender document

Forms of tenders and further information regarding the conditions of this tender may be obtained from


**Water Services
Corporation**

Contracts & Purchasing Office,
Qormi Road, Luqa LOA 05.
Tel: 249851 - 7 Fax: 223016

Upgrading Malta's Infrastructure

TENDER

The Director of Contracts notifies for general information that sealed tenders will be received at the

Department of Contracts
c/o The Treasury, Floriana.

up to 10.00 a.m. on Thursday,
1st September, 1994, for the purchase of:

**Laboratory Equipment
Hydrological Equipment**

for the



Water Services Corporation

This project is being financed by the European Community in accordance with the Malta E.C. "2nd Financial Protocol" under Project No. F.A. 125/MLT 89610/88.88.0002.
Title: Upgrading Malta's Infrastructure.

Upgrading Malta's Infrastructure

T E N D E R S

The Chief Executive, Water Services Corporation, notifies for general information that sealed tenders will be received by the Director of Contracts at the

**Department of
Contracts**
Notre Dame Ravelin, Floriana:
up to 10.00 a.m. on Thursday,
2nd February 1995 for

**TRENCHING &
ROAD REINSTATEMENT
WORKS IN
MALTA & GOZO**

Tender documents may be collected
against a fee of Lm25.00 from the


**Water Services
Corporation**

Contracts & Purchasing Office,
Qormi Road, Luqa LOA 05.
Tel: 249851 - 7 Fax: 223016

TENDER

TENDER - extension

Tenders for the supply of hardware and software.

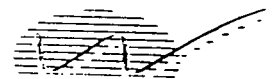
The chief executive notifies prospective tenderers that the closing date has been extended to 1000hrs, Tuesday 01 February 1994.

Tender documents may be collected against a fee of Lm25.00 from:-

The Supplies And Contracts Office
Water Services Corporation
Qormi Road, Luqa LOA 05.

Tenders should be placed in a sealed envelope boldly marked WSC T/86/93 and deposited in the tender box at the Treasury, Floriana.

The Corporation reserves the right to refuse any or all of the tenders, whether in part or in whole, even the most advantageous.



Water Services Corporation

Figure App.3.8.8.
Source: WSC.



100% INTEREST IN CUSTOMER CARE
TRY OUR ABSOLUTE PERSONAL SERVICE
APS, A FRIEND YOU CAN BANK ON
Customer Care Department Tel: 247547



Bank of Valletta

- To promote excellence as the hallmark of all our activities
 - To provide friendly and efficient service and to be receptive to the needs of our customers through product innovation
- Extract from the Corporate Philosophy of the Bank of Valletta

Branch Operations Department
Tel: 336224, 342581, 317684; Fax: 346160



Customer Service Office
Citygate Arcade, Valletta
Tel: 224671 224039
Fax: 244343

Contact Person: Mr. A.V. Rutter Tel: 239971

CONSTANTLY
CONSIDERING
CONSUMERS'
NEEDS

CUSTOMER SERVICE HELPLINE

The Water Services Corporation is committed to improve rapidly its services.

A dedicated Customer Service Helpline has been set up to deal with problems that may arise with your water supply.

No water? Leakages to report?

Call our Customer Services Unit on 234530 or 234531 and we will help.

This service is open from Monday to Friday from 7.30am to 4.30pm

Water Services Corporation
Qormi Road, Luqa LQA 05
Tel: 249851-7; Fax: 223016



WHO CARES WINS!

"We are committed to building on the performance of our airport, so that we may give the community we have the honour to serve, the highest possible standards of service"

Extract from the Corporate Statement

For more information on the products and services at Malta International Airport please phone our Communications Department on 249600 or fax us on 249563



Our service is your guaranteed Sea Link to Gozo

- Approximately 17,000 sailings a year
- Over two million passengers
- Half a million vehicles

The co-operation of passengers in our entire operation is a prime requisite for the continuous growth and improvement of the Service.

Tel: 243964-5-6
Hay Wharf, Sa Maison



Telephone Faults:
FREECALL 133

Telephone Bills Enquiries:
247770 ext 2019/22

Branches in Valletta, Luqa,
St Julians, St Paul's Bay,
Qawra & Victoria Gozo



L-Awtorità dwer il-Transport Pubbliku
Public Transport Authority

The Public Transport Authority strives to instill in the minds of public transport operators the need to enhance the service they provide for the benefit of public transport users.

Enquiries, suggestions and complaints should be directed, in the first instance, to the respective associations providing the services, namely:

- Public Transport Association (route buses) Tel: 221883
- Unscheduled Bus Service (coaches) Tel: 665085/665087
- Minibuses Cooperative Tel: 487941/487740
- White Taxi Service Amalgamated Tel: 332762/310996
- The Marisaxxetto Steam/erry Service Tel: 338981/335689

The Public Transport Authority may be contacted at Notary Zarb Sij, Attard, BZN 03, Tel: 466327, 467171, 447165



The LOMBARD BANK publication entitled
'THE LOMBARD CODE OF PRACTICE'
outlines the good banking practice that
characterises our dealings with customers

For copies and information please contact:
The Manager Customer Service, Lombard Bank (Malta) Limited
67, Republic Street, Valletta VLT 05



Mid-Med Bank

In its ongoing efforts to give a better Personalised Service Mid-Med Bank set up a Customer Service Unit based at its Head Office in Valletta.

A Customer Service Official has been appointed at all Branches to deal with queries or complaints. The name of this official is prominently displayed in the Banking Hall of the Branch.

If you have a complaint:

1. Contact the Customer Service Official either in person or by phone at the Branch where you carry out your transactions.

2. If your problem is not solved at this stage, the official will refer you to the Branch Manager.

3. If you are still not satisfied, then you can refer the matter to our Customer Service (Mx) at Head Office. This official will advise you of any action that will be taken.

A Customer Service Helpline is available on Tel: 248248. A Telephone Answering Machine Service is also available 24 hours a day.

Figure App.3.8.9. The Times 15/3/94 p.2.

Focus on providers of essential services

Paul E. Micallef

"What most consumers really want from the providers of essential services is the ability and willingness to deal properly with their complaints"

The origin of the World Consumers' Rights Day goes back to March 15, 1962, when President John F. Kennedy made a declaration enshrining the basic consumer rights.

The following years witnessed a growing awareness of consumer rights in many parts of the globe. Effectively this was demonstrated by the growing strength of a pro-active consumer movement and concurrently the gradual enactment in many countries of comprehensive consumer protection laws.

Eventually due recognition of these basic consumer rights was accorded by the United Nations General Assembly which on April 9, 1985, adopted guidelines on consumer protection adding to the basic rights enunciated previously by President Kennedy.

In substance the basic rights of consumers are:

1. The protection of consumers' health and safety. This implies that only products which do not pose any danger to the safety or health of consumers should be marketed. Complementary to this, producers should provide full information about potential risks and safety requirements.

2. The right of consumers to information and education. Consumers ought to be in a position where they have access in the knowledge and skills necessary to enable them to make an informed choice when buying or hiring goods or services.

3. Consumer representation and participation. Consumer interests should be taken into consideration in any decision-making process which is of concern to consumers.

4. The right to redress. Consumers are entitled to simple, fair, affordable and effective procedures for the equitable settlement of their complaints or claims; and

5. The promotion and protection of the economic interests of consumers. This entails providing for the protection of consumers from any unfair practices in the market place that are of detriment to consumers.

These basic rights are now widely recognised as the foundation of any comprehensive consumer protection regime. It is however no simple matter to effectively implement all these rights. Indeed even those countries generally recognised as being leaders in consumer protection, review their situation continuously to provide their citizens with an effective and practical regulatory structure adaptable to the changing needs of the consumer in the marketplace.

This year, the focus of the International Organisation of Consumer Unions (IOCU) in commemorating World Consumer Rights Day is on the providers of basic or essential services, with emphasis on the services provided by public utilities, the providers of water, gas, electricity, transport and telecommunications.

One must be objective in making criticism

Before commenting on any provider of an essential service, it is important first that we comprehend how that particular service operates. It is not always simply a matter of criticising the shortcomings in the quality or price of the service given and leaving it at that. We have to be objective in levelling any criticism.

It is important that we evaluate fully the conditions under which that particular provider operates and what he is expected to deliver to his customer. Does the provider enjoy a monopoly in that sector?

Is the provider under certain constraints to offer his or his services at certain rates? How much does it cost the provider to operate?

Should there be a relationship between the financial indicators - like profits, margin or levels of borrowing - and prices asked from the consumer for that service? These are just a few issues we must bear in mind in doing a critical analysis of a provider of an essential service. Without adequate financial or technical information it may be difficult to understand how profitable the industry is or just how efficiently that particular service is being run.

The need to understand better how the providers of basic or essential services operate becomes even more important when one remembers that various providers of such services enjoy a monopoly in that particular industry, a monopoly which may be the result of particular domestic circumstances which may be unavoidable at least in the short term.

One must also not forget that the regulation of a provider of an essential service can also take a vital social aspect - for example, should senior citizens enjoy special concessions in the provision of certain essential services?

Should the supply in such cases be subsidised by the provider himself? The answer at times may not be so simple.

Gradually in many countries, providers of essential services are being subjected to the control of independent watch-dogs or regulators concerned with the maintenance of standards in that particular industry.

In the UK in the mid-eighties with the advent of the privatisation of various essential services, the government originally started to set up different regulators to control the various providers of essential services, including regulators for gas (GAS), electricity (OFFER), water (OFWAT) and telecommunications (OFTEL).

These different regulators today effectively monitor the operations of providers in different spheres thereby ensuring that customers get good value for the services that they are paying for.

In a small country like Malta it may not be practical to create regulators for each specific service. There are however other options worth considering.

The Consumer Affairs Bill published recently includes under the definition of trader, "a government department, public corporation, authority or organisation which provides goods or services to consumers for a fee, as the Prime Minister may from time to time designate by notice in the Gazette".

This bill also proposes the setting up of a Consumer Affairs Council whose functions include the review of trading and business practices.

Therefore, as things stand, the Consumer Affairs Council may be empowered to oversee the conduct of providers of essential services and investigate any complaints.

Another option is the creation of an authority to regulate the traditional providers of essential services; namely water, gas, electricity and telecommunications. This is the approach taken in some of smaller North American

jurisdictions. Hence in the Canadian province of Manitoba the Public Utilities Board, an independent quasi-judicial body operating within the ambit of Consumer Affairs and under the authority of the Manitoba Legislature, is responsible for the regulation of various public utilities.

This board has general supervision over all the public utilities and may make orders which it considers to be necessary regarding equipment, appliances, etc.

The existence of this and similar authorities throughout North America has in practice proved to be an effective means to the ordinary citizen as a user of essential services, to check possible abuse by utility monopolies.

Whatever option is taken, it is essential for the user of a service, especially a service provided by an entity that enjoys a monopoly, to have access to an effective, simple and inexpensive redress system. Not only that, but also that the user is advised in the clearest of terms of what he has to do and when he has to contact if he has a complaint.

It is after all useless to create complaint mechanisms and not informing your customers about them. We must also start to look to ameliorate our standards of service, if needs be looking elsewhere to achieve desirable standards of service.

British Telecom, to mention one example, following its privatisation introduced a guarantee scheme in an endeavour to promote its level of customer care.

Consumers in Malta, too, are increasingly becoming aware of their basic entitlement to a good standard of service.

Many of our providers of essential services are responding in a positive way to their customers' expectations by instituting customer care programmes and providing more information.

There is still of course considerable room for improvement. Ultimately what most consumers really want from the providers of essential services is the ability and willingness to deal properly with their complaints. This should be the goal of all such providers.



DEPARTMENT FOR CONSUMER AFFAIRS

MISSION

TO GUIDE AND PROTECT THE CONSUMER AGAINST UNFAIR DEALINGS

MANDATE

TO DEVELOP POLICIES IN FAVOUR OF CONSUMERS
TO PREPARE CONSUMER PROTECTION LEGISLATION
TO EDUCATE AND INFORM THE CONSUMER AS HOW TO OBTAIN VALUE FOR MONEY AND HOW TO EXERCISE HIS RIGHTS
TO CREATE AMONG CONSUMERS, TRADERS AND PRODUCERS A SENSE OF FAIR DEALING IN THE MARKET
TO ASSIST CONSUMERS WITH THEIR COMPLAINTS AND DISPUTES THEY MAY HAVE WITH TRADERS WITH THE AIM OF SECURING AMICABLE SETTLEMENT TO THE SATISFACTION OF CONSUMERS, THEREBY AVOIDING LITIGATION

3A, TRIQ ZEKKA L-QADIMA, VALLETTA. Tel: 246806, 246804; Fax: 240052

Now you can dial direct!

Direct Dialling Service

Do you need to check your water and electricity bill over the phone?

WSC

Water Services Corporation
Qormi Road, Luqa LQA 05
Tel: 249851 - 7 Fax: 222916

25999410 25999470 25999400 25999415

At our Valletta branches you can also:

Direct Counter Service

- Check or pay your water & electricity bill
- Change your residential address
- Apply for a water/electricity meter test

at 229, Merchants Street, Valletta.

Winter Time: Monday to Friday from 8.00a.m. to 3.30p.m.
Summer Time: Monday to Friday from 8.00a.m. to 12.00 noon

Direct Cash Points

You can now pay your bill directly at:

- Valletta**
229, Merchants Street
Winter Time: Monday to Friday from 8.00a.m. to 3.30p.m.
Summer Time: Monday to Friday from 8.00a.m. to 12.00 noon
- Police Stations**
Local Council Offices, Schools.
Winter Time: Monday to Friday from 8.30a.m. to 1.00p.m.
Summer Time: Monday to Friday from 8.15a.m. to 11.15 a.m.

Direct Registration of Household Residents

- Is your water bill wrong?
- Has any member in your household been left without the subsidy?

All you have to do is simply collect a form from Valletta Direct Service Branch, Local Council Offices or District Offices of the Corporation. Fill it in and send it back to the Corporation. The bill will then be corrected.

General Notification

The general telephone lines for Head Office, Luqa, are now 249851 - 7. Tel N° 221901 is no longer in use.

PUBLIC ANNOUNCEMENT

Water & Electricity Sales Office on the move...

Water Services Corporation wishes to announce that Billing Service Staff will be moving from 229 Merchants Street, Valletta to its Luqa Head Office in Qormi Road.

BILLING SALES OFFICE VALLETTA

Closed from
Monday 30 May -
Friday 10 June, 1994

Re-opens Monday
13 June - 1994 at
Qormi Road, Luqa

Office Hours:
16 June - 30 Sept 1994
07.30 - 11.00 hrs Mon - Wed
1 October 1994 - 15th June 1995
08.00-12.00 hrs Mon - Wed

CASH OFFICE - VALLETTA

Remains open for cash payments

Office Hours:
Summer 08.00-12.00 hrs Mon-Fri
Winter 08.00-15.00 hrs Mon-Fri

Cheque payments should be mailed to the Cash Office or Luqa Head Office

Water Services Corporation apologises for any inconvenience caused during this move.

Water Services Corporation

Qormi Road, Luqa, LQA 05, Malta. Tel : 249851/7
Customer Helpline Tel: 234530/1 Emergency Tel: 238716/224142/231656

Figure App.3.8.11.
Source: WSC.

DIRECT



CASH POINT SERVICES

You can now pay your...

Water and Electricity Bill

on a

SATURDAY MORNING

at the Valletta Branch
229, Merchants Street

between
8.00 a.m. and
12.00 noon

It is always easier to pay by cheque or money order through the mail.



Water Services Corporation
Qormi Road, Luqa LOA 05. Tel: 249851 - 7 Fax: 223016

DIRECT



REGISTRATION OF HOUSEHOLD RESIDENTS SERVICES

Is your water bill incorrect?

Has any member in your household been left without the subsidy?

All you have to do is simply collect a form from

- Valletta Direct Service Branch
- Local Council Offices or
- District Offices of the Corporation.

Fill it in and send it back to the Corporation. The bill will then be corrected.



Water Services Corporation
Qormi Road, Luqa LOA 05. Tel: 249851 - 7 Fax: 223016

Water & Electricity PAYMENTS

Date	Locality	Time
NOVEMBER		
Monday 21st	Mgarr Local Council	08.30a.m. - 1.00p.m.
Tuesday 22nd	Rabat Local Council	08.30a.m. - 1.00p.m.
Wednesday 23rd	Rabat Local Council & Dingli Police Station	08.30a.m. - 1.00p.m.
Thursday 24th	Rabat Local Council & Mdina Police Station	08.30a.m. - 1.00p.m.
Friday 25th	Mellieha Police Station	08.30a.m. - 1.00p.m.
Monday 28th	Mellieha Police Station	08.30a.m. - 1.00p.m.
Tuesday 29th	San Gwann & St. Julians Police Stations	08.30a.m. - 1.00p.m.
Wednesday 30th	San Gwann & St. Julians Police Stations	08.30a.m. - 1.00p.m.

The Corporation apologises for the inconvenience caused.



Water Services Corporation
Qormi Road, Luqa 05. Tel: 249851/7 Fax: 223016

The Water Services Corporation wishes to notify its consumers that during the month of November, the dates for the water & electricity bills collection service, from the locations as mentioned, have been altered as follows:

Consumers can also avail of the Corporation's Cash Office services located in Merchants Street, Valletta. This service is available from Monday to Friday between 8.00am and 3.30 pm.

Figure App.3.8.12.
Source: WSC.

PUBLIC WARNING

SEVERE FINES FOR ILLEGAL USE OF WATER

Water Services Corporation wishes to announce that it is forced to introduce harsher fines to curb the increases in the abusive use of water and its theft.

These fines are intended to protect ground water resources

For any person who extracts groundwater, drills boreholes, stores and distributes water without the Corporation's authorisation.	FINE Lm 500 to Lm 4,000
For any person who sells and hawks the water supply without the Corporation's authorisation.	
For any person who either purchases, possesses water pumps for groundwater extraction or any machinery used for borehole drilling without the necessary permit to buy or sell this equipment.	
For any person who drills wells or reservoirs without the Corporation's permit.	
For any person who installs or repairs the water distribution mains without the authorisation of the Corporation.	FINE Lm 100 to Lm 1,000
For any person who obstructs or impedes the Corporation's officials who during the course of their duties, are investigating theft reports related to the services or facilities of the Corporation.	FINE Lm 50 to Lm 300

The Corporation strongly urges the public to report any suspected abuses of the island's water by calling the Customer Services Helpline on 234530/234531.



Water Services Corporation
Qormi Road, Luqa, LQA 05. Tel: 249851/7

The introduction of these new levels of fines are intended to:

- PROTECT** groundwater resources
- STOP** the illegal over-extraction of the water table
- ELIMINATE** water thefts
- ERADICATE** tampering with the water mains

EVERY DROP COUNTS
SAVE WATER

Figure App.3.8.13.
Source: WSC.

EVERY



DROP

COUNTS



Water Services Corporation

Water Conservation

EVERY



DROP

COUNTS

Campaign

Hints & Tips

Leaflet

Competition Closing Date

Water Services Corporation wishes to advise all householders that the closing date of the competition appearing in the Hints & Tips leaflet has been extended from Friday, 12th August to:

Friday 26th August, 1994

The winner will be announced after the draw which takes place on Friday, 8th September, 1994.



Water Services Corporation

Qorma Road, Lurgan, COA 05, Malta Tel.: 24985177

Water For Life

EVERY



DROP

COUNTS

Now there is enough water for everyone...

Don't Waste It!

Open Day at Pembroke Reverse Osmosis Plant on Saturday 15th October from 09.00 a.m. 12.30 p.m.



Water Services Corporation

Supporting World Food Day

Figure App.3.8.14.
Source: WSC.

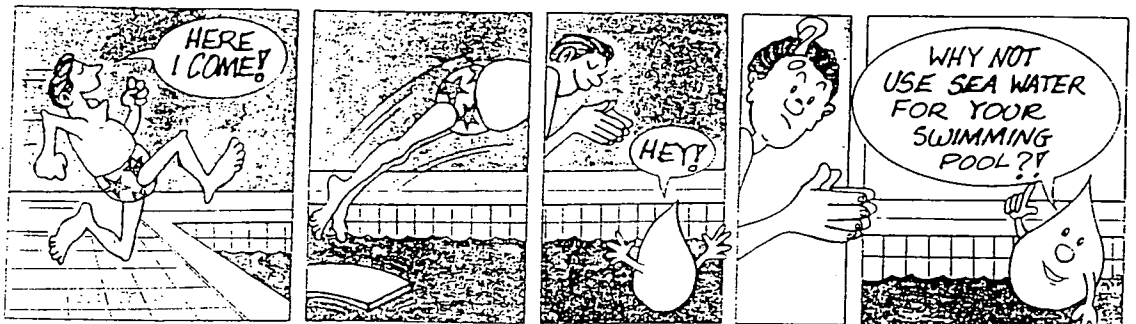
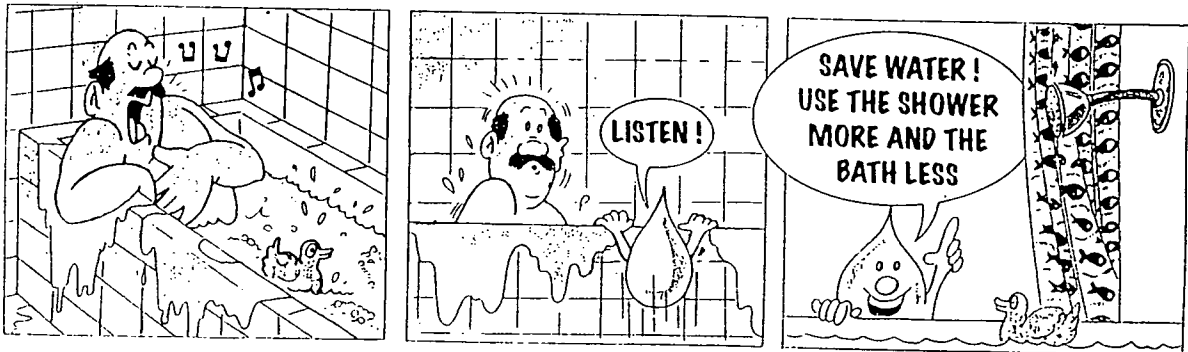
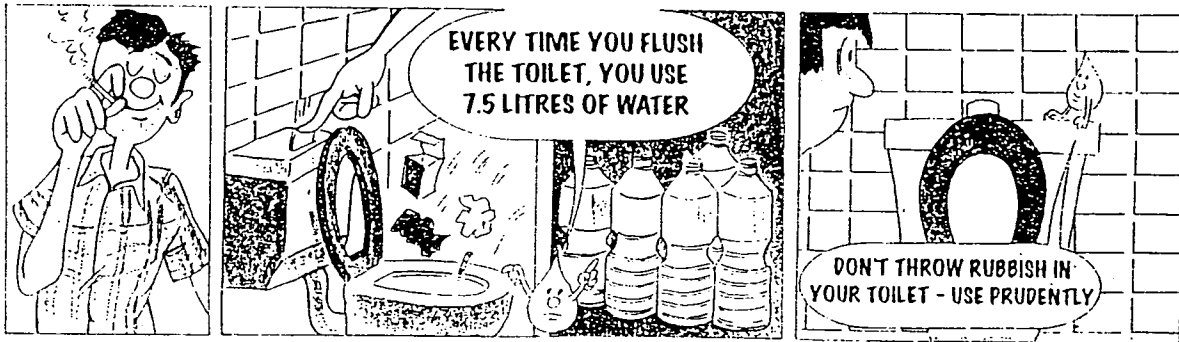


Figure App.3.8.15.
Source: WSC.

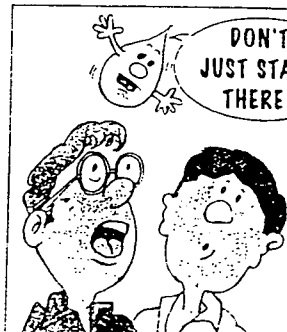
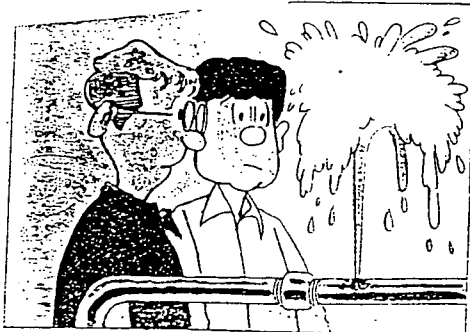
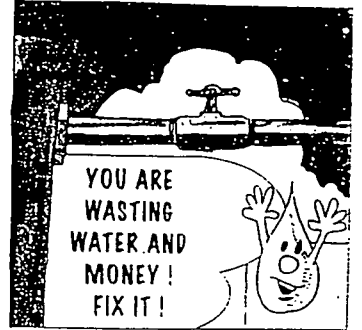
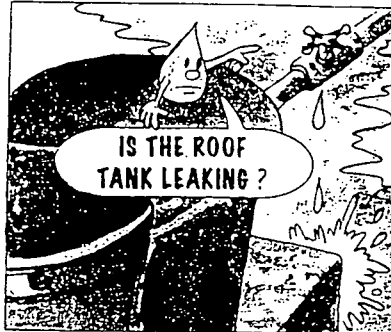
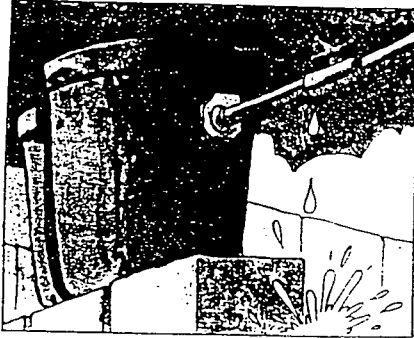
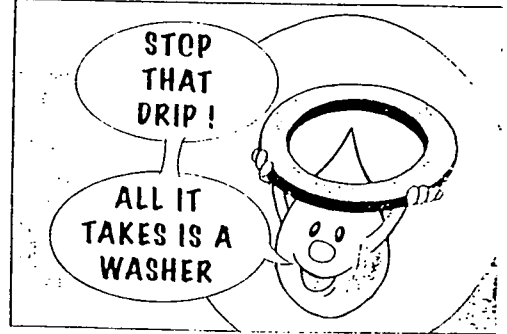
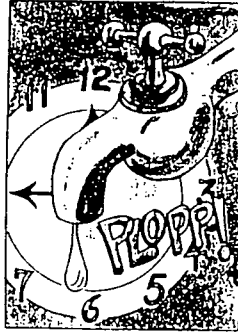
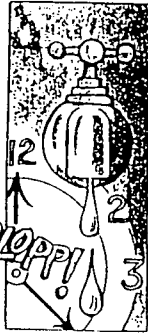
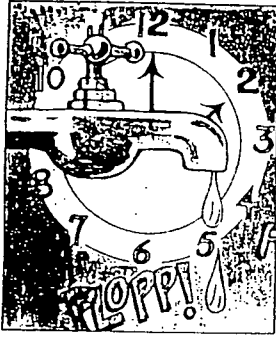
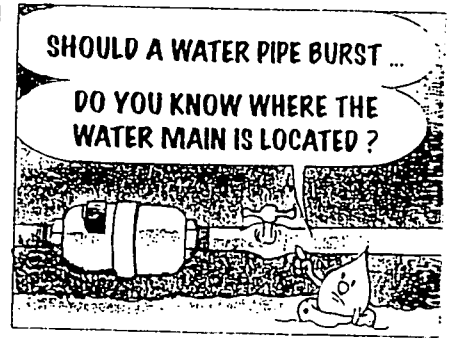
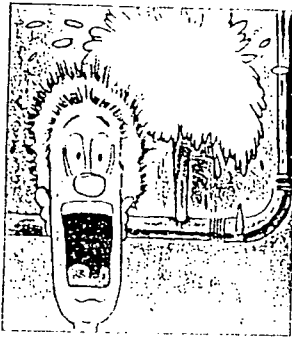


Figure App.3.8.16.
Source: WSC.

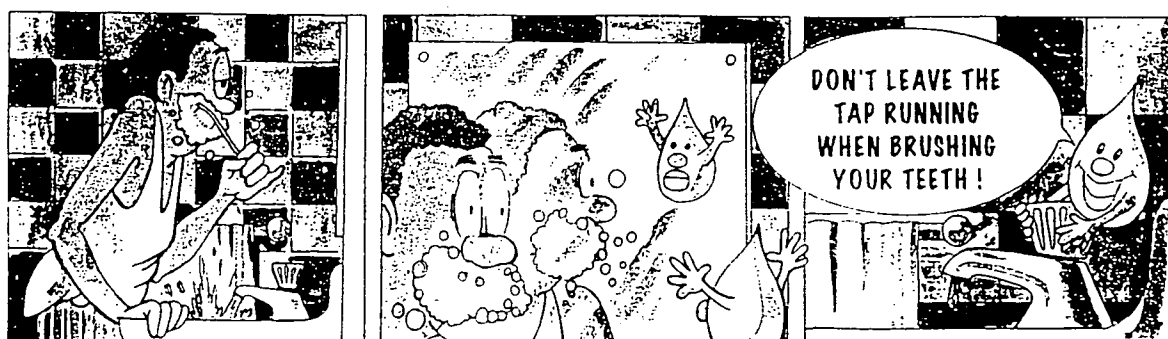
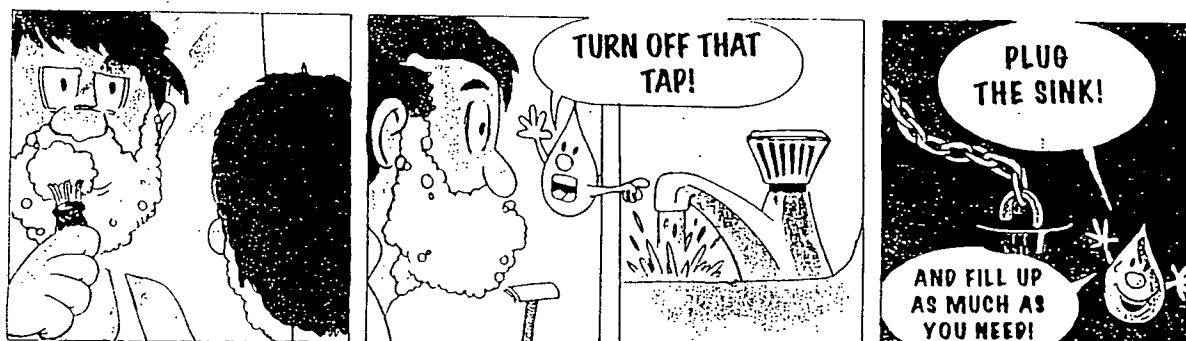
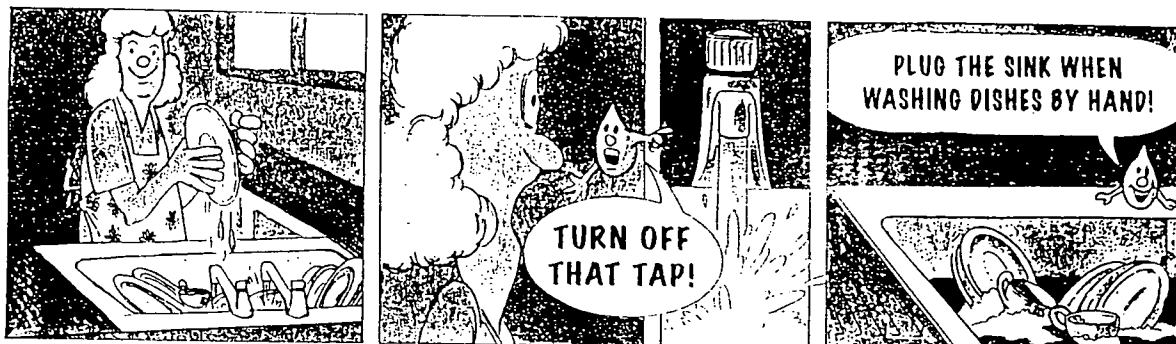


Figure App.3.8.17.
Source: WSC.

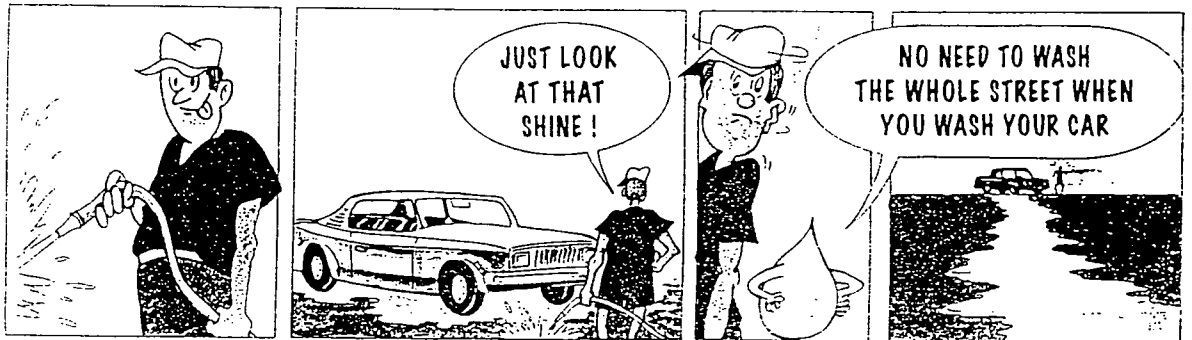
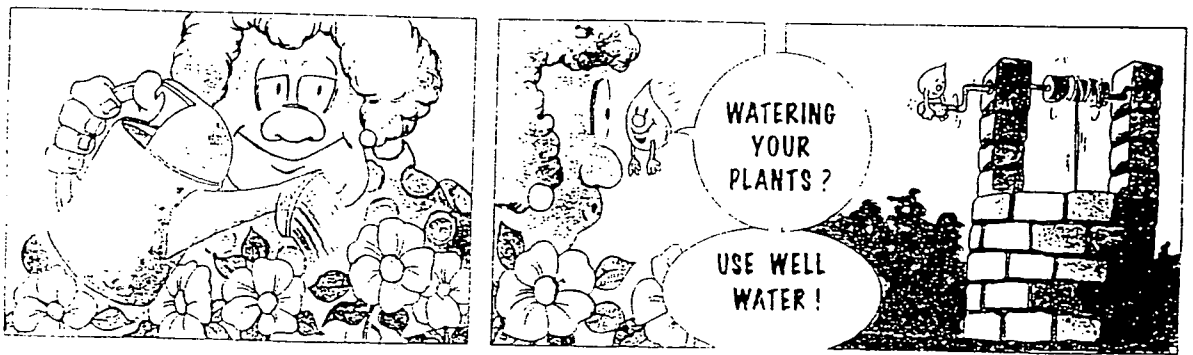


Figure App.3.8.18.
Source: WSC.

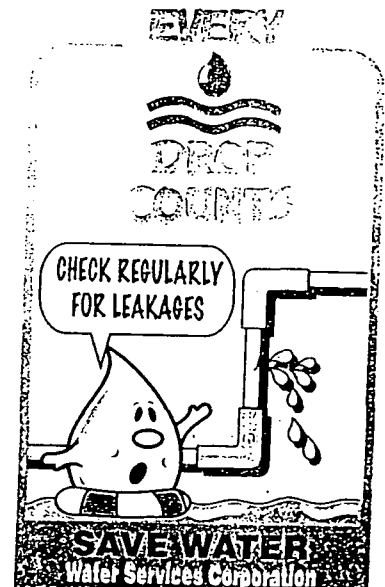
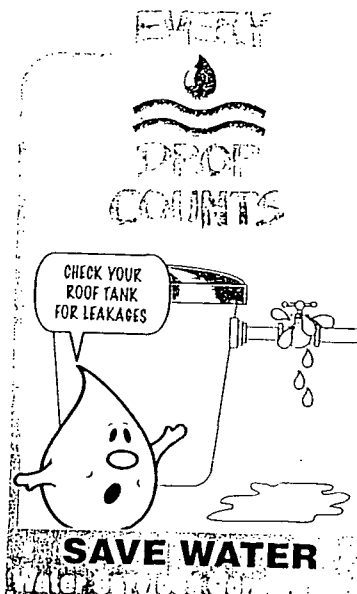
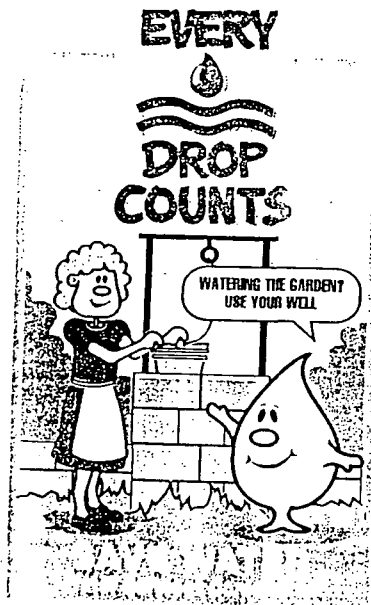
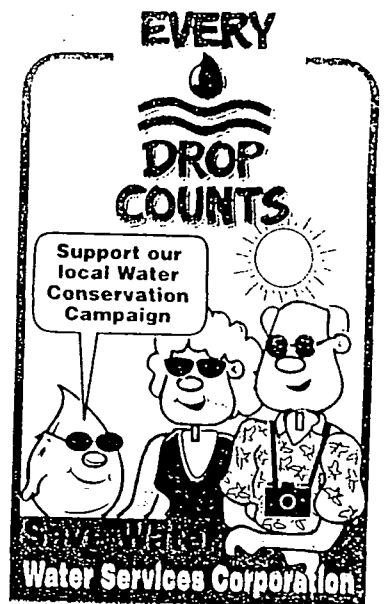
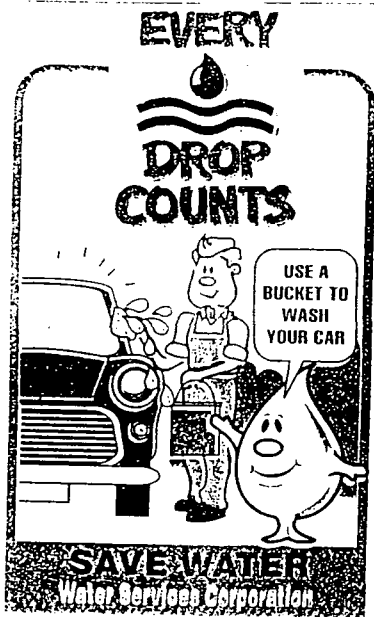


Figure App.3.8.19.
Source: WSC.

Water – the real challenge

It is in our human nature to search for the easiest way of doing things. Often, the easier the method the higher the price we have to pay, which, on occasion, we find is borne by others. It is here that the temptation to opt for an easy way out is overwhelming and it is only a strong sense of responsibility towards others that stops sensible people from giving in to this temptation. Alas, for some the temptation is just too strong.

In a recent article, Mr Paul H. Bejemann was very right in stating that pumping water into the water table is easier said than done. If we were looking for an easy way out of the water problem we would certainly not find it by recharging the aquifer.

I suggest we should look for responsible rather than easy ways out. We can hope to find any only if we look at the water problem as one of resource management rather than mere water production. To manage our water resources better we have to contend with some basic facts of life which are simple enough to be taught in our primary schools.

For aeons water has been undergoing practically the same cycle starting with its evaporation from the sea. Atmospheric moisture aggregates in clouds and eventually precipitates in many forms including rain.

Most rain water evaporates in mid-air or soon after hitting the ground. Some of it infiltrates the aeration zone from where it is absorbed by plants and transpired back to the atmosphere.

Some percolates into the so-called phreatic zone and replenishes the water table. The rest runs off impermeable surfaces straight into the sea.

When we construct a building or a road we interfere with this cycle and cause a slight shift in nature's balance. We bar the way to the aquifer for all rain water falling on the paved or built up area. It ends up back in the sea.

At the same time we continue to pump out water from the aquifer.

This is like regularly taking money out of our piggy bank and just as regularly reducing the

amount of money we save. One day we will find an empty piggy bank.

Having inherited a plentiful reserve of groundwater, it is our responsibility to pass it on to posterity in at least the same state we found it. But instead, we have voraciously plundered our water "piggy bank" while spreading our impermeable umbrella over it without sparing a thought about redressing the balance we disturb.

Mr Bejemann's suggestion to use solar power to desalinate sea water must be seen in this context. It could be a valid proposition if we find satisfactory answers to two fundamental questions.

The process of desalination is really an imitation of nature's own water production plant. After throwing away rivers of fresh water produced by nature (surface runoff) we would replace it by the product of our emula-

Amadeo Mifsud

the water we throw away by desalinated water as we have done in the past and persist in doing at present, is simply not sensible.

We may as well spend it to pump rain water underground where it can be of use to us and to future generations.

Pumping water underground is no mean task, as Mr Bejemann stated and, if we want to act responsibly we have only one way of avoiding or postponing it, namely, by managing our water resources better than we have done to date. This requires a clear and premeditated strategy. But we have no such strategy, which brings us to the crux of the whole matter.

If water is the precious utility we all make it out to be, we need to have a national strategy for the management of our water resources.

If we do not get this concept clear in our heads we will continue to mismanage our water resources as we have been doing for the past number of years. We may be able to sweep the problem under the carpet by producing ever-increasing quantities of desalinated water, but we will never be able to solve it until we recognise it for what it is: a problem of resource management which begs for a clear strategy.

The Structure Plan, our national planning policy, fails to provide this strategy because it tends to treat the water problem merely as one of production rather than resource management. Consequently, its provisions have failed to bear good results.

One of the more onerous tasks that the Structure Plan assigns to the Planning Authority is the formation of an inter-Departmental group for planning public utilities (POLICY PUT 14). Among the tasks of this group are: (a) "the production of 20-year development plans for each of the public utility providers"; (b) the provision of "a more efficient and effective product"; and (c) the initiation of research into "alternative

sources".

Four years have passed since the first draft of the Structure Plan saw the light of day and it may well be that our public utility services are now run on the lines of 20-year development plans, although they remain obscure. Certainly, most of us do tend to get all the water they need nowadays. Yet we still underutilise rainwater and make up for it by producing costly desalinated water. So much for "a more efficient product".

We seem to be doing things right, but are we doing the right things?

I suggest we are not. We have been effective in producing all the water we need (or so it is claimed) but we have been very inefficient in managing our water resources. This inefficiency is reflected in the high salinity of our ground water, the huge quantity of rainwater finding its way into our sewers, the flooded roads after a mere drizzle and, of course, the higher water rates.

With the new rates we are allowed, 10 gallons of water per head per day at the 'old' rates, slightly more than two flushes of

the toilet. The rest is considered a "luxury".

By contrast, the 87 gallons per person per day consumed in Tucson, Arizona sounds outlandish. Yet it is one of the lowest per capita domestic consumption figures in the United States. This is no surprise when considering that the city, situated as it is in the middle of the desert, gets only 10 to 20 inches of rain a year!

When we consider anything in excess of two toilet flushes per person per day as a "luxury" we have to admit that we have a water problem. The problem is we do not manage our water, we just produce it in ever-increasing quantities to the extreme pleasure, I am sure, of the suppliers of reverse osmosis plants.

Higher water rates do not reduce water consumption. They simply cover the cost of our faulty management, or lack of it. We may witness a temporary drop in consumption when bills start getting stiff, but demand is very elastic and it will soon spring back to original levels.

When it does we will not be

(Continued on page 6)

The water problem

(Continued from page 5)

saving a single drop, we will just be paying more for our water. Meanwhile, we continue to dump free rainwater into the sea.

The fortunate thing about all this is that, as long as rain continues to fall we continue to have the opportunity to improve matters. We should start by filling in the grave lacuna in the Structure Plan and the onus, I suggest, lies on the Planning Authority, while the Plan itself provides the necessary tools.

Subject Plans are one such tool dealing with "specific issues relevant to the (Structure Plan) strategy and may relate to the whole of the territory... or to a particular activity" (clause 1.8.3).

I suggest that the management of our water resources is one such issue. The Planning Authority should set up the requisite inter-departmental group to advise it on the formulation of a subject plan that lays down the strategy

for managing our water resources.

The Water Services Corporation should not stop breathing down the Authority's neck until its (the WSC's) experts find themselves occupying important seats on this committee. If that is not enough to start the ball rolling then Cabinet, to whom the Authority is directly responsible, should give it the first nudge.

The objective of such a strategy should be clear enough, namely, that of optimising the use of our water resources by maximising the utility of available water and minimising waste.

Only then may we see the provision of "a more efficient and effective product" as envisaged in the Structure Plan.

One may object that all this is easier said than done. I suggest it is easier the earlier it is done.

(1) POLICY PUT 1 = Public utilities policy No. 1. (Chapter 16 of Structure Plan).

Water rationing in the land of plenty

Auckland, the largest city in a land of plenty, faces the prospect of severe water shortages as its worst drought for more than 60 years bites deep. Gemini News Service reports that the crisis is forcing a fresh look at management of the city's water supplies

The message has finally got through to the one million inhabitants of New Zealand's biggest city. Unless something drastic is done, Auckland will run out of water in a few weeks.

The alarm bells that started ringing - albeit faintly - almost a year ago have finally been noticed as an unseasonably mild winter, in tandem with a drought, has reduced the Auckland region's reservoirs to disturbing puddles.

By early June Aucklanders were beginning to think the unthinkable: having to queue in the street for water, and civil defence personnel were preparing to declare a state of emergency.

In the rugged Waitakere Ranges to the west of Auckland city, where five dams contribute just under a third of the region's water supply, rainfall figures were the lowest for 66 years.

Supply lakes which at that time of year should have been 75 per cent full were down to 31 per cent - and falling.

It will take months of constant rain to replenish these supplies. Winter in Auckland is usually wet. Instead, as June progressed, Aucklanders were getting cold weather with cloudless skies.

If water levels fall below 15 per cent and Aucklanders continue to use water at the rate they are doing, they face the hardship of stand-pipes in the streets and severe water rationing - something they have never known.

Even if there is rain, stand-pipes may be needed by Christmas in a city that ironically sits between two large harbours, the Waitemata and the Manukau, and is effectively surrounded by water.

Aucklanders have already

John Richardson

begun to take water-saving measures. The city's carwashes - which use 150 litres of water per car - have temporarily closed. That helps in a sprawling cosmopolitan area where the car rules and where many families have two vehicles.

That and other measures, such as bans on hoses, sprinklers, filling swimming pools and watering gardens, and asking Aucklanders to save 10 per cent of their normal use, are helping. People are even being advised not to let taps run while they are washing and brushing their teeth, and to get dripping taps fixed.

Thousands of city dwellers are buying water storage tanks at \$400 each to guard against the unthinkable.

Watercare Services, the company which supplies Auckland's water, says Auckland's water catchment system ringing the city can normally supply 353,000 cubic metres a day. That is normally comfortably above present demand of 370,000 cubic metres a day.

Fourteen of the past 16 months have seen lower than expected rainfall in Auckland, part of chaotic weather patterns that have affected the entire planet. And, say some experts, Auckland's present water catchment system is inadequate for the city's size despite its slow growth. Watercare pointed out in a newspaper article that demand for water in 1994 was the same as 1987. That was below a 1990 peak, thanks to the conservation programmes.

But while Auckland's water system is adequate to deal with a drought every 50 years, it is not coping with the present

drought, says Watercare.

Other experts are scathing of the extravagance with which Aucklanders use their clean water, a commodity which does not exist in many areas of the world.

Mark Bellingham is environment manager for the Maruia Society, which concerns itself with the environment and wildlife. He believes water is far too cheap. Millions of cubic metres of clean water are wasted each year on washing cars and watering market gardens when recycled water would do the job, he says.

He advocates making water much more expensive. "People won't want to waste their money. They will start to value their water then."

Watercare says most of the water it supplies to the councils in the area is used in commerce and industry, washing cars, gardening, showers and lavatories.

Less than a quarter of Auckland's water, which by international standards is of very high quality, is used for cooking and drinking.

Watercare says many Aucklanders do not fully understand that even when it rains the drought will persist.

"Weather patterns can be different in the catchment areas, and rain falling on dry ground may be held in the bush and not reach the streams or the storage lakes at all," it said.

Several days of rain could be needed to start water flowing into supply lakes.

At the end of May it was predicting that the city would need in excess of 50 days of winter rain before October to restore the lakes.

"Based on past weather records and on long-term forecasts there is only a remote possibility of this happening."

Watercare has looked at various options to increase the flow of water into Auckland. Eventually, as Auckland continues to grow, some of those options will have to be used anyway.

Other smaller projects were being considered to take extra water from catchments close at hand to ease the 1994 drought. For many the ultimate answer would be tapping into New Zealand's biggest river, the Waikato. It waters rolling farmland south of Auckland as it progresses west to pour 13 million

● Daily per head consumption in middle-income urban household: 150-200 litres

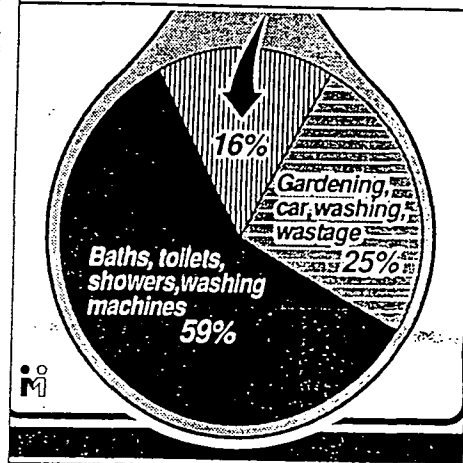


ESSENTIAL USE: 21-36 litres

Drinking and cooking: 3-6 litres

Washing and personal hygiene: 15-20 litres

Cleaning the house: 3-10 litres



cubic metres of water a day into the Tasman Sea

One per cent of a single day's flow from the Waikato would easily satisfy Auckland demand.

But the cost of tapping into the Waikato would be considerable, says Watercare.

As the drought drags on there has been political fallout. Some civic leaders blame central government restructuring in the 1990s that took water supply operations from the Auckland Regional Council and gave it to Watercare. But Watercare, as the supplier, can only suggest conservation measures. The various councils in Auckland have

power to bring in restrictions but, say some councils, they are not acting in cohesion. And the regional body has shown no leadership, they allege.

In a TV debate Bruce Jesson, chairman of the Auckland Regional Service Trust, which owns Watercare Services, was accused of passing the buck. He answered that the trust had been sending out warning letters to councils for months.

Whatever the politics of the situation, without a lot of rain in the coming months, Aucklanders face the prospect of water rationing usually associated with Third World countries.

Hints & Tips

Nothing in life is free - certainly not the water you drink. Literally millions of pounds are being spent to ensure the water supply meets an ever increasing demand. However, much water is still wasted; most of it unconsciously. A great deal can be saved if you follow these few simple hints and tips.

What happens if a pipe bursts in the house? Do you know where the water main is located? If you don't, a burst water pipe can cause flooding and a lot of damage around the home, not to mention the gallons that will be wasted. Locate your mains valve and make sure other members of the family know too.



When you take a bath you use around 80 litres of water every time. A shower, however, on average uses 30 litres. If you only have a bath, don't fill it to brimming heights, but if you have both, try to use the shower instead.



When you brush your teeth or wash your face, don't let the water run. Use only the amount of water you need. You'll be amazed at how much you can save every day.



You can find out whether your toilet tank is leaking by simply adding just a few drops of food colouring into the cistern. Don't flush the toilet for about fifteen minutes. If the water in your toilet basin colours, your tank will have a leak. Have it repaired immediately.



Plan your washing day well and always use your washing machine for full loads. That's one way of helping to save water. A normal sized washing machine can use up to 100 litres of water every load.

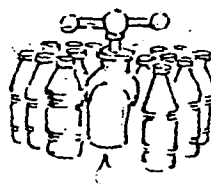
Every time you flush the toilet, you use 7.5 litres of water. In fact, you don't need that much. If you fill up a plastic bag with pebbles and put into your toilet cistern, this will replace some of the water in the cistern and reduce the amount that is flushed.



Every drop counts. You'll be surprised at how much water is lost through leaking taps - two spoonfuls every minute add up to 68 litres a day, 475 litres a week and a massive 24,800 litres a year.



If you leave your tap running whilst shaving, you waste a lot of water. You can save valuable water simply by putting the stopper in before you shave.

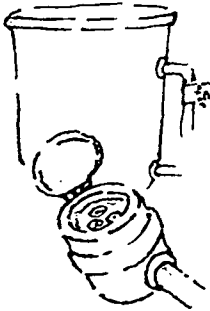


Please remember that water is precious. Our water resources are not without their limits. Use any amount you need but make sure you and other members of the family do not waste it.

Figure App.3.8.22.
Source: WSC.

...MORE HINTS & TIPS

When washing your car, do not use a hose pipe and if possible, use well water. All you need to use is one bucket with soapy water and one bucket with clean water for rinsing.



The best time to check for leaks in your water system is when you are away for a few days. Before leaving, close off the water supply to the roof tank. Mark the level of water in the water tank and take note of the reading on the water meter. Upon returning home, check if the water level in the tank, or the meter reading have changed. If it has the water system is faulty and needs repairing.

When watering the garden, use water from your well. This will help you save on your water bill. You can plant your garden with trees and shrubs which do not require large amounts of water, such as cacti, and also by hard landscaping, using pebbles, rocks, etc.



REMEMBER
EVERY



SAVE WATER

The Water Services Corporation aims to provide all households in Malta and Gozo with a supply of water. If you have any problems regarding your water supply, you can contact the consumer services section on 234530, 234531 or the nearest Water Services Corporation district office. In case of emergency after office hours, please telephone 224142, 231656 or 238716.

DISTRICT 1

Bombi - Belt il-Hażna, Floriana. Tel: 247931
Valletta, Floriana, Hamrun, Pieta, G' Mangia, Qormi, Tal-Handaq.

DISTRICT 2

B'Kara - Imdina Road, Mriehel. Tel: 442156.
B'Kara, St. Venera, Lija, Attard, Balzan, Taz-Zwejt.

DISTRICT 2A

Naxxar - Civic Centre, 21st September Avenue, Naxxar.
Tel: 413704 Gharghur, Mosta, Naxxar, Madliena, Bahar ic-Caghaq, Maghtab, Salina, Bidnija.

DISTRICT 3

San Ġwann - Well Street. Tel: 375984.
Msida, Ta'Xbiex, Gżira, Sliema, St. Julians, Tal-Qroqq, Swieqi, Paceville, San Ġwann, St. Andrews, Kappara, Ta'Giorni.

DISTRICT 4

Rabat - Gharreġin Ditch, Mdina. Tel: 454521.
Rabat, Mdina, Dingli, Mtarfa, Zebbiegh, Mgarr, Mellieha, Marfa.

DISTRICT 4A

San Pawl Il-Baħar - Tax-Xema Lane. Tel: 573507.
San Pawl Il-Baħar, Buġibba, Qawra, Burmarrad, Ghajn Tuffieha, Wardija, Manikata.

DISTRICT 5

Paola - Civic Centre, Paola Square. Tel: 826781.
Bormla, Isla, Birgu, Kalkara, Paola, Tarxien, Santa Lucia, Fgura, Gudja, Ghaxaq, Ricasoli.

DISTRICT 6

Paola - 2nd Floor, Civic Centre, Paola Square. Tel: 236120.
Żejtun, M'Xlokk, B'Buġia, Hal-Far, Zabbar, Lyster Barracks, M'Scala, Xghajra.

DISTRICT 7

Kirkop - Old Valletta Road, Tar-Robba, Kirkop. Tel: 823451.
Zurrieq, Safi, Mqabba, Qrendi, Kirkop.

DISTRICT 7A

Zebbuġ - Archbishop Caruana Street, Zebbuġ. Tel: 460245.
Zebbuġ, Siggiewi.

DISTRICT 8

Gozo - Triq ta' Wara s-Sur, Victoria. Tel: 556433.

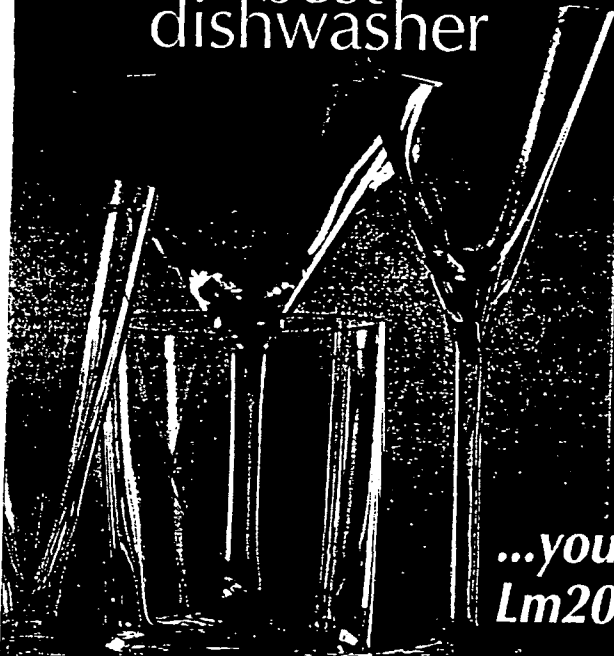


Water Services Corporation

Qormi Road, Luqa, LQA 05, Malta. Tel: 249851/7

Figure App.3.8.23.
Source: WSC.

The World's best dishwasher



...yours for only Lm20 a month!

A MIELE dishwasher goes a long way for your money. Using the latest environment-friendly technology, it can save you:

- 44% on the usual ENERGY consumption of a normal dishwasher (each wash costs less than 7ct)
- 45% on WATER (only 18 litres per full wash!)
- 50% on DETERGENT!

MIELE
The name speaks for itself, the dishwasher pays for itself! Now you can buy a MIELE dishwasher at super hire purchase rates. Call at our showrooms and see for yourself how easy it is to own the World's Best Dishwashing Machine...

Forestals
APPLIANCES LTD
The Strand, Sliema and Branches in Valletta, Paola, Hamrun and Victoria, Gozo.



Miele
Anything else is a compromise

ZANKER Slashed Prices

Save Water, Energy & Detergent with the NEW Zanker Range



itc

SPECIAL DISCOUNTS on cash and hire purchase terms
Dehumidifiers in stock
IIC SHOWROOM
National Road Blanda L-Bajda. Tel: 220644, 240291

Figure App.3.8.24.

The World's best washing machine

...yours for only
Lm20 a month!

A MIELE washing machine goes a long way for your money. Using the latest environment-friendly technology, it can save you:

- 44% on the usual ENERGY consumption of a normal washing machine (each wash costs less than 7cl)
- 45% on WATER (only 65 litres per full wash!)
- 50% on DETERGENT!

MIELE

The name speaks for itself, the washing machine pays for itself!

Now you can buy a MIELE washing machine at super hire purchase rates.

Call at our showrooms and see for yourself how easy it is to own the World's Best Washing Machine...



Forestals
APPLIANCES LTD.

The Strand, Sliema and Branches in Valletta, Paola, Hamrun and Victoria, Gozo.

Miele

Anything else is a compromise

Figure App.3.8.25.

APPENDIX 4

EXAMPLE WATER THEFT CASES

WATER THEFT

September 94

Consumer Type	Locality	Means Of Theft	Amount
Commercial	Msida	service w/o meter	1
Agriculture	Ghajnsielem, Gozo	bypass	1
Domestic	M Scala	tap before meter	1
		Total	3

October 94

Consumer Type	Locality	Means Of Theft	Amount
Commercial	San Pawl il-Bahar	Tap w/o meter	1
	B` Kara	Service w/o meter	1
	Sliema	Service w/o meter	1
Domestic	lbragg	Tap before meter	1
	Zejtun	Tap before meter	1
	Mellieha	Service detached before meter	1
	Mellieha	Service w/o meter	1
		Total	7

November 94

Consumer Type	Locality	Means Of Theft	Amount
Agriculture	Safi	Service w/o meter	1
		Total	1

December 94

Consumer Type	Locality	Means Of Theft	Amount
Domestic	Mosta	Tap w/o meter attached to 2 way connector	1
Domestic	Zabbar	Service w/o meter	1
		Total	2

January 95

Consumer Type	Locality	Means Of Theft	Amount
Commercial	Marsa	Hydrants w/o meter	2
	Floriana	Bypass before meter	1
	M` Scala	`T` before meter	1
	San Pawl il-Bahar	`T` before meter	2
	Mellieha	Service w/o meter	3
		Total	9

February 95

Consumer Type	Locality	Means Of Theft	Amount
Commercial	San Gwann	Hydrant outlet w/o meter	1
	Mriehel	Illegal taps on main	1
	Kalkara	Illegal use of water from F/H	1
	St. Julians	Missing meter	1
	Bugibba	Water Service w/o meter	1
	Paceville	Missing meter	1
	B` Kara	Water service w/o meter	1
	Mosta	Service w/o meter	1
	B` Bugia	No meter	2
Domestic	San Gwann	Water service w/o meter	1
	Luga	Water service w/o meter	1
	B` Bugia	Service w/o meter	1
	Zejtun	Meter removed	1
Agriculture	B` Bugia	Service w/o meter	1
		Total	15

APPENDIX 5

EDITED TRANSCRIPT OF AN *ISLAND SOUND RADIO* DISCUSSION ABOUT WATER ON 22 AUGUST 1993

Edited transcript of an Island Sound Radio
discussion about water on 22 August 1993

Borg: Apparently their [consumers] complaints have not been arriving at the Government side, so we open up our office lines for people to phone in and complain and we've had a lot of people phoning in.... I live there and I have been in contact with this problem in the area through personal experience and there were areas in Marsascala where in one case of a person phoning in, telling us that she lives in a second floor apartment and she hasn't had water for the past three years and it's no joke.

Presenter: I hope it's not treated as a joke because three years without running water doesn't sound like a joke, it sounds like hell.

Borg: It is hell for these people. Most of Marsascala haven't had water for weeks on end. Some areas haven't had it for three months, some four months or so....

Presenter: Are we talking about a complete no water in the tap, open tap, nothing.

Borg: Certain areas have had no water in the tap. Other areas have had water coming at around three 'o' clock at night.... People do wake up at three 'o' clock at night waiting for the water filling up their tanks in the basement and pumping it up to the roofs. I mean, it's certainly an inconvenient time to have water at three 'o' clock.... we've had.... a lot of swimming pools.... car washes.... So, how can we really say that we are trying to tackle the problem and been trying [to get] people not to waste, when it's [Government that's] not prohibiting at least these things to be put up in the island.

Buhagiar: As you know our party we've also launched a campaign regarding this problem. We're publishing notices in the local papers asking people who are facing this problem to write to us. And we did this because till three months ago, even less maybe, Government was explaining or trying to explain the lack of water in the various localities, by saying, 'look we're doing some repairs here or some repairs there to a reverse osmosis plant, that's why they have no water'. Now, one thing that you've got to note from our campaign is that this problem is widespread and it's all over the Islands, both in Malta and in Gozo. And through this campaign we also got Government to admit that we don't have enough water to go around, and Government is intentionally rationing the water and, er, you know, we have water cuts in all the villages. I know that means in Malta and in Gozo, at least once or twice a week everywhere.... It's not a very simple problem to talk about, it's really quite complicated. But you can really talk about this problem in three ways: There's a problem of water production, a problem of water distribution, and a problem of the quality of the water. Now, Government is saying that during the past five, six years it has increased the production and it is very true. Government has spent in the region of 65 million pounds and now we have a production of about 28 million gallons [$127,288\text{m}^3$] a day. Now if you deduct the water used by industry, which is about two and a half million gallons [$11,365\text{m}^3$] per day and make an allowance for tourists.... we have sixty four, sixty five [0.295m^3] gallons per head and that's a pretty big amount.... For example in England, the standard is thirty gallons [0.136m^3]. They consider that as the amount of water a person would need for a day.... now when you say that in Malta we've got sixty five gallons, therefore we've got enough production, what is the reason we get no water in the taps. And the reason all behind this is the distribution system.... it's not

good enough.... and the Labour Party has been stating this for the past five, six years now. During the last year of the Labour Government in 1986.... we had budgeted a figure for the rehabilitation of this distribution system - the entire rehabilitation of the distribution system. But unfortunately when the Nationalist Party was elected to Government, they didn't continue this process and went over to increasing the production.... The amount of unaccounted for water, the percentage, has been going up and up and up. The latest figures we've got for 1991, I believe, show that 61% of all the water produced is unaccounted for, which means it's not being metered and probably it's not even reaching our taps [Note: this is not true since only what is leaked does not reach the taps] and that's a lot, and a lot of water.

Presenter: We have a caller, Mrs. Mateus....

Mrs. Mateus: I was so angry about was the attitude of the people [at the WSC] who I phoned up.... I was just asking when we'd have some water and what was going on and all I was getting was, 'There's no water'. I mean, you know, it's a terrible attitude to take to the public.... I mean, we've not had water here for five days.... I mean I've got parents who live a couple of doors away, they're both invalids, I mean they need their water.... I've got small children, it's very inconvenient.... I'm phoning them [the WSC] constantly.... it was just excuses all the time....

Presenter: ...I'd like to ask Mark if what their [AD] experience is this - people keep getting the run around, you know complaints being ignored, etcetera?

Borg: People have been complaining that they never get the same answers when they phone in.... People get an answer but they don't get their problem solved.... so we

thought we would try to mediate between both the Government and the people who are doing the complaint. Government can't just, you know, shove us off because we tend to stick to our points more than people do usually so we usually get more real answers.

Presenter: the question I was about to ask Charles and I'm sure he's very prepared for it: what the devil was the Labour Government doing up to 1986?

Buhagiar: it had started the process of putting up reverse osmosis plants.... But, we knew at the time that it was very, very important to improve the distribution system.... I think that Government has got an estimation for upgrading the distribution system, which runs in the region of 100 million Maltese pounds.... but if one remembers that in the past years Government had spent 65 million: instead of spending all those 65 million on water production, [if] part of that were spent on the water distribution, I'm sure it would have got much better results.

Presenter: OK we'll take another caller.... from Xghajra, which is very much in the southern part of the island. Good evening Godwin.

Godwin: Good evening. How very nice of you to put me on the air. I'm very surprised one of the Ministers never turned up, mind, not that I blame them really.

Presenter: Ah yes, I see your point of course.

Godwin: As I said, I come from Xghajra, probably the worst part of the island where water supply is, but what I would like to say is that this morning on *The Sunday Times* there was an article by Michael Falzon [Figure

App.3.7.37.], the Minister responsible [for the environment], and all he did was he gave a whole list of boreholes, daily production, and not an inch of information to say why a small island like us which is as big as an English town cannot supply water on an everyday basis, you know like any civilised country in Europe. The island is split in two: north and south and you will note, the south suffers much more than the north and nothing is done. For, example, today we phoned up for the bowser.... we had to stay in all day.... half past twelve, I phoned up the bloke and he said, 'Oh, he should be there any minute'. Obviously that means tomorrow, hopefully tomorrow anyway. We haven't had any water for the past two weeks. That is no joke. We had the bowser once and that was on charity basis.... I'm sorry to say but one administration blames another and it's nice of Mr. Buhagiar to turn up and give his view, but I'm afraid we've had our share [of problems] when the Labour was in power, but with the change of Government everyone thought that things would improve, and obviously, not only they didn't improve, they got worse.... not so long ago we got promised that we gonna have a pipeline and it was meant to be operational in June. Obviously [sarcasm] they meant next year not this year.... I mean I've seen people here with buckets, lots of buckets in their hands [filled with seawater]. I mean these are things you see in either Somalia or Saudia Arabia, not in the twentieth century. We're meant to be going into Europe. I don't know how we're going into Europe with this situation....

Presenter: We don't actaully have a Minister to answer all these complaints.... I would invite Mr. Zammit or Mr. Falzon to try and use the telephone, 249149, if they would like to get through.... Mark.... if you did have a magic wand, what would you actually do?

Borg: I think the best solution would be, as Charles

Buhagiar said, to fix up the distribution system.... there may be a need for a more production of water, since population is increasing and tourists are increasing and our lifestyle has changed.... certainly Government is talking of increasing the water rates.... a solution of eliminating waste.... unfortunately in Malta.... if we had to pay for water at the source, real prices, then I believe people start saving water more, so all this fuss about wasting water which Mr. Falzon has been known to say recently, will just disappear.

Presenter: OK, we'll take another caller, Mr. Xerri from Cospicua. Good Evening.

Mr. Xerri: Hello. Good evening. Thankyou for putting me on air.... Well I got complaints.... shortage of water here in the Cospicua and Cottonera area. We've been going without water for weeks and when it comes, it comes all rusty that you have to waste whatever comes for about two hours or three hours to have good clean water. See what I mean?.... years ago, about ten years ago, we've been told in the programme [manifesto] of the Nationalist Party, who's governing now, they said, when we open the tap we're gonna have, what we deserve - water. [Angrily shouts] We ain't gettin' it! We surely are [not]! We're not getting it! When we get it, it's dirty.... What we gonna do about it? We don't wanna hear people talking about education, education all the time. We're educated enough. What we want is action. Can they do it or can't they do it. It's what we really want to know. Who's gonna answer all this questions I am asking? Who?!

DJ: OK. Well Mr. Xerri, I'm afraid I can't get someone to answer your questions.

Mr. Xerri [interrupting and still shouting angrily]: Well you should get someone to the questions.... are we gonna

have it or not?

Presenter: Charles Buhagiar.... what would you do about it if you were in Government.

Buhagiar: I'll tell you what we're doing about it right now. At the moment as a part of its campaign on this problem, we're testing the water all over the island.... for the salinity as well as the iron content.... At the moment we're doing a study about the chemicals in our water, which we intend to publish later on. What will we do about the water problem as a whole? Well I would tend to agree with Mark here, that the first thing that needs to be done is to improve the distribution system. When we talk about distribution system, unfortunately most people understand that we need to upgrade the system.... That's not the only thing. The other thing about the distribution system is that the water we produce is not being distributed adjustly, in the same amounts to all over the island.... we get a funny situation whereby half the population of the island, the people in the south, are depending on one RO plant and the rest on three RO plants [four actually].... Unfortunately, we don't have a national grid for our distribution system and that's one thing that needs to be done.

Presenter: Is it being done?

Buhagiar: It's not being done and Government has never tried to do this thing [This is not true. the Qrendi pipeline is the first in a series of trunk mains to redistribute water. See Chapter 8].... we need to produce more water for the south of the island and one way of doing that would be ^{to} put up another RO plant in that area [a new RO plant in the south was publicly announced by the WSC in April 1994, but discussion about it had been an going process since the summer in 1993 [see Chapter

8]. This would be a short term solution, because, you would increase the amount of water available but, unless you also improve the distribution system chances are that water will never get in touch with anybody.

Presenter: 61% of the quota for the area.

Buhagiar: That's right, yeah [This is not true because that is the unaccounted for figure, of which only leakages (17%) is lost].

Presenter: We have a caller, Mrs. Vella from Xghajra Good evening Mrs. Vella .

Mrs. Vella: We haven't had any water here at the present time for about two weeks, I think, or just over, and about a month before that we were waterless for three months here.... How they can expect us to live without water, it's absolutely impossible....

Presenter: Charles lets be politically aware.... Is the problem generally concentrated more on the south side of the island? Or is everywhere having a problem, but there's more noise being made about the south, the same way there was more noise being made about the north when the Nationalists were in Opposition. Let's be honest about that side too.

Buhagiar: Yeah, well. The problem is widespread, it's all over the island, even in Gozo. And reason being this year it didn't rain very much, this winter rather, and so we're not getting very much water from the ground, so we're depending very much on the RO plants. Just like I was saying previously, the reverse osmosis plants we've got, most of those supply the north of the island and only one plant supplies the south, and for a particular reason the south is suffering a lot from this problem....

the distribution system in the south is very old and needs to be redone very quickly.... in some areas the water is so saline that the percentage of salinity in the water is more than ten times that is the maximum established by WHO....

Presenter: Let's take another caller. Nari Birdi from the UK. [Ironically, after trying all night to get through to the station, the tape ran out on my recorder as I came on air. After me another caller has been on proposing water conservation education].

Buhagiar: I do agree that we need to educate our people in the use and it's a pity that although Government has been promising for the past four years now that it's going to try and launch professional campaign [pause] water conservation, nothing has been done.... the other thing is I don't agree that increasing the rate of the water is going to solve the problem at all. What will happen then is that we'll get more water theft. Because people are going to be, to have more incentive now, with the price going up. And the thing is as far as I know, and I'm sure about this, for the past three years Government hasn't charged anyone with stealing water.... Government hasn't got the facilities to enforce against those who do steal water.... Government has invested a lot of money in this service [water supply] for the past year, that's about right, and that's what makes the question even more wrong, because it's been invested in the wrong way. I mean one has invested in the production of the water whilst no money has been invested in the distribution where the problem really lies. And one last point which I should like to make is that.... we use a lot of water for things like flushing toilets and other matter, washing floors, which we can do with second class water. I would like that in this country we have a system whereby households will have two systems, one for

drinking and one for second class water. Now we're talking about treating all of our drainage [by 2010 all of Malta's sewage is to be recycled and treated. See Chapter 8].... and treating it as second class water and what are we going to do with it. Are we going to throw it in the sea or can we use it to flush toilets, wash doors, whatever.

Borg: Well, regarding the enforcement of water theft, I think enforcement is lacking in all areas in Malta. I mean you don't get enforcement in almost anything.... I hope people will keep pressing the Government because otherwise things will not improve. I hope people will keep writing, phoning in on radio stations, and keep complaining so Government will step up these steps which he's supposed to be doing."

APPENDIX 6

WATER SERVICES CORPORATION WATER RE-USE

SECTION: TASKS, AIMS AND STRATEGIES

OBJECTIVES	MAIN ACTIVITIES	TASKS	CONSTRAINTS	Projects to be Performed	Information available/task to be performed by
1. Evaluation of Resources STORMWATER RUNOFF	1.1 Updating and improving available data.	1.1.1 Strengthening of institutions	Present staff available is already loaded with Groundwater monitoring issues.	1.1.1.1 New job shcedules for existing personnel	Chief Executive
				1.1.1.2 Recruiting of personnel	
		1.1.2 Grouping of already available data in terms of sites, capacities, present use and quality.	Though this data may already be available in our database, this needs to be rechecked and organised on the basis of the criteria mentioned in the tasks.	1.1.1.3 Training of personnel	
				1.1.2.1 Prepare inventory of existing data	Either by the present Hydrology staff on a part-time basis or/and newly recruited and trained staff.
				1.1.2.2 Sort data available according to criteria required	
				1.1.2.3 Add onto any missing data	
		1.1.3 Site inspections to verify or alter existing data.	as per 1.1 above plus transport	1.1.3.1 as per 1.1 above	as above
				1.1.3.2 Provide the trasport necessary for these inspections	
				1.1.3.3 Perform site inspections	

				1.1.3.4 Check outcome of inspections with previous data	
				1.1.3.5 Alter any incorrect data accordingly	
		1.1.4 Collection and complete testing of runoff water (urban ,semi-urban, rural and semi-rural) samples. These should include sediments.	seasonal sampling i.e. during and after rainstorms. Thus, this task should be carried out before Summer season.	1.1.4.1 Make a list of representative catchment areas eg. urban	Laboratory
				1.1.4.2 List points, in each catchment chosen, from where samples of water, sediments, etc should be taken	
				1.1.4.3 Prepare schedule for sample collection; including frequency	
				1.1.4.4 Prepare schedule for analysis to be carried out. (including those to be carried out on site)	
				1.1.4.5 Recruit personnel as necessary	
				1.1.4.6 Train personnel	
				1.1.4.7 Purchase any equipment required	
				1.1.4.8 Perform sampling and analysis	
				1.1.4.9 Identify, periodic changes, trouble-shooting areas, etc	

				1.1.4.10 Continue sampling programme to assess long-term effects	
			later		
		1.1.5 Drawing up a new quality analysis programme			
	1.2 Re-assess traditional estimation coefficients	1.2.1 Re-allocation of rainfall and runoff equipment for particular catchments and as per specified standards (eg. Bleasdale/Stephenson Tables)	Infrastructural eg. To install runoff recorders, particular structures need to be constructed. This is somewhat difficult in areas such as Msida. Present runoff recorder is situated way upstream of Msida square. Thus the relatively newly-developed areas of Ta'Xbiex, University Heights and Gwardamangia etc. bypass this runoff recorder.	1.2.1.1 Prepare list of available on-site recorders (eg runoff recorders, weather stations) and their performance; including their location vis-a-vis to recent land development	The location of such recorders is to be performed by Hydrology section and all infrastructure needed by the Engineering Services.
				1.2.1.2 Determine how many recorders are required (and in which locations) according to present land use	
				1.2.1.3 Issue tender for new equipment (and spare parts if the case)	
				1.2.1.4 Install the new equipment	

		1.2.2 Data collection (including survey on seasonal variations) from 1.2.1 above.	1.2.1 above	1.2.2.1 Alter job schedules of existing personnel, to cover data collection from additional instrumentation	Hydrology
				1.2.2.2 Recruiting and training of new personnel	
		1.2.3 Re-calibrate all data which were based on certain assumed runoff coefficients.	1.2.1 and 1.2.2 above	1.2.3.1 Inserting additional data in appropriate databank	Hydrology/Drainage
				1.2.3.2 Calculate coefficients with new data available	
				1.2.3.3 Recalibrate existing data where necessary	
GROUNDWATER				1.3.1.1 Make a list of all wells which have been shut down for any length of time due to quality problems	Laboratory
	1.3 Zoning of non-potable groundwater sources	1.3.1 Updating data with recent analysis	Sampling and analysis of groundwater wells which have a history of being shut-down because of quality problems eg. springs, Via Dingli Pumping Station, etc.	1.3.1.2 Check the present status of these wells eg closed down, intermittent pumping ,etc	

					1.3.1.3 Take a recent sample of those which are pumping and perform analysis of trouble shooting parameter	
					1.3.1.4 Make arrangements for 24 hours of pumping of wells which have been shut down for a long time.	
					1.3.1.5 Collect samples (and analyse) from these wells	
				1.3.2 Mapping of quality data available	1.3.2.1 Draw up contour maps of quality parameters with the most recent data	Hydrology
				1.3.3 Delineating trouble shooting zones	1.3.3.1 Use maps from 1.3.2.1 to delineate trouble shooting zones	Hydrology
TREATED EFFLUENT	SEWAGE	1.4 Availability of treated sewage effluent	1.4.1 Collection of data regarding the quantity and location of TSE produced with time	This data is available but has to be organised for the task in hand	1.4.1.1 Transfer of this data from the departments where it is available	SASTP/Drainage/Hydrology
					1.4.1.2 Put data in appropriate databank	
					1.4.1.3 Plot graphs, contour maps, etc as required	
			1.4.2 Collect data on quality	As above	1.4.2.1 as 1.4.1.1 to 1.4.1.3 above	As above

REUSED WATER IN INDUSTRY	1.5	Quantify water recycling and reuse in Industry	1.5.1	Carry out appropriate surveys in all fields of Industry taking consideration into quantity and quality of such reuse, if any.	A detailed insight of the operations of all industries/ factories must be acquired.	1.5.1.1	Gather as much information as possible from the MDC on the type of industries, manufacturing processes requiring water use, and any other relevant data present locally	MDC/Hydrology section and WSC Consumers Section.
						1.5.1.2	Prepare questionnaire to be sent to all industries on points such as water consumption, recycling facilities, present use of second class water, etc	
						1.5.1.3	Gather information from WSC audit section to determine zones of heavy water consumption, other than for domestic use	
						1.5.1.4	Put all information gathered in appropriate databank	
DOMESTIC CISTERNS	1.6	Assess capacity of storage facilities in domestic households	1.6.1	Carry out surveys on location, availability, and size of domestic cisterns.	Flats and apartments, plus a percentage of domestic households which do not have such cisterns.	1.6.1.1	Prepare questionnaire to be sent to individual households, via the local councils	Local Councils/WSC
						1.6.1.2	Transfer all information gathered into an appropriate databank	

2. Increasing Capacity of Resources	2.1 Increasing storage for surface runoff	2.1.1 Determine ways in which to increase capacity of existing storage entities; both man-made and natural		2.1.1.1 Study the results obtained in 1.1 and 1.2 above to determine changes in traditional catchments areas due to land development 2.1.1.2 List areas where the existing storage facilities cannot cope with the availability of runoff during storms	WSC
		2.1.2 Set up plan to construct / relocate entities according to present/ future situation	Performance of tasks as per 1.1 and 1.2 above	2.1.2.1 For each area listed in point 2.1.1.2 above prepare a work schedule of construction/maintenance works which must be carried out to reinforce present storage capacities 2.1.2.2 Check on whether there are any objections to the implementation of these projects (especially those in rural areas)	
					To be dealt with by the Planning Authority
		2.1.3 Carry out a cost benefit analysis on proposed schemes.	Data on the cost of such projects must be collected from other departments	2.1.3.1 Determine the capital cost and the running costs of all the individual projects listed in 2.1.2.1 above 2.1.3.2 Determine whether the costs incurred can be offset by the ultimate use of the water collected (this can only be determined when the Final executable scheme has been issued)	

		2.1.4 Set up a maintenance / construction team to carry out proposals and upkeep of same	Prior to the implementation of this task it must be made clear which governing body is responsible for the upkeep of certain structures, such as valleys and dams	2.1.4.1 From the study on running costs calculated in 2.1.3.1 determine whether it is more feasible to set up a maintenance section within theWSC or to sub-contract this work	
				2.1.4.2 Proceed according to results obtained in 2.1.4.1 above	
3 Evaluation of Demands	3.1 Agricultural Demand	3.1.1 Determine the location of arable land	Possible lack of data	3.1.1.1 Gather all the information available on the subject matter (including previous studies and available land use maps)	
				3.1.1.2 Determine the amount of arable land from this information	
				3.1.1.3 Subdivide this land into different agricultural and irrigation practices as at present; to determine areas where water for irrigation is mostly needed	
		3.1.2 Carry out survey on quality and quantity of irrigation water required		3.1.2.1 Prepare a questionnaire to be distributed to all registered private well owners' asking for information on the quantity of water used for irrigation	
				3.1.2.2 Input all the information gathered in an appropriate databank	

				3.1.2.3 Substantiate this information with previous surveys and with information from the Agricultural Department		In conjunction with the Agricultural Department
		3.1.3 Carry out research on crop productions requiring inferior quality water	Possible lack of data.	3.1.3.1 Gather as much information on the subject matter as possible (probably sources FAO, Agriculture Dept., Farmers' Cooperatives)		
				3.1.3.2 Carry out a survey to determine the point of view of farmers on such matters		
		3.1.4 Carry out survey on use of untreated water on land reclaimed in coastal areas	Possible lack of data	3.1.4.1 Gather information on the subject from departments concerned eg. waste management, agriculture, Planning Authority		In conjunction with the Agricultural Dept.
		3.1.5 Carry out an impact assessment on soil, subsoil and aquifer if lesser quality water is to be used	Lack of data	3.1.5.1 Select individual cases (eg irrigating with SASTP effluent) and determine the effect on underlying aquifers		
				3.1.5.2 Record findings and substantiate with literature		
				3.1.5.3 Transfer data of findings into aquifer models to determine (i) the validity of these models, (ii) any short and long term effects expected from such practices		

					3.1.5.4 Thereby determine a policy on such irrigation practices		
	3.2 Industrial Demand		3.2.1 Carry out survey on quantity and quality demand of industries for water		Incorrect data is likely to be submitted if a direct questionnaire is held	3.2.1.1 The projects for this task should be included in 1.5 above to avoid repetition of work	Substantiate the information received through literature and by verifying with heavy consumers section
			3.2.2 Zoning of industries with similar demands (qualitywise)			3.2.2.1 The results from questionnaire above have to be plotted on maps	
						3.2.2.2 Maps have to be studied to see if areas having industries with similar water quality demands exist	
						3.2.2.3 Policies have to be issued so that further developments in industry could be vetted on such lines	
	3.3 Demands by the touristic industry		3.3.1 Estimate the amount of water used - apart that used for catering and drinking purposes		Difficulty to get correct data, as in the case of industries	3.3.1.1 Gather as much information as possible from heavy consumers section regarding this point	
						3.3.1.2 Carry out a survey in touristic outlets to see how much second class water is being utilised at present and how much demand there is likely to be in the future	
			3.3.2 Determine localities mostly requiring this type of water			3.3.2.1 This has to be deduced after the completion of 3.3.1 above	

	3.4 Commercial and public facilities	3.4.1 Estimate the quantity of non-potable water required for these uses	Difficulty to get correct data	3.4.1.1 Send out questionnaire to departments which use this type of water eg. Agriculture, Health, Environment; to determine the quantity and quality required	
				3.4.1.2 Collect this data, study and issue a policy plan	
	3.5 Recharge of aquifers	3.5.1 Determine the quality of water required for recharge (especially if direct recharge is to be used)	Lack of literature	3.5.1.1 Collect as much literature as possible on the subject matter	
				3.5.1.2 Study geological models to determine the best location, etc. for recharge; considering the transportation model in particular	
		3.5.2 Establish programme for recharging		3.5.2.1 Prepare a plan for aquifer recharge; in the short term and subsequently in the long term	
				3.5.2.2 Determine costings of different methods on how to execute this plan	
				3.5.2.3 Set up section for the implementation of this project	

Project Title: Feasibility Study on the use of Springs for Potable Purposes or for second class use.

<u>Objective</u>	<u>Main Activities</u>	<u>Task to be Performed</u>	<u>Constrains.</u> (see Annex III)	<u>Remarks</u>
1. Evaluation of past and present day status	1.1 Preliminary chemical and bacteriological analysis to determine their quality	1.1.1 Determine sites for the most representative sampling points	Professional/technical personnel are required to go on site to determine these points	
		1.1.2 Collection of samples from all springs for chemical analysis	Trained sampling personnel are required (plus transport)	Chemical analysis should be mainly focused on pesticides, fertilizers, organic matter and suspected byproducts. (see Annex I)
		1.1.3 Collection of samples for bacteriological analysis	As above	
	1.2 Set up a sampling programme			Programme should cater for seasonal variations
	1.3 Relevant historical data collection and analysis	1.3.1 Collection of all quality data	Facilities for a databank and operators	
		1.3.2 Collection of production data	As above	Production data should be split into amount used by distribution and discharge
		1.3.3 Collection of rainfall data	As above	
		1.3.4 Collection of chlorine dosing data	As above	Including method of chlorination
		1.3.5 Collection of velographs showing (a) spring gallery outlay (b) distribution network from springs	As above plus the services of field surveyors	

	1.4 Production of land use maps	1.4.1 Deleantating / spring gallery layout on survey sheets	Services of land surveyors are required	A status report on the springs themselves should be included in this survey
		1.4.2 Carrying out field inspections to determine land use	As above	
		1.4.3 Comparism of land use maps to quality data to determine any relationship		
	1.5 Removal / Alteration of offending pollution sources	1.5.1 Pollution sources identification from 1.3.3 above		
		1.5.2 Identify legal procedures which could be taken to eliminate / improve on these situations	These legal procedures have first to be identified.	
	1.6 Costings of present day caretaking and investigations of these springs	1.6.1 Collection of costs for (a)salaries (b)transport (c)chlorine (d)energy (e)testing	Information is required from several sections involved in this work	Salaries shuold include those for caretaking and laboratory personel
		1.6.2 Calculate the cost per m ³ of water from springs available for potable use		
2 Treatment required to get a potable standard	2.1 For good bacteriological quality	2.1.1 Group springs in zones		Characteristics to be used in zoning include (a)distribution network, (b)geographical position., (c)quality criteria
		2.1.2 Determine the chlorine demand for each group	Laboratory and field tests (time consuming) are required	Pilot projects might be required

		2.13 Listing and costings calculation of proposed projects to rectify the situation		Method to go about this part of the project can only be determined when all the tasks mentioned above are performed
	2.2 For good chemical quality			As not enough information is available on this point this task can only be performed after the completion of present day chemical analysis
3 Use for second class purposes	3.1 Determine the demand for second class water	3.1.1 List the potential customers in the area		With the collaboration of MDC (see Annex II)
		3.1.2 Determine quality standards required	Poor response to questionnaire	
		3.1.3 Zone localities as per demand		
	3.2 Carry out studies on method of transportation of water to various localities (as required)	3.2.1 List probable sites of transportation		
		3.2.2 Investigate alternative modes of transportation	Velographs of old mains systems are required	
		3.2.3 Carry out cost benefit analysis of these transportation methods		
	3.3 Calculate the cost per m ³ of this water supply			
4 Decide on a policy for the use of water from springs		This task can only be performed after the completion all the tasks listed above		

Proposed Preliminary List of Chemical Analysis to be carried out on Springs.

(extracted from EEC Directive 80 / 778 / EEC)

Chemical Parameter.	Proposed method of Analysis
Colour	Photometric method calibrated on the Pt/Co scale
Turbidity	Silica method - Formazine test - Secchi's method
Temperature	Thermometry
Hydrogen ion concentration	Electrometry
Chlorides	Titrimetry - Mohr's method
Sulphates	Gravimetry - Complexometry - Spectrophotometry
Silica	Absorption spectrophotometry
Calcium	Atomic absorption - complexometry
Magnesium	Atomic absorption
Sodium	Atomic absorption
Potassium	Atomic absorption
Nitrates	Absorption spectrophotometry - Specific electrode method
Nitrites	Absorption spectrophotometry
Ammonium	Absorption spectrophotometry
Oxidizability	Boiling for 10 minutes with KMnO ₄ in acid medium
Total Organic Carbon	
Substances extractable in chloroform	Liquid/liquid extraction using purified chloroform at neutral pH, weighing the residue
Hydrocarbons (dissolved or in emulsion); Mineral oils	Infra - red absorption spectrophotometry
Phenols (phenol index)	Absorption spectrophotometry, paranitroaniline method and 4 - aminoantipyrine method
Organo - chlorine compounds	Gas - phase or liquid - phase chromatography after extraction by appropriate solvents and purification
Iron	Atomic absorption - Absorption spectrophotometry
Copper	Atomic absorption - Absorption spectrophotometry
Zinc	Atomic absorption - Absorption spectrophotometry
Phosphorus	Absorption spectrophotometry
Suspended solids	Method of filtration on to a 0.45 porous membrane or centrifugation (for at least 15 minutes with an average acceleration of 2800 to 3200g) dried at 105°C and weighed
Pesticides and related products	Gas - phase or liquid - phase chromatography after extraction by appropriate solvents and purification - Identification of the constituents of mixture. Quantitative determination

Frequency of sampling / analysis of the springs will be determined after the preliminary analysis. Further some parameters will be deleted and/or added onto this list as the need arises.

Services / Equipment Required for the Performance of the Tasks Listed in the Project Plan.

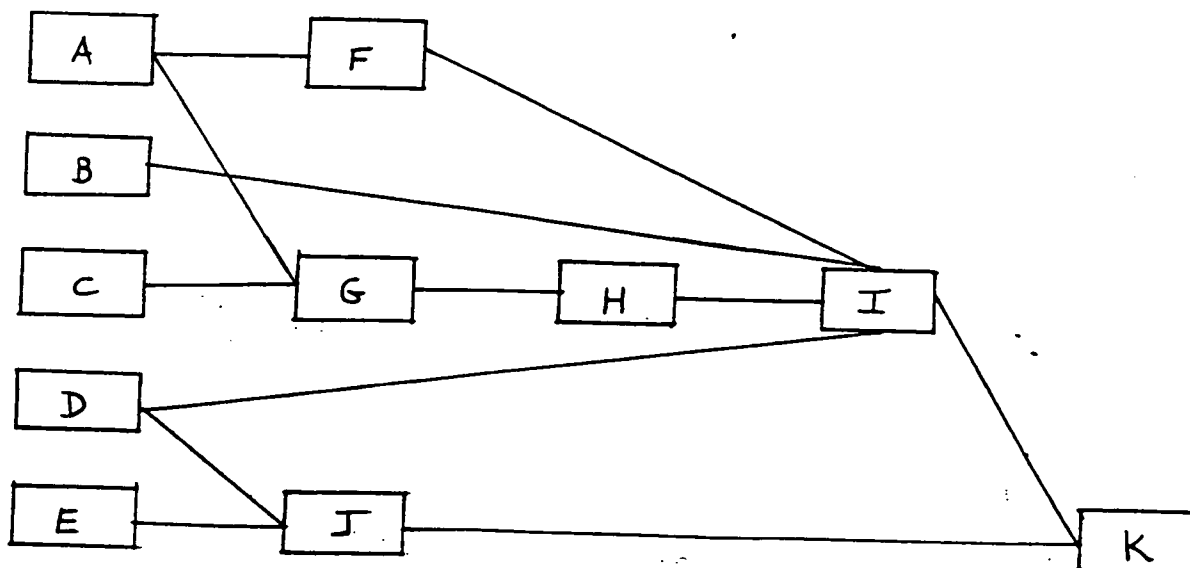
<u>Task Number</u>	<u>Services Required</u>
1.1	Laboratory services Field technicians (trained for sample collection) Transport
1.2	As 1.1
1.3	Databank facilities Data Entry Operators Field Surveyors / Draughtsmen Transport
1.4	Field Surveyors Transport Computer facilities
1.5	Computer facilities Personnel working in managment of legal procedures
1.6	Computer facilities
2.1	Computer facilities Field Surveyors Laboratory services Services of the Personnel taking care of the Springs
2.2	As 2.1
3.1	Clerical services Computer facilities
3.2	Computer facilities

Annex IV

Job Schedule.

- A Preliminary chemical and bacteriological tests on individual and groups of springs.
- B Historical data processing (quality)
(production)
(rainfall)
(chlorine dosage)
(velographs)
- C Site inspections and plotting of land use maps
- D Calculation of data for costings calculation
- E Questionnaire on second class use
- F On the completion of A a sampling and testing programme for long term use will be established
- G On the completion of A and C offending sources could be identified
- H From G individual cases can be identified and studied
- I On the completion of B D F and H individual sub-projects on treatment to get to potable standards could be suggested and cost benefit analysis carried out.
- J On the completion of D and E specific case studies for second class use in industry can be carried out
- K Decide on a policy for the use of water from springs

Jobs A B C D and E can be started concurrently whilst the rest of the tasks have to wait for the completion of some other task before they could be started.



APPENDIX 7

INSTITUTE OF WATER TECHNOLOGY PORTFOLIO



One of the Primary objectives of the Institute of Water Technology is to help its customers identify the training needs and develop and implement an effective action plan. This is achieved by providing a comprehensive range of training services that give quality, choice and effective results back at the workplace.

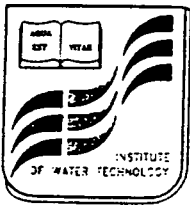
The Institute of Water Technology has been entrusted to identify and satisfy wide-ranging needs of the Maltese Water Sector.

The Institute of Water Technology is wholly owned by the Water Services Corporation which is the state owned company responsible for the management of water resources in the Maltese Islands.

The Institute has excellent reputation in running courses in desalination and water resources management. It offers first class lecturing and training facilities. Its staff of qualified engineers, hydrologists and scientists are well experienced both in their field of specialisation and also in training.

It has the support and recognition of well established educational and training Institutions and various Universities.

The Institute of Water Technology is utilising Malta's unique water experience and long standing co-operation with the institutions of repute such as Water Training International of the UK and UNEP in establishing a curriculum for courses of international standard.



Supervisory & Management Development Programme

Institute of
Water Technology

ADVANCED SUPERVISORY MANAGEMENT COURSE - (PART 1) COMMUNICATIONS

AIM

To improve communication skills in the organisation.

OBJECTIVES

- To acquire an understanding of the complex nature of the communication process.
- To understand the interdependence of people skills and communication.
- To improve listening and speaking skills.
- To improve people skills.
- To learn how to contribute to the improvement of communications within the organisation.

COURSE CONTENT

• The process of communication	• Empowerment
• Components of effective communication	• Improving people skills
• Developing an adequate self-concept	• Communications within the organisation
• Learning to be a good listener	• Improving communications
• Learning to be a good speaker	



Supervisory & Management
Development
Programme

Institute of
Water Technology

*ADVANCED SUPERVISORY MANAGEMENT
COURSE - (PART 1)*

WRITTEN COMMUNICATIONS

AIM

To enable participants to write concise and coherent reports in English.

OBJECTIVES

- To enable participants express themselves in good idiomatic English.
- To rise awareness of the need to pay attention to sentence and paragraph construction.
- To help participant write concisely and to the point.
- To enable participants write formal reports relevant to their work.

COURSE CONTENT

- Writing good idiomatic English
- Sentence and paragraph construction
- Writing coherently
- Relevance
- Formal report writing



Supervisory & Management Development Programme

Institute of
Water Technology

ADVANCED SUPERVISORY MANAGEMENT COURSE - (PART 1)

INSURANCE FOR MIDDLE MANAGEMENT

AIM:

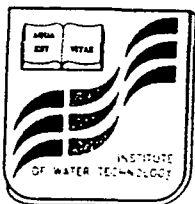
To introduce middle managers to the basic principles of insurance as applied to the water industry.

OBJECTIVES:

- to acquire an understanding of insurance principles
- to understand and interpret insurance policy wording
- to be acquainted with Property Insurance and Life Covers
- to appreciate the need for managing risk

CONTENTS:

• Characteristics of Insurable Risk	• Basic Law of Contract
• Utmost good faith	• Policies of Transportation
• Indemnity	• Property Insurance
• Insurable Interest	• Life Covers
• Risk Management	



Supervisory & Management Development Programme

Institute of
Water Technology

ADVANCED SUPERVISORY MANAGEMENT COURSE - (PART 1)

SUPERVISION FOR MIDDLE MANAGEMENT

AIM:

To develop the supervisory skills and techniques necessary for middle management.

OBJECTIVES:

- to acquire an understanding of the supervisory process
- to identify the role of supervision in the work process
- to develop basic leadership skills
- to achieve results through people

CONTENTS:

- Complaint and Grievances
- Leadership Skills
- Team Building
- Training and Development
- Achieving Results



Supervisory Courses

SUPERVISORY COURSE

- Level 1 -

AIM:

To improve work proficiency in the Water Services Corporation by helping supervisory staff develop the necessary skills and knowledge.

OBJECTIVES:

At the end of the course participants will:

- be acquainted with the different functions of the Corporation
- understand better the role of the Supervisor in the Water Industry
- develop the appropriate Supervisory and Operational skills and techniques
- be aware of the requirements of Health and Safety at work
- be aware of the need of Customer Care and good Public Relations

CONTENTS:

- Introduction to the Water Industry in Malta
- The role of the Supervisor in the Water Industry
- Supervisory and Operational Skills
- The Supervisor and Occupational Health and Safety
- The Supervisor and good Public Relations

APPENDIX 8

WATER SERVICES CORPORATION WATER AWARENESS QUESTIONNAIRE

- (1) What percentage of the world is covered by water?

- (2) What percentage of the world's water is readily available for humans to use?

- (3) How much water is contained in the human body?

- (4) Which contains more water as a percentage of body weight, a woman's or a man's body?

- (5) Why do male and female bodies tend to have different amounts of water?

- (6) How much water does a human body tend to loose in a typical day?

- (7) Why is water especially good for people on a diet?

- (8) What is the largest use of water indoors by percentage on a daily use per person per day?

- (9) The Water Services Corporation produces 28 million gallons per day. What percentage of that is actually consumed as drinking water?

ANSWERS

- (1) 80% water 20% dry land
- (2) 97% is salty ocean, 2% frozen, 1% for human needs.
- (3) An adult body contains 40 gallons of water.
- (4) A man's body is 60-65% water. A woman's 50-60% water. The human brain is 75% water.
- (5) Muscle tissue contains a large amount of water
Fat tissues contain virtually no water. Men tend to have more muscle as a percentage of body weight while women have more fat.
- (6) You loose 2.5 to 3 quarts of water per day through normal elimination, sweating and breathing. If you exercise or live in a humid climate, you may loose another quart.
- (7) It has 0 calories and 0 sugar, but a good drink of water can reduce hunger. Water helps your body metabolize stored fats, helps maintain proper muscle tone, and help rid the body of waistes.
- (8) Use on a percentage basis per person per day:
toilets / flushing use : 41%
bathroom use : 37%
Laundry / kitchen : 10%
- (9) Typically, less than 1% of the drinking water produced by utilities is actually consumed by people. Most goes for lawns, showers and tubs, toilets, etc.

