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Independent Advisory Panel on Long-term Environmental Issues Facing the Water Industry

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A Report to Severn Trent Plc

Contents

Preface

To the Chairman of Severn Trent Plc

At the beginning of 1997 your Board decided to establish a panel of independent environmental experts to advise you as you develop your long-term environmental strategy, concentrating initially on your water business.

You invited us to form this Panel. We were immediately impressed with Severn Trent's commitment to developing a long-term environmental strategy and your courage in opening this process up to external participation and scrutiny. We were therefore glad to accept your invitation.

In doing so we agreed with you that the objective should be to consider with you the general way in which a long-term environmental strategy might best be developed for a company like Severn Trent Water. We would endeavour to take a long-term view running up to 25 years ahead, and to consider Severn Trent Water and its challenges as an exemplar of the issues which all water companies in the United Kingdom will have to face in the years ahead. Our report would be addressed to the situation of Severn Trent Water but it would approach issues from a generic point of view. We hoped that the resulting advice might be helpful to other water companies as well as to Severn Trent Water.

We have found our task interesting and challenging. We have met seven times during the year and have had extremely interesting discussions with your Chief Executive, Vic Cocker, and your Director of Environmental and Corporate Controls, Jim Oatridge, who sat with us through most of our meetings and interacted creatively with us at all stages, and with many of your senior staff and others connected with Severn Trent Water. We have had invaluable assistance and wise guidance from Jim Lamb, Group Environmental Manager, who serviced the group. We have also sought views and had valuable comments and assistance from the regulatory bodies, from the Department of the Environment, Transport and the Regions, from consumer representatives, from business, local government, and others with an interest in water and the environment. We are very grateful to all who assisted us so generously with their comments and their time.
(A summary of the responses we received is at Appendix 2.)

We now have pleasure in submitting our Report.

A water company like Severn Trent Water has to attend closely to the interests and concerns of many different stakeholders. It has the statutory duty of supplying clean water to all who want and need it in its area, and disposing of used and dirty water. It must provide a good standard of service to these customers and at a reasonable price. It must be financially sound and provide an adequate return to the shareholders who invest in it. And it needs to conduct its operations in such a way as to protect and at every opportunity enhance the whole water environment which is interdependent with its operations, and in whose well-being the whole public has an interest.

These different interests can sometimes overlap and reinforce one another. Environmental measures may for example sometimes help to reduce costs, bringing benefits to customers and shareholders as well as to the environment. Companies need to be keen to seek out and maximise these win-win opportunities.

In other cases the interests of different stakeholders do not wholly overlap and may even conflict. The companies then need to take a view as to the optimum balance to be struck, and to build a consensus around their approach with their different stakeholders, and with the regulators. In our view the environment in its broadest sense needs to be a central part of this mix.

At the core of our recommendations is the vision of a water company that is at the heart of the environment and whose heart is in the environment. Severn Trent Water – and other water companies – could and should make continuous improvement of the whole water environment in their area a core objective of their business. We believe that a well articulated long-term vision of this goal should not only benefit the environment but should help the company to survive and prosper, and to manage its own external constraints and regulatory pressures in a constructive way. We hope that our Report will help you to clarify that vision and move decisively towards it.

Our report is structured as follows. After an Executive Summary of our main recommendations Chapter I provides a brief profile of Severn Trent Plc, and of its water company business. In Chapter 2 we review the environment in which all water companies in England and Wales have to operate, and likely developments over the next 25 years. Within this framework we identify the scope for a leading water company like Severn Trent Water to develop its own environmental strategy. Chapter 3 discusses the qualitative aspects of Severn Trent Water's business, and identifies a possible strategic objective for the wider water environment. In Chapter 4 we consider issues of supply and demand management and how Severn Trent Water might meet future demand for water in the face of the challenges we see emerging on the environment front. In Chapter 5 we consider the frequently conflicting pressures from shareholders, customers, and the regulators and see what scope there may be to influence these external constraints so that the company can develop its own strategy more effectively. Chapter 6 deals with the management of environmental issues within the company. Finally, in Chapter 7 we summarise our vision of how a leading, environmentally-aware water company might look in the 21st century.

Derek Osborn, Chairman
Nigel Arnell
Janet Barber
David Lascelles

Executive summary

Severn Trent Water is one of the largest water companies in the country. It has had a good commercial and financial performance since privatisation. It has also established a good environmental track record, and is in a position to consolidate this and to make it a key feature of its long-term business planning and continuing financial success.

To do this successfully it will need to establish a clear long term environmental strategy and goals which can be advocated persuasively and effectively with all its key stakeholders – its customers, its employees, the environmental world, the government and regulators, and with the City and its shareholders.

We believe that Severn Trent Water should be a natural champion of the water environment and water quality throughout its region. It could spearhead improvements in its two major river systems, working in collaboration with others.

The Environment Fund which Severn Trent is planning to establish could be a major force for progress on the environment.

Drinking water supplied by the company is already of high quality, but more needs to be done to reduce lead levels. The Panel recommends Severn Trent Water to explore ways of developing a systematic campaign to eliminate lead piping.

Like many other water companies Severn Trent Water is facing increasing demands for water at the same time as greater uncertainty over the reliability of supplies, possibly exacerbated by climate change. The Panel believes that in the short term this problem can be addressed largely by more effective leakage reduction and demand management. We propose progressive tightening of leakage reduction targets and a progressive move towards compulsory metering starting with those in the highest rateable value properties using the most water.

Severn Trent Water also needs to consider how and when supply could be enhanced. The Panel believes there should be a preference for improving the quality of treatment of dirty water and of discharges so that rivers such as the Trent can be used as potential sources of supply, rather than for impounding more headwaters of rivers in reservoirs with all the expense and environmental and political problems that can cause.

All water companies are subject to many external constraints. They must satisfy many different stakeholders with different views and priorities. The Panel believe that Severn Trent Water is itself in the best position to determine an appropriate environmental strategy for its own company, and the investment and current expenditure priorities that should flow from this. They believe that an effective presentation of the strategy will be highly influential with customers, shareholders and regulators alike. Many of the environmental steps needed will also help to save money through waste minimisation and risk reduction; and others will contribute to longer term business development through reputation-building and employee motivation.

The Panel proposes discussion with the regulators and the government to gain their general support for the objectives of the strategy. In particular the regulatory framework and price determinations need to support the strategy and ensure that there is a reasonable return to investors for environmental investment by the company.

Severn Trent already has the Board level commitment, the structures and the staff to make a reality of its environmental strategy. We believe it should now seek to strengthen its arrangements further by tightening its targets, benchmarking progress against other companies, systematising environmental management, and extending the rewarding of staff according to environmental performance.

Severn Trent has already made considerable progress towards its environmental objectives. The panel believes that Severn Trent is now well placed to develop a fully articulated and coherent long term environmental strategy and to establish standards of excellence in this field.

Profile of Severn Trent Plc

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Severn Trent Plc, based in Birmingham, has as its main subsidiary Severn Trent Water. The UK's second largest water company in terms of population served, Severn Trent Water supplies water and sewerage services to 8m people in the heart of England, an area which stretches from the Severn estuary to the Humber and contains some of the country's finest rural scenes and rivers as well as the industrial Midlands. Uniquely, the Severn Trent Water region has no coastline, but in the Severn and Trent basins it has two of the largest river systems of the country.

Severn Trent's business objective is to be a leader in the water industry while establishing complementary businesses with good growth prospects. The group has six business units, much the largest being Severn Trent Water, followed by the Biffa waste management business.

Since privatisation Severn Trent has also made considerable progress in improving environmental performance mostly in order to meet statutory and regulatory requirements, partly through improved operating methods and controls, and partly through substantial investment. It is one of the more profitable water companies, and since its privatisation in 1989 the company has shown steady dividend growth.

As a public utility and a virtual monopoly, Severn Trent Water is regulated by a number of agencies, notably the Director General of Water Services who determines limits on the prices the company charges to consumers, and effectively thereby on investment levels, and the Environment Agency and the Drinking Water Inspectorate which regulate its performance on environmental and qualitative issues.

Board level responsibility for the environment lies with the group chief executive, who delegates it to the managers of the business units. Standards are enforced across the group through a series of protocols on matters such as reporting and responsibilities, waste management and air emissions. Severn Trent's environment policy is 'to move beyond the standards set by national and international regulators and to take a progressive approach to the environment so that the group's standards may become an accepted industry benchmark.' Environmental leadership has been adopted as one of the three core values of the group along with service and quality.

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In this report – which focuses on the water aspects of Severn Trent's business rather than the group as a whole – we have tried to work out the implications of this policy so as to help the company to establish a long-term environmental strategy. Our object has been to review strategic issues that will shape the company over the first quarter of the next century.

Severn Trent Water: key statistics			
	1992/93	1996/97	Change
Financial			
Turnover (£m)	742.3	919.1	+23.8%
Pre-Tax profit, including exceptionals (£m)	278.4	351.1	+26.1%
Average water bill per household (£)	151	209	+38.4%
Resources			
Employee numbers (average)	7445	5743	-22.9%
Population (million):			
Supplied with water	6.91	7.28	+5.4%
Receiving sewerage service	8.20	8.30	+1.2%
Volume:			
Water into supply (Megalitres per day)	1987	2022	+1.8%
Length of pipelines (kms):			
Water mains	38987	41590	+0.2%
Sewers	51978	52065	+6.7%
Regulatory Performance			
Proportion of drinking water samples meeting standards (%)	99.71	99.84	
Proportion of sewage works meeting sanitary consents (%)	98.9	100.00	
Convictions for infringements of environmental legislation	2	4	
Properties at risk from sewage flooding	1751	1625	
Leakage (%)			
STW mains	20.9	16.1	-23.0%
Household	6.4	7.5	+17.2%

The framework

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As the new century approaches, the water industry faces fundamental challenges. Demand for water is going up, and so are people's expectations of uninterrupted supplies. Peak demand in the summer has been increasing much faster than average demand and this has given rise to particular problems in dry seasons. The growth of the economy and the rising number of households forecast for the next 25 years will boost this demand still further. Pressures on the consumer, environmental and regulatory fronts also require ever higher standards of water quality, and better treatment of waste water.

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These demands have to be met in a world where the supply of water appears to be becoming more uncertain because of factors like climate change, and where environmental pressures increasingly limit the ways in which water can be abstracted, stored and discharged. Yet water companies lack many of the freedoms that other industries have to meet these sorts of challenges. As suppliers of essential services, they have obligations to meet stringent standards as to reliability and quality of supply. As businesses whose operations affect the wider environment at every point they have to meet many statutory and other requirements. As monopolies, their prices are regulated by the Director General of Water Services.

In relation to current expenditure the Director General of Water Supplies has used this régime to exert pressure on the companies to make progressive improvements in efficiency.

The industry is capital intensive and needs to undertake high levels of investment in order to maintain and develop supplies and to meet environmental standards. Much of this investment can only earn a return for the companies if it is accepted by the Director General and included by him in his calculations of allowable prices to be charged to the consumer. There may be limited scope for companies to go beyond these levels without running into shareholder resistance.

During the 1990s high levels of investment have been needed in order to meet European and national statutory requirements and the Director General has had to allow significant real terms year on year price increases throughout that period in order to pay for that investment. These increases have been absorbed but there has been some customer resistance and political concern about their level and further increases could now be problematic. Indeed the regulator has publicly indicated his desire to see the level of charges reduced in real terms during his next quinquennial review covering the five years from 2000.

Faced with all these constraints it is quite difficult for water companies to establish their own independent view on appropriate investment levels. A passive company might indeed define its objectives in essentially negative terms: doing the bare minimum to meet the law and regulatory requirements. But this is not likely to prove rewarding in the long term, nor even in the shorter term. A strategy defined

entirely in terms of meeting obligations imposed by others will gain little support among staff let alone customers and shareholders. It is not optimal for the environment since it will miss opportunities which the company itself is best placed to spot. Nor is it optimal from the economic point of view because it will miss opportunities to bring about improvements in the most efficient way.

By contrast, a company which takes a positive stance and tries to work out its own strategy to meet these demands will do more for its own commercial performance, for its customers and for the environment. It will be able to ensure that regulatory and other requirements take their place as aids to achieving the company's own long-term goals rather than as external constraints exacting grudging compliance rather than full-hearted consent. It will be able to present an integrated set of objectives to its customers, its shareholders, to environmental groups and its own staff, all of whom will respond more positively to what they see as an active strategy. This approach will also help the company avoid the classic utility trap in which each stakeholder wants higher standards – provided someone else pays for them.

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A clear set of environmental objectives established by the company will also be influential with regulatory bodies and government. If legislators and regulators think water companies are driven entirely by the narrow short term interests of shareholders, they will conclude that customer and environmental interests can only be secured by ever closer intervention, with all the friction and inefficiency which that can produce. If, on the other hand, companies show that they are sensitive to wider stakeholder interests, they will be much better placed to influence regulators' reactions to their proposals, and to achieve greater benefit for customers and the environment while also enhancing their financial performance.

The main water companies are large UK businesses and play a rôle in their regions which extends well beyond their water operations. So they have the opportunity in their regions to give a lead on good management generally, and the environment in particular. A water company which takes a championship rôle for the improvement of the whole water environment in its area and encourages other companies and users to join in a co-operative approach to this may help to bring about advantages for all in a much more efficient way than simply going it alone.

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Water companies also need to be conscious of water issues at the international level so that they can participate in the growing market for water services around the world. A reputation for sound environmental management can be very helpful here.

All this means that a leading water company such as Severn Trent Water has good reason to take control of its own destiny and develop its own environmental view and objectives. Armed with these self-generated goals it will be well-placed to argue its corner with the regulators about what investment is needed, and how

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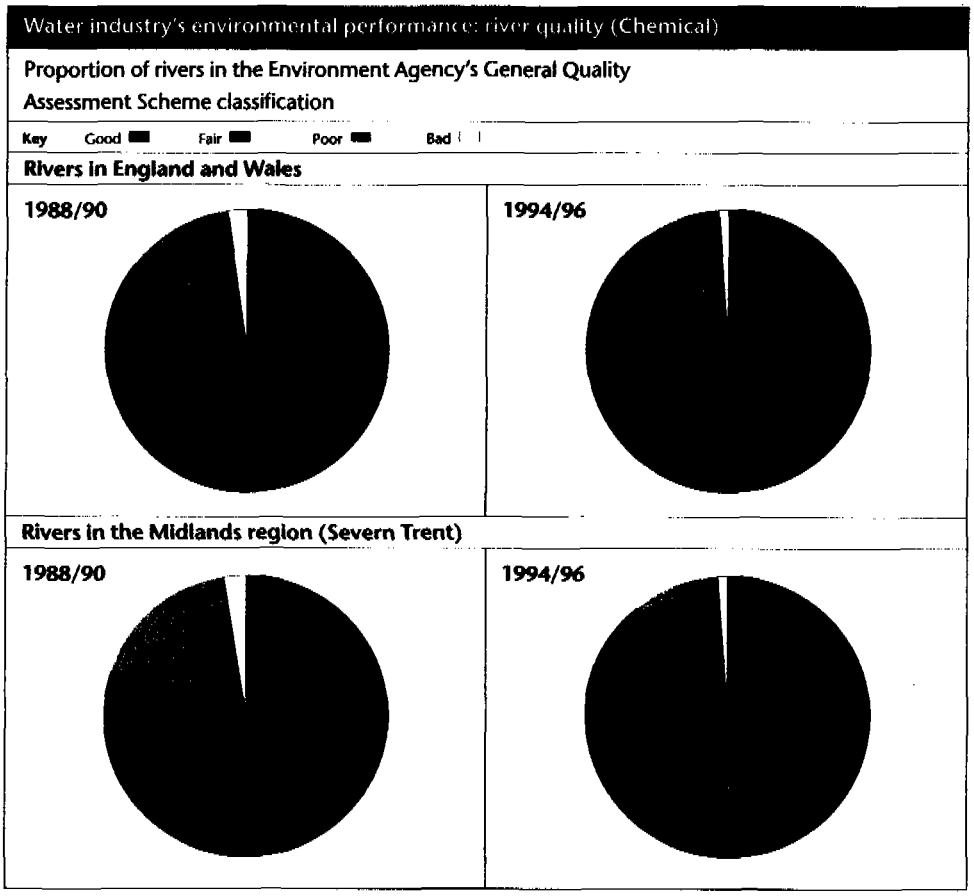
The framework

regulation can best secure it, to play a leading rôle on the evolution of environmental policy and practice at regional, national and international level, and to ensure that these activities contribute over time to its commercial performance.

In the Panel's view an appropriate way for the Company to proceed would be first to define their long-term environmental vision and goals; secondly to decide investment priorities for each successive quinquennium, consistent with that long-term strategy, and to seek to persuade the regulatory bodies to allow for this in the approved investment plans; and thirdly to seek to generate further efficiency savings during each quinquennium, and to apply them partly to the benefit of environmental priorities as well as to the benefit of customers and shareholders.

First define long-term environmental goals, second decide investment priorities for each quinquennium, third apply efficiency savings, partly to the benefit of the environment.



Drinking water quality		
Compliance of drinking water with quality standards		
	1990	1996
Severn Trent		
Microbiological standards:		
Treatment works (%)	99.8	99.9
Service reservoirs (%)	99.8	99.9
Customers' taps (%)	99.3	99.8
Physical and chemical standards:		
Customers' taps (%)	99.6	99.7
Overall compliance	**99.6**	**99.8**
England and Wales		
Microbiological standards:		
Treatment works (%)	N/A	99.9
Service reservoirs (%)	N/A	99.8
Customers' taps (%)	98.9	99.6
Physical and chemical standards:		
Customers' taps (%)	98.8	99.6
Overall compliance	**99.0**	**99.7**

Capital investment (Outturn prices)	
Total investment between 1989/90 and 1995/96:	
By the water industry in England and Wales	
Water Services (£m)	9120
Sewerage Services (£m)	8980
Industry Total (£m)	**18100**
By Severn Trent Water	
Water Services (£m)	1479
Sewerage Services (£m)	1470
Severn Trent Total (£m)	**2949**

Quality of the water environment 3

The statutory duties of water companies in regard to water quality are to provide good quality potable water to consumers, and to clean up dirty water to the point at which it can meet required standards for discharges to rivers or other outfalls. Severn Trent Water has made good progress on this although some tasks remain.

Increasingly however water companies need to concern themselves with all of the water in their catchment areas and the whole of the water management cycle in partnership with the Environment Agency. Companies have a direct interest in helping to ensure that all water remains in good condition or is improved, as all is a potential source of supply. As abstraction becomes more difficult and expensive and as charging for polluted discharges is added to direct controls over discharges the incentive for companies to take this broader view is bound to increase. Environmental pressures for water companies to have regard to the whole of the water resource are also growing.

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The challenge is to define such a rôle for companies in a way which reconciles growing social and environmental expectations with their commercial interests.

What is the 'water resource'?

The phrase describes the great diversity of the rivers, lakes, estuaries and other wetland habitats that enrich the landscapes of England and Wales. They are biologically very diverse, but also perform a wide range of essential functions for human activity.

Rivers provide habitat for fish and invertebrates, as well as about a third of England's plant life (600 species). About 95% of all standing waters, including ponds and temporary pools, are less than one hectare in size and nurture all six of England's native amphibians including the natterjack toad.

Manmade habitats including flooded gravel, clay and peat pits and reservoirs have added significantly to the amount of open water and marginal wetland habitat for plants, birds and other aquatic wildlife, as well as providing winter refuges for internationally important numbers of waterfowl – geese, swans and ducks. Lowland wet grassland and the fens, with their yellow flag irises, orchids and ferns are other species-rich but increasingly scarce habitats. Canals too, combine their recreational and commercial rôles with providing habitats for animal and plant species.

The health of the water resource depends on recognition of its sensitivity and the rôle it plays for human benefit, directly as a water supply and a dispersing medium for pollutants, and indirectly in the formation and stabilisation of river and stream channels for example.

In the Severn Trent Water area the quality of drinking water is already very good, showing 99.84% compliance with the current drinking water standards. But some

of the river and ground water is less good, and more needs to be done to improve discharges in order to make more rivers suitable as potential sources of supply, more attractive in themselves and provide more support for fish and other wildlife. We believe that improving the water environment deserves higher priority in future investment plans and may show a better benefit cost ratio than some other investments.

In our view Severn Trent Water could appropriately play a key rôle as a leading champion of the quality of the whole water environment in its area, working in partnership with the Environment Agency and others. The very name of the company points to the two great river systems of the Severn and the Trent which they might adopt in this way. Severn Trent Water could do this partly by consistently improving its own water management standards, and partly by launching initiatives with other water users and interested parties to raise awareness, promote better water management techniques, and encourage practices which reduce or eliminate diffuse pollution.

Severn Trent Water could play a key rôle as a leading champion of the quality of the whole water environment in its area, working in partnership with the Environment Agency and others. It might adopt the Severn and the Trent.

Specifically it could work with the Environment Agency to set targets for improving its own discharges and encouraging similar activity by other dischargers and originators of diffuse pollution so as to achieve particular goals for improvement of key rivers and environments and habitats in its area. Such objectives could fit naturally into the proposals for a National Environment Programme which the Environment Agency has put forward recently in the context of the quinquennial investment review. The eventual long term goal might be to manage the water company's operations so that it makes zero adverse impact on the water environment of its river systems and substantial positive impact. If that was the long term vision, this could then be broken down into a series of campaigns and programmes for improving the quality, flow and general environment of particular rivers or areas in each five year period.

The eventual long term goal might be to manage the water company's operations so that it makes zero adverse impact on the water environment of its river systems and substantial positive impact.

We understand that Severn Trent Water is developing plans for an Environment Foundation which would provide grants for water resource conservation projects. This is an exciting initiative which has the warmest support of the Panel. It will be of great assistance and help to many organisations in the environment field, and will help build Severn Trent Water's own reputation and championship rôle in this area.

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Apart from developing its own programme and networks to support a champion rôle we would recommend active support and partnership for the work of the Environment Agency in its work on quality objectives and assessments, and on Local Environment Agency Plans (LEAPS).

Drinking Water

Maintenance of the highest standards for drinking water will always remain a core duty. Severn Trent Water has already achieved a very high level of compliance with present standards. But World Health Organisation (WHO) and European

Quality of the water environment

standards are currently being tightened for some substances and more needs to be done on some aspects in accordance with the priorities established by the Chief Drinking Water Inspector and others.

We would particularly draw attention to the continuing need for action on lead levels in some areas. On lead we are glad to note that Severn Trent Water offers replacement of any company-owned lead pipes when householders replace theirs. In view of the progressive tightening of standards by the WHO we believe this programme should be vigorously pursued, and perhaps promoted more strongly. Systematic efforts to remove as much lead as possible from whole areas might be worthwhile.

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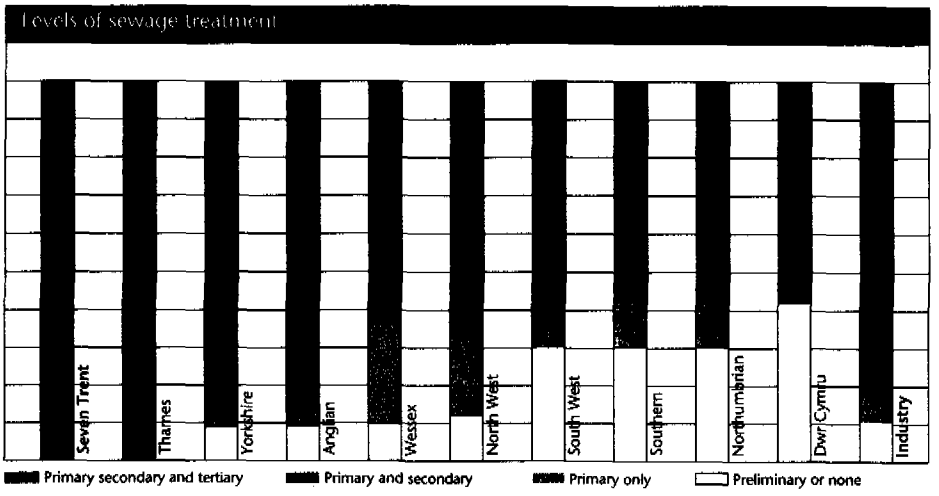
Campaigns to assist all householders in an area to remove their lead pipes at the same time as the company deals with its lead pipes could be effective if the Government provided appropriate financial support for householders to play their part. Technical options for lining lead pipes with impermeable materials rather than replacing them might also be explored further.

Campaigns to assist all householders to remove their lead pipes could be effective if the Government provided appropriate financial support.

We also draw attention to continuing national concerns about pesticides and about the threat of outbreaks of cryptosporidium in some parts of the UK and the need to be vigilant on these.

Waste water

Waste water treatment and disposal is a special issue for Severn Trent Water because of its unique inland position, and the relatively small rivers in some of its highly industrialised conurbations. This has historically obliged Severn Trent Water to subject waste and foul water to higher levels of secondary and tertiary treatment than other water companies. In 1996/7 all of the company's sewage works were in full compliance with the present required standards.



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Even higher standards of discharge - both by water companies and by other dischargers – will be required to bring about the desired improvements in river quality everywhere. In consultation with the water companies the Environment Agency will be trying to define an optimal programme of investment by the companies during the next quinquennium for this purpose – the so-called National Environmental Programme – and we know that Severn Trent Water along with the other companies is playing an active part in this.

If Severn Trent Water is to develop its championship rôle for the improvement of the water environment in its area it could not only undertake clean-up investment itself but help to persuade other dischargers to do likewise. This would be popular and would gain a multiplier effect for environmental improvement and accelerate the time at which such rivers can become alternative sources of supply.

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Pollution of water from diffuse sources can and does affect quality of rivers and the water environment as much as discharges from point sources. Clean-up may require changes in farming practices, and the building, maintenance and drainage of roads for example. The water companies have no direct locus in this, but since failure to control pollution may affect their sources of supply they have a strong secondary interest in ensuring that pollution issues are handled properly, and in helping to promote good practice.

Chief among the culprits are agricultural chemicals, particularly nitrates, phosphates and pesticides, where the outlook will depend on how far agricultural reform leads to less intensive farming methods. Pollution of groundwater is a more complicated problem, largely because of the slow transmissivity of the Permo-Triassic sandstone aquifers in the Severn Trent Water region. It can take many decades for pollution to reach boreholes – and therefore for clean-up initiatives to produce results. So it is important to gain an understanding of past inputs and water flows in order to gauge the size of this hidden threat.

Urban and industrial pollution, particularly from old industrial facilities, poses a particular threat to two major new sources in the Severn Trent region, the rising Birmingham groundwater and the upper Trent. Some of the pollutants are serious and will be costly to remove. Drainage of polluted water from abandoned metal and coal mines presents similar problems. Overflow from combined foul and storm sewers is a locally serious pollution problem, and we welcome the actions taken by Severn Trent Water to reduce such incidents, but much remains to be done to eliminate this problem and this should be a high priority since it is an issue of public concern.

Global warming is also likely to affect water quality, probably negatively. A rise in water temperature can speed up biochemical processes, while changes in flow volumes can affect dilution and increase the erosion of water courses, or cause changes in processes and pathways within a catchment.

Quality of the water environment

New charging régimes could play an important part in providing the right economic incentives to improve discharges. This applies to trade effluent charges for discharges into water company sewers, and also to the possibility of imposing new pollution related charges for discharges into rivers, and perhaps to charging régimes in relation to some of the sources of diffuse pollution.

New charging régimes could play an important part in providing the right economic incentives to improve discharges.

Much treatment is only necessary because the waste producers do not do enough to minimise or clean it up in the first place. We applaud the work Severn Trent Water has already done with heavy metals.

Such a change could appropriately be coupled with the introduction of pollution-related charges for discharges to rivers as canvassed by the Department of the Environment, Transport and the Regions. Such charges would be a direct application of 'the polluter pays' principle and would be a strong incentive to reduce polluting discharges. It might be worth considering whether some or all of the proceeds of such a charging régime should be recycled into water improvement investment perhaps through a challenge fund administered by the Environment Agency or perhaps the new Regional Development Agencies so as to gain a multiplier effect. The interaction of such charges with the Director General's price cap régime for the water companies would clearly need to be considered further.

Such a change could appropriately be coupled with the introduction of pollution-related charges for discharges to rivers as canvassed by the Department of the Environment, Transport and the Regions.

Apart from point discharges, codes of good practice for the management of diffuse sources perhaps supplemented by charging régimes for certain types of activity could have a useful part to play.

The conventional water industry response to quality and pollution problems is to find 'point' engineering or technological solutions. But Severn Trent Water's wider environmental remit also requires an engagement with the management of the whole water cycle, and how water shapes and cleanses the environment. We recommend that Severn Trent Water's future investment in this area should ensure that the quality of the water environment is sustained and, where possible, enhanced, for example by using 'soft' engineering solutions such as tree and reed planting to slow run-off.

Watersheds and watercourses

Severn Trent Water has a clear commercial interest in protecting the purity of its water environment because a good quality source will produce plentiful and cheap supplies. But this is also an area of strong overlapping environmental interest. Well-managed wetlands and clean rivers represent much more to society than just a good water supply: they are a common good to be appreciated and cherished. There are therefore sound reasons why Severn Trent Water should take a high profile on the management of watersheds and water courses, in partnership with the Environment Agency and English Nature and other interested parties.

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Apart from the pollution issues discussed above the other main threat to watersheds and rivers arises from over-abstraction which affects the reliability and cost of water supplies, and also damages the natural environment.

Abstraction from rivers and aquifers is regulated by the Environment Agency which can impose quantitative limits to protect flows and assure fair allocation of resources. But the Agency's hands are tied by established rights which makes it difficult to tackle over-abstraction in some cases even when the natural environment is under threat. Over time it seems likely that increasing pressures on abstraction, perhaps coupled with reduced flows brought about by climate change or other factors will lead to changes in this régime, either to limit established rights or perhaps to manage them down by a charging régime related to the volume abstracted. As a major abstractor Severn Trent Water needs to continue to ensure that its abstractions are carefully controlled, and where possible that both abstractions and discharges are managed in such a way as to enhance environmental values in the rivers and aquifers affected.

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Water supply

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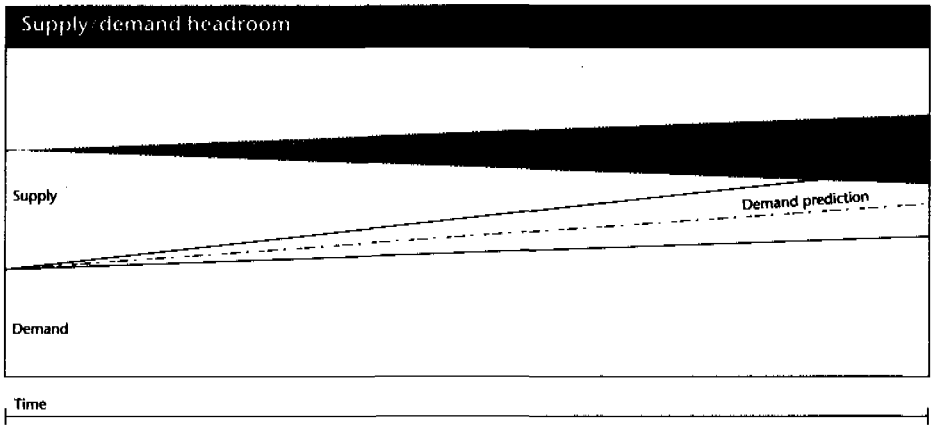
Following wise investment by predecessor bodies and the development of the Carsington reservoir, Severn Trent Water is quite favourably placed for water supply. There were distribution problems during 1995, but Severn Trent Water is currently able to operate a 'no restrictions' policy (i.e. no hosepipe bans) and is prepared to supply water to all new housing developments. But this situation may not persist. Demand for water is slowly but steadily increasing, while the reliability of supply becomes more problematic because of greater resistance to increasing abstraction in dry periods, and in the longer term because of the prospect of climate change. At the same time, growing popular support for river and wetland conservation suggests that access to new water resources for public consumption could become more restricted.



The diagram above illustrates how the 'headroom' between demand for water and the supply of water, for any water company, may shrink over time. Without the implementation of new schemes, the supply line will be reduced as environmental demands are increased and may be either reduced or increased as climate changes. Estimates of the effects of climate change are currently uncertain, but under some scenarios resources within the Severn Trent region would be significantly reduced over the medium term as summer river flows decline following later rainfall and increased evaporation. Higher flows during winter would not be of much benefit to Severn Trent Water, because there is no spare reservoir capacity available.

The demand line will be driven up by increasing domestic demand, possibly exacerbated still further by climate change, but demand management actions may slow or reverse the increase.

Overall, the message from the diagram is clear: growing uncertainty – for several reasons – implies a need for greater safety margins. This can only be achieved by reducing demand (and especially peak demand) and/or by increasing supply: the so-called 'twin-track' approach.

Overall, the message is clear: growing uncertainty – for several reasons – implies a need for greater safety margins. This can only be achieved by reducing demand (and especially peak demand) and/or by increasing supply: the so-called 'twin-track' approach.

In principle, demand management – reducing leakage and encouraging customers to reduce consumption where they conveniently can – is likely to have additional environmental benefits in terms of reducing pressures on the environment from over-abstraction; whereas measures to increase supply can have disbenefits for the wider water environment. Therefore there is an environmental advantage in pursuing demand management options in preference to creating new supplies which needs to be taken into account. Nevertheless demand management cannot solve all problems, and the panel believes that as well as pursuing demand management options vigorously Severn Trent Water will soon need to be considering options for increasing supply within the next twenty five years.

Severn Trent will soon need to be considering options for increasing supply within the next twenty five years.

Demand

Severn Trent supplied an average 2022Ml of water a day in 1996, a fall of ten per cent on the previous year, mainly because of reductions in leakage. But the underlying trend of customer demand is up. Barring any new demand management measures, Severn Trent is currently forecasting an increase of around 1/2% a year, or between 8 and 10Ml per day per year.

New demand comes mainly from the domestic sector because of the increasing number of households, and more domestic appliances and gardening. The height of the demand peaks in the summer is also growing, as is customer intolerance of supply restrictions, which effectively adds to the pressure of demand. Agricultural demand is also likely to rise, particularly if global warming has its predicted effect, though here the bulk of the water is abstracted directly by farmers rather than supplied by Severn Trent Water. Business demand is expected to remain fairly stable; trends in this sector will be influenced by changes in water-use efficiency and customer population.

Leakage increased sharply in the mid-1990s, peaking in 1995. A remedial programme has made inroads on this problem, but leakage still accounted for 23 per cent of supplies in 1996, 16 per cent of it from water mains and 7 per cent from customer's own pipes. This represents more than the total amount drawn from the Severn and the Derwent rivers.

Water supply

Demand management

From the point of view of sustainable development, water catchments and the rivers and groundwater that flow in them need to be managed with prudence. The more water is abstracted and the more dirty water is discharged the more the environment is at risk. Human use of water is itself a natural use and must be accommodated; but it needs to be kept in balance with the needs of the rest of the natural environment which is dependent on the water cycle also.

Human use of water is itself a natural use and must be accommodated but it needs to be kept in balance with the needs of the rest of the natural environment which is dependent on the water cycle also.

The object of demand management in the water field is to encourage companies and consumers to moderate their consumption of water so as to reduce the risk of shortages or interruptions. Curbing consumption and waste not only helps to reduce abstraction, but also to avoid or postpone the need for new supply infrastructure.

Demand management has two aspects: the reduction of leakage from company pipes and supplies; and encouraging customers to make less use of water.

On leakage Severn Trent Water has already instituted ambitious leakage reduction targets which are beginning to yield results: the current target is to get leakage from Severn Trent Water's own pipes down to 12%, and customers' to 3% by 2000. This programme – which has attracted much popular approval – includes a rapid response to bursts, closer monitoring of the distribution system, and free repair of leaks on customers' premises. It is enforced by mandatory leakage reduction targets from OFWAT.

Leakage cannot be eliminated entirely, and there comes a point at which there are diminishing returns from seeking further reductions. It is also clearly a more important objective in areas of chronic water shortage than in areas of relative water abundance. We understand that analysis done for Severn Trent Water indicates that the economic level of leakage for the company (ie. the level beyond which costs of further reduction exceed the benefits) may be in the range 16 to 18%. In our view, however, costs and benefits are likely to change over time in the direction of making tighter targets progressively more appropriate. We believe, therefore, that Severn Trent is right to have established a more demanding 15% target to be achieved by 2000 and should keep the target under review with a view to establishing further reductions in the early years of the next century. This does not look to us unduly burdensome to achieve, and may be the necessary condition for persuading customers to agree to further measures to restrain demand or to persuade the public and the regulators to permit augmentation of supply when the time for this comes.

We believe, therefore, that Severn Trent is right to have established a more demanding 15% target to be achieved by 2000 and should keep the target under review with a view to establishing further reductions in the early years of the next century.

As to promoting demand management among consumers there are a large number of ideas in the literature and the guidance from Government, the regulators, Non-Governmental Organisations and others. They include the water-saving ideas such as more efficient appliances; customer-based storage with water

tanks and butts to catch and use water run-off; reuse of grey water, etc. Severn Trent is already active in all these areas, but we see considerable room for expansion and for the company to set itself targets for each type of measure so as to keep track of performance. It might do this directly itself or it might see advantage in the formation of a Water Saving Trust similar to the Energy Saving Trust to undertake this kind of activity. There should be increasing business opportunities in the promotion of water efficiency.

Tariffs and metering

In order for demand management to be promoted successfully it must make economic sense for customers. The tariff structure is crucial in this regard. Customers whose bills are proportional to the volume of water supplied to them have a direct economic incentive to minimise their demands.

In Severn Trent Water industrial customers pay by volume in this way, and have in fact reduced their demand significantly in recent years. But for households there is a mix of tariff structures which delivers no clear signals to most customers. The majority of Severn Trent Water's domestic customers still pay a tariff related to the rateable value of their property, which remains the same however much water they use. Under Severn Trent Water's current policy, metering is voluntary for domestic consumers (compulsory for new housing and for households with sprinklers), and only 10 per cent of them have so far opted for this change. The great majority of those who have made the change have done so to reduce their bills from a high rateable value based charge to a much lower charge by volume. This means that even though they then face a marginal cost for each extra litre they use their total bills are usually so much lower than formerly that they do not feel a strong incentive to economise.

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If it were politically possible to move more swiftly to pricing water by volume all consumers would then have an economic motive to manage their water consumption prudently. Markets in products and advice to assist them in this could then develop naturally. Water companies such as Severn Trent Water or the Government might consider giving further assistance to this process through the establishment of appropriate support services for customers to help them manage their demand better.

Switching to pricing by volume for all domestic consumers would however have a significant social impact. Poorer households in low rateable value properties would tend to pay more, and large poor families in low rateable value homes but with relatively high needs for water could be particularly badly affected. An early switch to universal pricing by volume therefore seems unlikely to be socially or politically acceptable. The question is whether there is any other way of moving towards a different tariff structure which would encourage demand management without being so disruptive.

Water supply

This dual requirement points to two features that in our view need to be built into a new system. First, to avoid disturbance there should be no early move to compulsory pricing by volume for properties with lower rateable values. But secondly, for higher rateable value properties which tend to have higher consumption of water services and where demand management is most likely to be effective there could be a gradual shift towards compulsory metering and a price tariff that includes a volume element.

...to avoid disturbance there should be no early move to compulsory pricing by volume for properties with lower rateable values. But for higher rateable value properties which tend to have higher consumption of water services and where demand management is most significant there could be a gradual move towards compulsory metering and a price tariff that includes a volume element.

In order to ease the transition the move might be introduced over a number of years with the highest rateable value properties being compulsorily metered first, and then progressively extended to further tranches over time. Another way to ease in the transition to the new structure might be to retain a charge based on rateable value for a baseload level of demand; and for the volume based charge only to apply to levels of consumption above this baseload demand. The effect of these two features would be to confine the initial effect of the compulsory change to metering to higher rateable value properties with a high water consumption, ie. to those properties for which demand management is the most important, and for which compulsory metering is most likely to be regarded as socially and politically acceptable .

For metered properties it is particularly important that the more marginal or wasteful uses of water be discouraged. The incentive to manage prudently might be increased further if the price per unit of volume were to increase in one or more steps above certain levels of consumption, under the so-called rising block tariff, which we understand Severn Trent Water is considering.

The incentive to manage prudently might be increased further if the price per unit of volume were to increase in one or more steps above certain levels of consumption, under the so-called rising block tariff.

We recommend Severn Trent Water to explore this or other similar options further, and perhaps to consider experimenting with introducing such tariffs on a trial basis in parts of their areas. Such a tariff structure might also be promoted with the Government and regulatory authorities. In the present situation action is stultified by confusion and excessive caution about pricing structures for the future.

Tariffs which encourage demand management by customers should reduce the total demand for water over time. Other things being equal this would then also reduce the total income of companies. It will be essential that this effect be recognised by the Director General and appropriately allowed for in the price formula over time. Since there is clearly an environmental and national interest in promoting the prudent use of water by demand management, we believe that water companies should be encouraged to do this, and not disadvantaged through the price formula.

The supply management track

While demand management can play a part, it may not offset all increases in demand, and a prudent water company also needs to have an eye on

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environmentally and commercially sound ways of augmenting supply in good time to deal with rising demand and increasing variability of rainfall. It is important for companies to plan ahead because of the very long lead times that may be involved in bringing new sources of supply into commission.

It is important for companies to plan ahead in good time because of the very long lead times that may be involved in bringing new sources of supply into commission.

We have explored the methodology for establishing new supply needs with Severn Trent Water. Essentially what is needed is a form of risk analysis which will establish a prudent headroom between forecast demand and supply capacity to ensure that demand can be met in all but the most exceptional and prolonged drought situations. Supplies are sometimes said to be planned to be able to cope with everything except the so called one in fifty year drought, but when supplies have proved to be inadequate to deal with demand in several years this planning assumption must be queried. Either climate or demand patterns are changing at unforseen rates, or the headroom built into supply and storage capacity does not give enough margin to meet design criterion; or very possibly both are true. The headroom may also need to be higher than previously thought appropriate, because of greater consumer resistance to drought measures, and partly because it will be less acceptable in future to take extra water during times of shortage from fragile natural environments.

...it will be less acceptable in future to take extra water during times of shortage from fragile natural environments.

We believe that, in conjunction with the regulators, Severn Trent Water needs to develop a more robust methodology for estimating risks of shortages of supply occurring, and for establishing an appropriate headroom to plan for. It seems to us likely that Severn Trent Water will need some additional capacity during the first quarter of the next century, and that now is the time to start working out the methodology for establishing how much will be needed at different times.

Severn Trent Water will need some additional capacity during the first quarter of the next century. Now is the time to start working out the methodology for establishing how much will be needed at different times.

We discussed a number of options that Severn Trent Water may have for augmenting supply.

One possibility is to improve the quality of substandard rivers to the point where water can be abstracted for supply to consumers as the company is doing on the Trent. This increases the flexibility of supply available to Severn Trent Water, and is environmentally an attractive option since it improves the natural water environment at the same time. This option fits well with the long-term goal for the water environment in the region which we have suggested Severn Trent Water might adopt.

Another possibility is to make more use of underground rock formations to hold reserves of water to be drawn on in drier periods. This is also a potentially attractive solution from the environmental point of view. It would involve no significant disturbance of the surface water environment since abstraction would be in times of plenty. It could, however, require a substantial amount of pumping, thereby increasing the energy consumption of the company. We believe it would be worth undertaking a further environmental impact assessment of this possibility.

Water supply

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A third possibility is to extend existing reservoirs or build new dams. This tends to be both expensive and controversial, particularly for Severn Trent Water as new reservoirs might need to be built in the politically sensitive Welsh uplands. Upland reservoirs are not the only possibility, however; and the company is considering the feasibility of using lowland flood plain sites such as old gravel workings alongside the Trent. Reservoirs have mixed environmental implications: valuable valley-bottom land is often flooded, and downstream river habitats are altered. But reservoirs do also sometimes have environmental and recreational benefits, and they may permit abstraction from a heavily stressed river to be reduced. We incline to think that for Severn Trent Water the lowland reservoir options such as the Trent possibilities are likely to be capable of being developed in a way that is better for the environment than the upland options.

Another supply side option which receives a lot of attention during drought crises, is transferring water between river basins. While a completely interconnected 'national grid' would be technically difficult and expensive, more modest inter-basin transfers have been widely considered. There are two major environmental problems, however. The most conspicuous is the ecological effect of mixing waters with different characteristics. The second is that inter-basin transfers usually involve large amounts of pumping, which consumes electricity and produces unwelcome environmental side effects such as increased greenhouse gas emissions.

Each of these options has environmental implications, and we recommend that Severn Trent Water develops robust procedures for evaluating and comparing its environmental impact as well as its costs and operating characteristics. Subject to the results of this detailed exercise we incline to the view that improving substandard rivers to the point at which their waters can be abstracted for use is likely to be the best environmental option to begin with, followed by making greater use of recharging underground rock structures.

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Customers, shareholders, regulators and the Government

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Customers

Everyone is a consumer of water services. In England and Wales this means that virtually everyone is a customer of the water companies who provide these services, and has a keen interest in the quality of service they receive and the price they pay.

Everyone is also affected by the environment in which they live, and has a strong interest in the protection and enhancement of their environment. In respect of the water environment in England and Wales the operations of the water companies are again the strongest single influence.

Everyone is affected by the environment in which they live, and has a strong interest in the protection and enhancement of their environment.

We believe that there is strong public support for water companies to do more for the environment and that the broader approach to company championship of the water environment which we advocate will be generally popular.

How far this popular support for the environment in general will go in support of higher prices to pay for investment in the water environment is more debatable. We do not propose to enter directly into the current debate about appropriate levels of investment and prices to be accepted by the Director General for the next quinquennial round starting in 2000. We can, however, clearly see the need for substantial levels of investment for many years to come to improve the overall water environment as well as meeting the regular needs for upgrading and replacing the company's own infrastructure. We hope this will be adequately reflected in the investment review and in the company's plans, and in their reaction to the National Environmental Programme which the Environment Agency has proposed. Our discussions and the survey evidence we have seen suggest to us that the public have in general been prepared to accept the part of the price increases of the past few years that has helped to finance environmental improvements, and would be willing to see real price levels maintained for that purpose.

We can clearly see the need for substantial levels of investment for many years to come to improve the overall water environment as well as meeting the regular needs for upgrading and replacing the company's own infrastructure.

Within that general picture the evidence indicates that poorer customers are on the whole less willing to accept higher charges to finance water company investment, for whatever purpose, than those who are better off. A move towards the kind of tariff structure we have suggested for consideration in Chapter 4 might help here. It would tend to bring about higher charges for those in higher rateable value properties who use above average quantities of water who may be willing to contemplate higher charges for the privilege and are typically more likely to favour investment to improve the water environment. Conversely it would marginally ease the pressure and charge levels for poorer households who are less able to pay more for the environment.

Shareholders

What does the City think? Our discussions with analysts showed that investors are primarily concerned with the Director General's determinations on price levels since these are by far the largest external influence on the returns and financial

Customers, shareholders, regulators and the Government

performance of a company. Investment accepted by the Director whether for environmental purposes or any other is perfectly acceptable to the City since it is then built into price levels and provides the basis for an acceptable rate of return.

The City is naturally more suspicious of discretionary investment going beyond this because in the short term this may be seen as unproductive, and eating into the money available for dividends. Companies are not however precluded from undertaking additional investment expenditure and we believe that in the right circumstances it will be to the long term advantage of the company and its relationships with all its stakeholders if it regards additional resources from efficiency savings or other means as a potential source for supplementing environmental spending in a discretionary way as well as rewarding customers or shareholders.

...it will be to the long term advantage of the company if it regards additional resources as a potential source for supplementing environmental spending in a discretionary way as well as rewarding customers or shareholders.

There are several reasons for this.

One is the City's view that there may be a link between good environmental management and superior company performance. The market tends to penalise the poor environmental performer more than it rewards the good. Nevertheless this is a real market pressure favouring good environmental management.

Another is that environmental investment can, in some cases, create value, for example by eliminating waste or anticipating future regulatory costs. In the case of water companies, there is the extra consideration that even if the cost cannot be passed through to the consumer, it might qualify for inclusion in the company's regulated asset base where it would enlarge the allowable returns. In any case, the City would prefer environmental investment to come out of a clearly designated budget rather than general revenues so that it can keep an eye on where the money is going.

A third is that environmental investment can reduce what most frightens investors: risk – pollution risk, drought risk, regulatory risk. Water company shares trade at a discount from the value that can be attributed to them by anticipated future dividend payments: this discount is due almost entirely to fear of risk. A company which mitigates these risks might, therefore, expect to be rewarded by the stock market.

There are, therefore, ways in which well-selected environmental investments which may not be immediately justifiable commercially can be made acceptable to a sceptical City audience. But we also believe that the City has a lot to learn about the value that can be created for shareholders by an active environmental stance – an area where Severn Trent Water may also wish to take initiatives.

By the same token, Severn Trent Water needs to reassure its other constituencies that the City is not the sole focus of its interests. One idea it might consider promoting is that water companies should set up special trust funds for

discretionary environmental spending, and that contributions into it should be treated as allowed costs by the regulator, provided they rose at least as fast as the company dividend. These funds could then be used to finance the discretionary activities that we described in Chapter 3.

Rôle of the Regulators

The regulatory bodies play a critical part in relation to all water companies. The Drinking Water Inspectorate polices standards for the quality of water supplied by companies and sets targets for further improvements. The Environment Agency sets standards for the wider water environment, sets and polices standards for the quality of discharges of waste water to the water environment, and sets goals for further improvement. The improvements typically require improved methods of operation and control by the companies, or investment in treatment or other works or both.

As statutory requirements come closer to fulfilment there will be more room to consider other ways of establishing priorities for environmental investment.

Hitherto both regulators have had to concentrate their main efforts on enforcing standards and goals that have been set by national or European legislation. But as these statutory requirements come closer to fulfilment there will be more room to consider other ways of establishing priorities for environmental investment.

Severn Trent Water's environmental strategy needs to embrace the requirements of both regulators. This requires an open dialogue between the company and the regulators. We were glad to find that this exists. It also requires a clear common understanding of how to establish priorities within the whole range of possible environmental improvements. Priority should be given to those investments which show the best rate of return. But most of the environmental investments of the companies produce an environmental benefit rather than a commercial return in the ordinary sense. What is needed therefore is a way of evaluating the environmental benefits available from different investments so as to establish appropriate priorities. Present methods of doing this are not entirely satisfactory, and Severn Trent Water might wish to consider trying to develop new approaches in this area, perhaps involving new valuation techniques or to cooperate with others in doing so.

The Director General of Water Services also plays a key rôle through his control of prices. The central economic issue for the environmental strategy of a water company such as Severn Trent Water is how to ensure that the regulatory régime gives appropriate economic incentives to support the goals of the strategy. There are several aspects to this.

First, in relation to current or operational expenditure the regulatory régime which OFWAT applies sets a price cap of the familiar RPI - X form which exerts a steady pressure on companies to achieve efficiency improvements of at least X% per annum. Where environmental improvements involve cost-cutting, eg. through reducing energy consumption or through waste minimisation, they are fully compatible with this form of regulation. If cost reductions were ever driven

Customers, shareholders, regulators and the Government

beyond this to the point at which environmental, operating or safety standards were put at risk in order to meet the regulators pressure for increased efficiency this would be a cause of concern. But we have seen no evidence of this being the case in Severn Trent Water, and we believe that there is still scope for further environmentally beneficial cost reductions to give win-win situations which will meet the regulator's pressure on behalf of the customers at the same time as helping the environment.

On the capital side the position is more difficult. Hitherto the Director General has proceeded by means of a five-yearly review of investment requirements, which he has conducted in cooperation with the companies, the Environment Agency and the government. The price limit has then been set to provide sufficient revenue to give a reasonable return to the capital required to finance the agreed investment programme. The first task for the company is therefore to ensure that the investment programme which it desires to establish to implement its own long term environmental strategy is accepted by the two regulators. There is an excellent opportunity to do this at present in the context of the forthcoming quinquennial review.

Once the five year investment programme is established it is important that companies should have incentives to deliver their programmes. In particular it is important that environmental plans be delivered if credibility is to be maintained. One way to secure this might be to require that the resources needed to finance the agreed investment programme should be set aside by companies in an earmarked fund, not available for distribution. Companies would then have less incentive to overbid their investment needs, or to seek to increase dividends by deliberately falling short on agreed environmental investment programmes.

...the resources needed to finance the agreed investment programme should be set aside by companies in an earmarked fund, not available for distribution.

Another possibility might be to make use of the proceeds of the kind of charge for discharging pollution into rivers that is currently being considered. If the proceeds were held by the Environment Agency in a kind of challenge fund for water improvements and water companies and others were invited to bid competitively for resources from this fund to bring about specified improvements to the water environment the incentive effects to come up with the optimum scheme for the least cost would have a powerful incentive effect in the right direction.

These are some suggestions as to how the incentives to deliver agreed environmental programmes might be improved. There may be other methods. We would in any case recommend Severn Trent Water to come forward as advocates of some change in this area so as to provide the right incentives for managing environmental investment properly.

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Issues for government

There is a strong political dimension to several of the issues we have discussed in this report, and ultimately the Government through the Department of the Environment, Transport and the Regions is likely to be involved in resolving some of them. We would particularly draw to their attention our recommendations about the basis for charging for water, and about establishing and protecting appropriate levels of investment for the environment.

We draw the attention of the Department of the Environment, Transport and the Regions to our recommendations about the basis for charging for water and about investment levels

At another level we question whether the present regulatory structure is appropriate to the evolving needs of the water industry and the country's wider commitment to environmental sustainability. The requirement will soon be for a regulatory régime which resolves, rather than sharpens the conflict between the water companies' economic obligations and their wider environmental responsibilities. One solution might be to give OFWAT in carrying out their functions a more explicit duty to have regard to the need to protect the water environment and achieve sustainable development.

One solution might be to give OFWAT in carrying out their functions a more explicit duty to have regard to the need to protect the water environment and achieve sustainable development.

Greening the company

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Severn Trent Plc is in the environment business, and management of the environment is built into its structures.

At the highest level, environmental issues are taken very seriously by the Board, and environmental leadership has been established as one of the three core values of the whole company. We believe that some regular discussion at Board level of the way in which the long-term environmental goal and vision can be interpreted in shorter-term objectives, operational plans and programmes and investment plans could be valuable.

We are impressed with the Environment Action Plan, the regular reports of the company on environmental performance and the Stewardship Report. We understand that this kind of target-setting and public reporting has already led to significant improvements in environmental performance in many areas and believe that it can and should be taken further. We suggest it would be desirable to compare targets and performance explicitly with other water companies, and more generally with a wider range of other leading companies by way of bench-marking.

It would be desirable to compare targets and performance explicitly with other water companies, and more generally with a wider range of other leading companies by way of bench-marking.

We are glad to note also that improved environmental performance is also proving valuable for the bottom line by reducing costs in many cases. We think this kind of win-win achievement could be highlighted and brought out in the main company report as a first step towards greater integration of environmental and financial reporting.

Day-to-day environmental management issues are handled within the water company and are a key aspect of the business at all levels. In addition Severn Trent Plc has a strong central environmental unit which ensures high level attention to environment issues, helps to establish standards and benchmarks for the consistent direction and monitoring of performance across the whole company, and is active in developing indicators of progress and identifying opportunities for further improvement.

In a company so centrally engaged with the environment it is crucially important that there be a common understanding of environmental objectives and goals running through the organisation from top to bottom. This is particularly important in relation to environmental issues. If there is any perception in a company that the commitment to the environment is lip service only, this will very soon become apparent both within and outside the company and have a damaging impact on its morale and longer-term performance.

In a company so centrally engaged with the environment it is crucially important that there be a common understanding of environmental objectives and goals running through the organisation from top to bottom.

We are glad to say that we saw no signs of this among the senior staff we met in Severn Trent. On the contrary, we were impressed with the depth of commitment and knowledge about the issues, and the determination to make progress wherever possible.

Of course, there also has to be a practical recognition that not everything can be done at once, and that environmental objectives have to be prioritised. We believe that the key objective for the successful motivation of a company such as Severn Trent Water is that the firsthand knowledge, experience and skill of the company's own staff in environmental matters should be the primary driving force in determining action and priorities, rather than external constraints and goals. External statutory and regulatory pressures clearly have their part to play in determining specific standards and investment programmes, and the company needs to ensure that it is in regulatory compliance. But satisfying external regulators is no substitute for internal agreement and determination on the way forward on environmental issues.

Satisfying external regulators is no substitute for internal agreement and determination on the way forward on environmental issues.

We believe that getting this right should be a key aspect of recruitment, training, management and organisation throughout the company. It needs to be regularly reinforced and enhanced in training programmes, in performance review of groups and individuals, and in internal performance measures. Top level commitment needs to be followed through with appropriate training and engagement at the level of middle management and other staff.

It would be worth considering whether individual good performance on environmental goals could be rewarded.

We understand that the operators of sewage works are bonused according to the quality standard of operation which their works achieve. We suggest it would be worth considering whether individual good performance on environmental goals could be rewarded elsewhere in the organisation as well.

In our experience environmental management systems such as ISO14001 and schemes like EMAS can be useful tools for assessing performance, and for setting and monitoring detailed targets so as to achieve continuous improvement. We suggest that Severn Trent Water might consider using such systems more widely for parts of its business. They are no substitute for embedding concern for the environment in the culture of the organisation at all levels. But they can be a useful aid.

With a very major investment programme stretching into the future it is surprising that more effort does not go into technical innovation so as to improve methods and reduce costs either at company level or collectively by the industry.

We think that research, development and technical innovation may not be given enough attention. With a very major investment programme stretching into the future it is surprising that more effort does not go into technical innovation so as to improve methods and reduce costs either at company level or collectively by the industry.

We think that at the most senior level the company might seek to interact more with other companies and other bodies interested in environmental issues so as to play its part in overall environmental progress in its region.

Severn Trent Water could, for example, be a natural leader in programmes to enhance the whole of the Severn and Trent catchments and form creative and action-oriented partnerships for this with the Environment Agency and others.

Greening the company

It could promote good environmental practice among its major commercial partners and suppliers.

It could consider developing partnership with others on promoting new environmental technology or in promoting efficient use of water by major consumers.

It could seek to make its environmental performance, records and objectives a key feature of its profile and attraction in seeking international water business.

All of these activities would contribute to a single core environmental theme, and could contribute also to business development.

Energy consumption and greenhouse gases

Severn Trent Water is a large energy user, with an energy bill of some £36m per annum, mainly because of its treatment and pumping operations, and its vehicle fleet. It is therefore a significant contributor to the UK's emission of greenhouse gases (albeit mostly indirectly). Also, the more effective Severn Trent Water becomes at treating sewage and meeting demand for drinking water, the more energy it consumes.

Also, the more effective Severn Trent Water becomes at treating sewage and meeting demand for drinking water, the more energy it consumes.

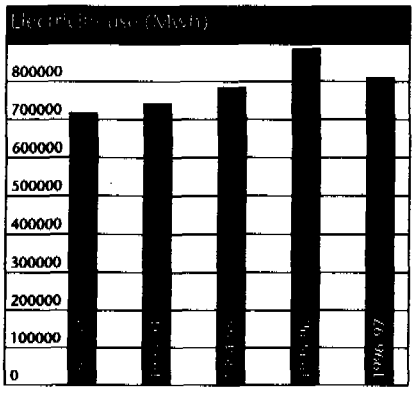
Severn Trent Water has set itself energy use targets and is in the process of setting greenhouse gas emission targets as well. In our view the water industry needs to agree with Government appropriate sectoral and company level targets that will align with overall national objectives for reducing global warming gas emissions. These would provide a useful focus for management, and enable the company to reduce its environmental impact.

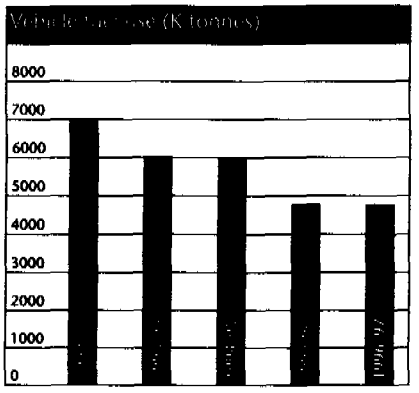
In our view the water industry needs to agree with Government appropriate sectoral and company level targets that will align with overall national objectives for reducing global warming gas emissions.

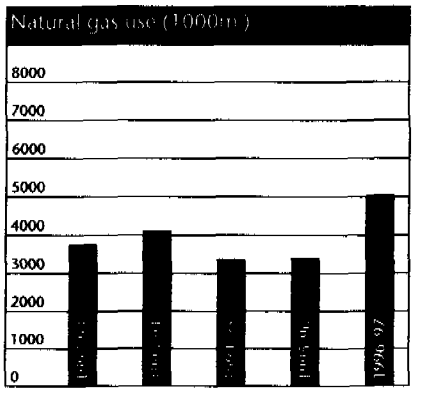
Severn Trent Water could meet emission targets not only by reducing energy use, but also by altering the source of electricity. The use of renewable or low emission sources could be encouraged by setting greenhouse gas targets that are tougher than energy use targets. Severn Trent Water should also consider expanding the use of methane for electricity production; it might even explore the use of micro-hydropower installations to power its works.

The use of renewable or low emission sources could be encouraged by setting greenhouse gas targets that are tougher than energy use targets.

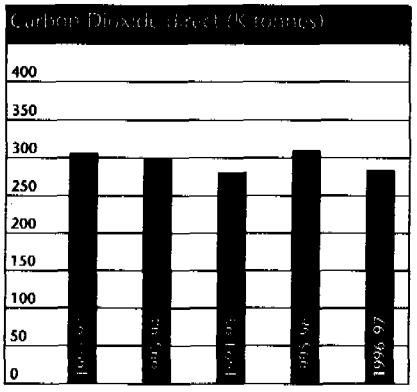
Energy use and emissions: Severn Trent Water's use of energy

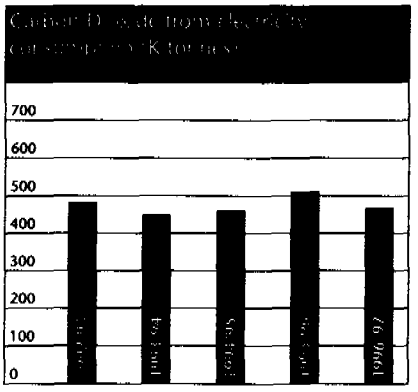


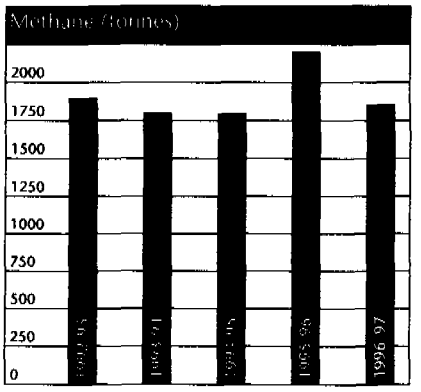


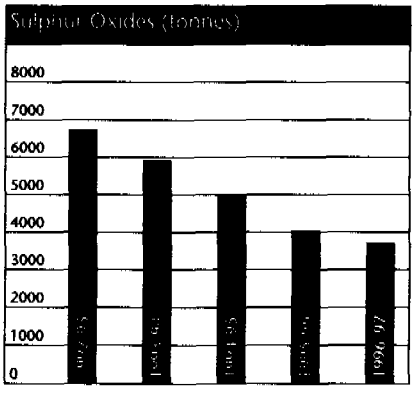


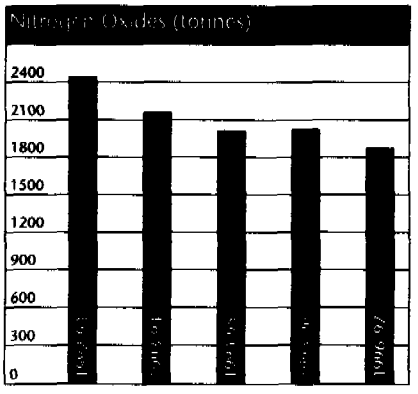
Severn Trent Water's emissions to atmosphere











Conclusion

7

We have tried in this Report to help to clarify and articulate a long-term vision for Severn Trent's water business. Many of the ideas in it were prompted from discussions with staff of Severn Trent and from our other committees. We have tried to help bring this together, and reflect back the vision in a single picture.

We see a water company like Severn Trent Water having the potential to develop as the champion of the water environment in its region, but with an impact reaching out to the rest of the country and overseas. We see it setting standards of excellence in quality and reliability in the provision of water to its customers, in dealing with waste water, protecting and enhancing the wider water environment, in development of technical and business expertise in all aspects of management of the water environment, in promoting best management of the whole water cycle in an integrated way throughout the country, Europe and internationally.

As this core vision and competence develops we see it capturing the imagination and commitment of Severn Trent Water's own staff, the support and participation of its customers and partners, the engagement of regulators and law makers in this country and in Europe. At the same time as it gathers this wider support and backing it will be able to play a more decisive part in shaping the way in which external regulation affects its commercial prospects and financial returns, and in seizing the business opportunities that will develop further for making good business and good returns out of good environmental practice.

Win-win opportunities do not grow on trees for the plucking. But with careful nurturing they can be grown from small beginnings. The environmental acorn can and should become a sturdy and prosperous oak.

Appendices

Appendix 1

Severn Trent Advisory Panel on Long-term Environmental Issues: Panel members

Details of Panel members are shown below.

Mr F Derek A Osborn, CB (Chairman)
Derek Osborn formerly held the post of Director General Environmental Protection in the Department of the Environment. He was responsible for all aspects of sustainable development and environmental protection, domestic policy on Air, Water and Waste Management and the formation of the Environment Agency, and International work on environmental issues. He was elected Chairman (non-executive) of the European Environment Agency in 1995. Derek is also a Board member of the Environment Agency for England and Wales, Chairman of UNED-UK (an NGO which acts as the UK liaison point to keep in touch with the United Nations on its environmental and development work) and Chairman of the Earth Centre in Conisborough.

Dr Nigel Arnell
Dr Arnell is a Reader in Physical Geography at the University of Southampton. His research interests include impacts of climate change on hydrology and water resources; water resources management, especially in droughts; macro scale hydrology, particularly in Europe. Nigel has served on a number of national and international committees, including the UK Climate Change Impacts Review Group and the Intergovernmental Panel on Climate Change (IPCC).

Ms Janet Barber
Janet Barber is a freelance environmentalist having worked for most of her life in the national and international environmental arena. She is particularly interested in the development of corporate environmental agendas and the functioning and accountability of that part of the charitable sector implementing sustainability programmes.

Janet is a Council member of English Nature, the Government's statutory advisers on nature conservation and a Trustee or committee member of a number of environmental and development charities including Forum for the Future and government working groups including the DEE/DOE Environmental Training Organisation.

In 1989 Janet was awarded the Order of the Golden Ark by HRH Prince Bernhard of the Netherlands for her work on the environmental policies of international development agencies.

Mr David Lascelles
David Lascelles worked on the Financial Times where his rôles included New York Correspondent, Banking Editor and Resources Editor. In this latter position he oversaw coverage of environmental issues. In 1994 David proposed a method for rating corporate environmental risk which was used for an experimental rating of Scottish Nuclear. David is now Co-Director of the Centre for the Study of Financial Innovation which he helped found four years ago. His responsibilities include the Centre's EMU programme which examines the implications of the single currency for the financial services industry.

Most of the Panel members were reimbursed by Severn Trent on a per diem basis for their work. As a member of the Environment Agency Board Derek Osborn declined to receive any payment but Severn Trent made a payment of an equivalent amount to a charity of his nomination.

Appendix 2

Written consultation – summary of responses

The Panel consulted a number of regulators, politicians, pressure groups, industrial customers, representatives of domestic customers, local authorities, academics and a group of other opinion formers who had an interest in the water industry. 36 replies were received. A number of common themes in the replies have been listed below.

Frequently raised Issues:

- Development of new pricing structures, including tariff bands, to deliver better demand management.
- Application of an ongoing water demand management strategy.
- Develop means to improve water efficiency through reuse of grey water for certain industrial and domestic applications.
- Minimise leakage from water mains.
- Ensure that operational practices, especially those associated with water and land management protect or enhance biodiversity.
- Ensure supplies to industry are reliable in respect of both quantity and quality with water companies becoming financially liable for compensation payments in the event of failures.
- Manage water abstractions to avoid adverse environmental impacts on aquifers, river flows and land habitats, especially SSSIs.
- Promote pollution prevention at source to minimise risks and environmental impacts on water courses, sewage treatment processes and sewage sludge quality.
- Invest in research and development to deliver best practice processes and operating methods for the water industry and its customers.
- Promote a water metering strategy which protects low income families but provides incentives for other users to improve water efficiency and reduce demand whilst providing the water industry with better consumption data for improving future resource management strategies and minimising the cost of its product.

Other key issues raised by consultees:

- Sustainability indicators relevant to the water sector and linked with UK Sustainability Indicators should be developed.
- Efforts to raise customer awareness of water efficiency measures and associated environmental benefits should be enhanced.
- There is a need to reduce the impacts from combined sewer overflows either by separating combined sewers into foul and storm systems, uprating sewerage systems to increase capacities, or introduce flow balancing storage facilities. Reed bed overflow treatment could also be considered.
- The issue of removing or replacing lead pipe work in domestic properties needs addressing.
- In view of the monopolistic licence arrangements water companies hold environmental policies and strategies should be broadened to encompass social and ethical issues.
- Severn Trent Water should engage more fully in evaluating and promoting industry best practice both for its own sector and its major customer sectors.

Appendices

Appendix 2 continued

- Greater evaluation and targeting of the environmental impacts of the company's resource consumption should be undertaken.
- The company should develop a stronger environmental strategy to encourage its supply chain to develop good environmental practice and to purchase more sustainable products and services from its suppliers.
- All new investment projects should be subjected to full environmental cost benefit analysis.
- The company should develop a wide range of sustainable products from its sludge by-product eg. saleable compost or dried sludge pellets.

Responses to the written consultation were received from the following:-

Dr D R Langslow
English Nature

Sara Parkin
Forum for the Future

Professor W B Wilkinson
Centre for Ecology & Hydrology

Tessa Tennant
NPI Global Care

Brian McLaughlin
NFU

Dieter Helm
OXERA

Matt Phillips
Friends of the Earth

Dr Harvey Wood
Clean Rivers Trust

Dr P E Bottomley
National Federation of Anglers

Dr Jane L Asherson
CBI

D J Fletcher
British Waterways

A J Dobbs
WRc

Chris Binnie
W S Atkins

Fiona Reynolds
CPRE

Dr E Hinchliffe
Britvic

Mark Limburick
Wolverhampton MBC

R Wright
Rolls-Royce

T Potter
Bass Brewers

Peter Pickard
Nuneaton & Bedworth BC

Alison Crofts
The Wildlife Trusts

Richard Gray
Courtaulds Plc

H S Wilson
City of Stoke-on-Trent

S W Catchpole
Hinkley & Bosworth BC

Barbara Young
RSPB

Dr Jill Shankleman
ERM

Joyce Stewart
The Royal Horticultural Society

Michael Rouse
DWI

E F Cantle
City of Nottingham

Alan Davis
DOE

I M Lindley
Leicester City Council

R B Perry
University of Warwick

Dr Alan Woods
Country Landowners Association

Dr W Hasselkus
Rover Group

Ed Gallagher
Environment Agency

Maggie Rosher
City of Coventry

David Slinger
Derby City Council

Appendix 3

Bibliography

The reports reviewed by the Panel included the following.

Monopolies and Mergers Commission Report on Severn Trent/SWW merger. (October 1996)

UK Round Table on Sustainable Development Water Seminar. (October 1996)

Freshwater UK Round Table on Sustainable Development. (February 1997)

Water Meeting the Challenge – Water Services Association. (1996)

Water Resources and Supply – Agenda for Action (Executive Summary) – DOE. (October 1996)

Commission proposals for a council directive establishing a framework for European Community Water Policy. Executive Summary – Consultation Draft. (1997)

High and Dry – Biodiversity Challenge. (December 1996)

Water Conservation Government Action. Department of the Environment. Welsh Office. (Response to the consultation document Using Water Wisely). (August 1995)

National Rivers Authority Water Resources Strategy (1994).

British Government Panel on Sustainable Development (Third Report, January 1997).

House of Commons Environment Committee Water Conservation and Supply – First Report (November 1996).

Wildlife and Freshwater an agenda for sustainable management – English Nature. (March 1997)

Water Wise – Royal Society for the Protection of Birds. (1995)