SUMMARY DOCUMENT

SUSTAINING OUR RESOURCES

Southern Region water resources development strategy

NRA

National Rivers Authority

Southern Region

INTRODUCTION

The drought has highlighted the importance of water resources to everyone in the South East. People have been inconvenienced by lengthy hosepipe bans and the once "Silvery Darent" has become a national symbol for rivers dried up by over abstraction.

The NRA national water resources strategy document has demonstrated the divide between the wet, less populated, North and West, and the dry more populated South and East.

NRA Southern Region, covering Kent, Sussex, Hampshire and the Isle of Wight has now examined in more detail the need for water in the South East and has set out a 30 year strategy to meet demand whilst protecting the environment.

In June 1992 the NRA Board approved a number of Key Issue Statements on 'Managing the Drought and Water Resources'. Southern Region has adopted a policy which extends these issues to the particular conditions of south east England, which has scarce resources and a large number of water company supply areas.

SOUTHERN REGION – WATER RESOURCES POLICY

The National Rivers Authority has a duty to conserve, redistribute, augment and ensure the proper use of water resources. In the Southern Region we seek to achieve this by adopting a Water Resources Policy. We will:

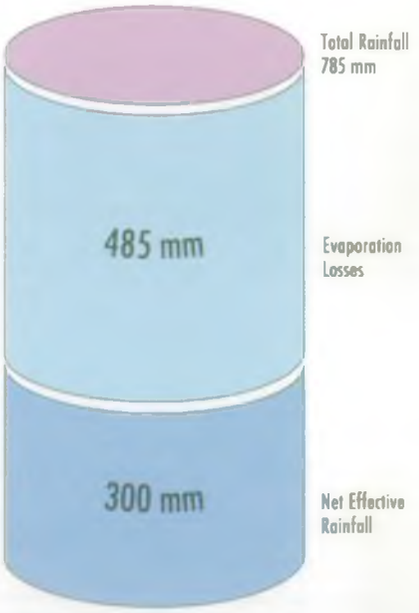
- Promote the full use of existing water resources by encouraging "water grid" connections and the conjunctive use of reservoirs, river abstractions and groundwaters.
- Promote future reallocations of supplies between companies, where appropriate.
- Permit new abstraction of water at the downstream limit of rivers.
- Protect river interests from the effects of abstraction by incorporating controlling flows in licences.
- Promote, where appropriate, the augmentation of chalk streams by groundwater abstraction to the benefit of all river users. We will also support river-regulating reservoirs.
- Promote the return of treated effluent to the local catchment wherever possible.
- Persuade water companies and consumers to adopt water saving measures.
- Persuade water companies to install domestic water meters with appropriate tariffs before major new resource schemes are licensed.
- Work with OFWAT to ensure that water companies achieve appropriate leakage targets.
- Remedy the effects of over abstracted catchments by improved groundwater management.
- Take into account the possible effects of climate change in long term water resources planning.

SOUTHERN REGION

Hydrology

Southern Region's average annual rainfall is just under 800 mm per year. This makes it the third driest region of England and Wales (and Scotland), after Anglian and Thames regions. After allowing for evaporation losses and water used by plants, some 485 mm on average, the net effective rainfall available to recharge aquifers and contribute to river flow averages 300 mm per year.

Average annual rainfall in Southern Region



Net effective rainfall provides the resource from which all uses of freshwater, both consumptive and non-consumptive, must in the end be met. Hence its relative level of exploitation is critically important. This folder concentrates on public water supply because of its importance as the dominant consumptive use in the Region.

There are six water companies responsible for supply across the Region covering the 14 main supply areas shown in the map.

KEY ISSUES

The strategy gives rise to a number of key issues on which the NRA welcomes views from organisations and individuals concerned about water and the environment.

a) Demand Management

Demand management measures, particularly domestic metering and reduced leakage, are proposed as the first steps before major new resources schemes are developed. The NRA believes that the costs involved are finely balanced, but there are long term benefits for the environment which have not yet been quantified.

b) Regional Self-Sufficiency

This document proposes a policy of developing indigenous resources before calling on long distance transfers from the North and West, because of the high cost and energy consumption involved.

c) Level of Service of Public Water Supply

The current drought has demonstrated that resources designed for a one in 50 year drought can withstand a more severe event, subject to restrictions on water use. The NRA believes it would be inappropriate, for reasons of environmental impact and cost, to adopt a more stringent design criterion from now on. Use of metering would reduce the incidence of restrictions by virtue of reduced demand, particularly peak demands.

d) Balance between Abstraction and the Environment

This document foresees abstraction increasing by up to 25% over the next 20 years, concentrated in six rivers and located at or near tidal limits in four (Test, Itchen, Medway, Stour). In the other two (the two Rothers) abstraction will be balanced by reservoir storage or groundwater. Against this, significant reductions in abstraction from R. Darent, Nailbourne, Wallop Brook and possibly R. Hamble and R. Meon will contribute towards better aquifer management and provide environmental improvements.

e) Funding Alleviation Works in Low Flow Catchments

This will require considerable future investment and raises the question of how this work should be funded.

f) Re-use of Water

In future the NRA will look to less marine disposal and greater inland treatment of effluent, with the possiblity of re-use through downstream abstraction near the tidal limit. Discharging treated effluent as far upstream as possible will enhance the resource potential of rivers without increasing the overall level of abstraction, but because of the geography of this region the scope for re-use of effluent will be limited.

g) Education

There is no doubt that great savings can be achieved through careful use of water in homes, industry and agriculture. The NRA is uniquely well placed to raise public awareness, and aims to target the young.

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This folder summarises the areas discussed in the Region's Water Resources Strategy Document which is a consultative document from which the Region's Strategy will be finalised in 1993.

WHAT DO YOU THINK?

We would like to hear your views on any of the aspects contained in this folder. If you would like a copy of the main Strategy Document please write to:

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by 31st December 1992.

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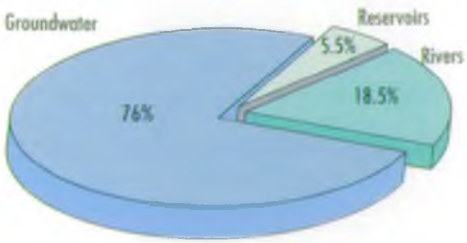
October 1992

Water Companies in Southern Region

PRESENT WATER USE

The total quantity of water abstracted in 1989 from freshwater rivers, reservoirs and underground sources for public water supply, industry and agriculture, amounted to 2,680 Ml/day. This represents 30% of the net rainfall received in an average year and 52% of the 1989 net rainfall.

Existing public water supply sources NRA Southern Region



Low Flow Rivers

The NRA has identified 40 rivers in England and Wales where low flows are a problem caused partly or mostly by abstraction. Six of these are in Southern Region.

River Darent, Kent.

Little Stour, Kent.

Wallop Brook, Hampshire.

Bourne Rivulet, Hampshire.

River Meon, Hampshire.

River Hamble, Hampshire.

DROUGHT

The drought of 1988-1992 has had a significant effect on water supply in the South East due to the combination of four successive dry winters and intervening hot, dry summers. This has a particular impact in Kent where high dependence on groundwater is combined with especially low winter rainfall.

The current drought has been, and continues to be, as severe a test of groundwater resources in Kent as any this century.

It has focused attention on the conflicting needs for water. Dried up river beds have become a familiar image on our television screens. This has led the NRA to review the balance between abstraction and the environment in times of drought and this is reflected in the regional strategy.

Drought Year Recharge

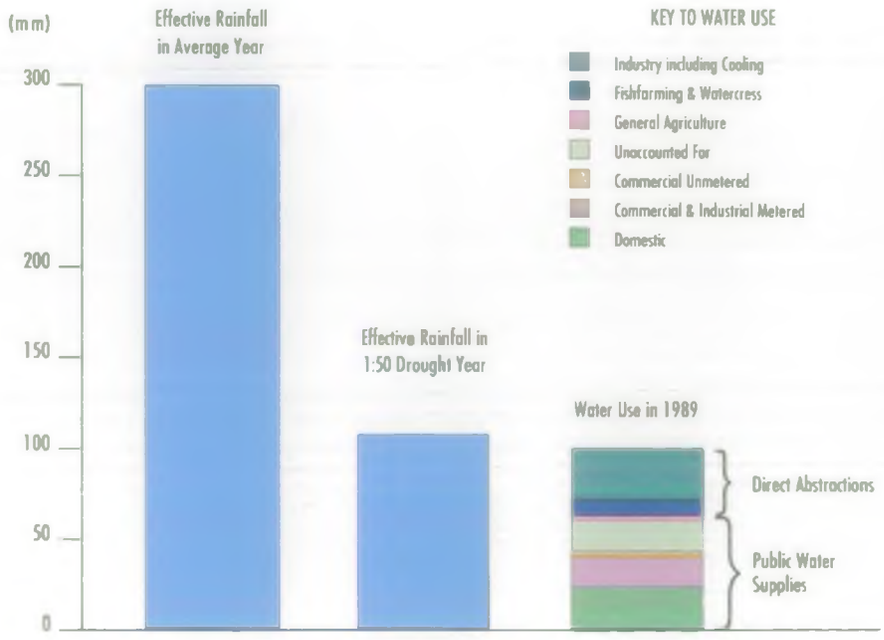
In a one in 50 year drought (a drought so severe it is likely to occur only once in every 50 years), the Region receives about 100mm of effective rainfall. The present total level of abstractions amounts to more than 90% with public water supplies amounting to 50%, as illustrated in the diagram.

CLIMATE CHANGE

Recent international concern regarding global warming has been taken into account through examining:

- Demands for water in the home and the environment.
- Water resource yields.
- Low energy means of balancing supply and demand.

Effective rainfall and water use– NRA Southern Region



Water metering priority areas

SOUTHERN REGION RESOURCE DEVELOPMENT STRATEGY

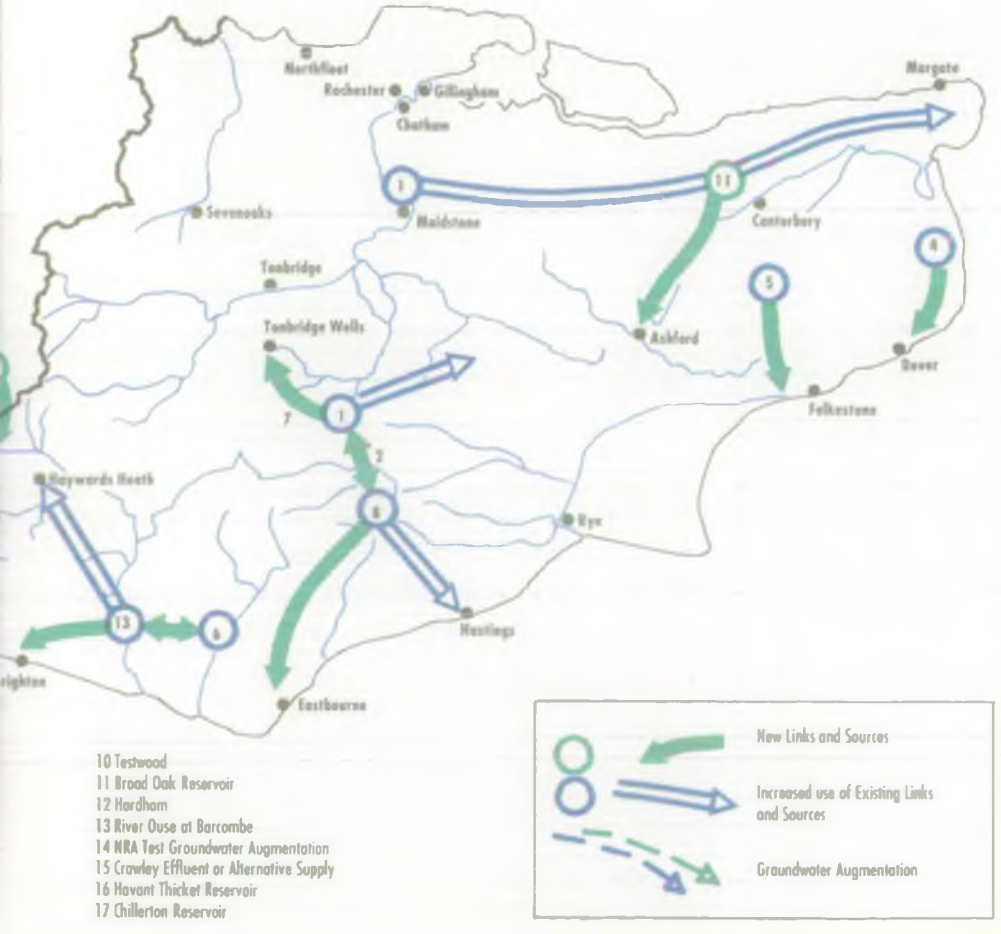
The NRA's proposed sequence of water resource development from now on puts demand management first and envisages a general sequence:

- Demand management: leakage reduction and domestic metering.
- Transfer of internal regional surplus to areas of deficit.
- Construction of new schemes in Southern Region.
- Transfers from other parts of the country.

The extent to which demand management measures are pursued will in practice be determined by economic and financial considerations as well as environmental issues. The NRA expects cost savings which accrue from the postponement of major capital schemes will be set against the cost of implementing such measures. This issue is still developing and as a better understanding of the savings in consumption resulting from metering is obtained, so the significance in terms of postponing new schemes will become clearer.

The various elements already discussed have been brought together in the larger map, with other major new trunk mains. Underlying all is a presumption that unaccounted for water is reduced to a 'good' housekeeping level and that domestic meters have been installed before new source developments proceed.

The NRA's view of priorities for metering is indicated on the smaller map, which divides the Region into High, Medium and Low categories. Timescales associated with these would be roughly within five years, within ten years and after ten years.



DEMAND GROWTH

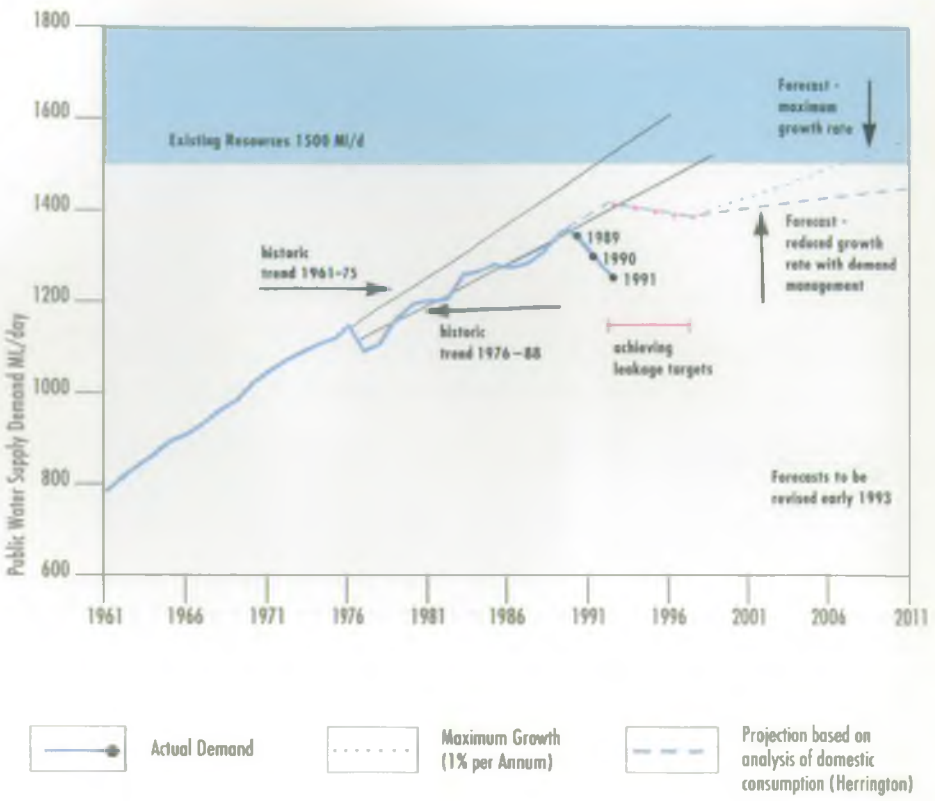
Downturn in Demand

From 1969-1989 public water supplies grew by 55%. 1989 marked the start of a pronounced downturn which has continued into 1992. The factors contributing to this are:

- The general economic downturn.
- Hosepipe restrictions.
- Drought publicity and public awareness.
- Reduced leakage as a result of water company activity.
- Domestic metering (on the Isle of Wight).

These have resulted in a level of consumption equivalent to the early 1980's. We do not yet know how rapidly it will recover.

NRA Southern Region 1990 demand forecast



Factors Influencing Growth

Demand increase over the next few decades will depend on the following factors:

- The level of general economic activity.
- Population growth and household size.
- The method of charging for water services and the price level adopted.
- Water consumption of household appliances and their level of ownership.
- Number of new houses built.
- Gardening habits.
- The extent of any new large water using industrial sites, such as power stations.
- Levels of leakage from distribution systems and consumers' plumbing.
- Climate change.

The NRA believes that opportunities to influence the trend will emerge through demand management measures. Early results from National Metering Trials in the UK indicate that this could be very significant.

Regional Demand Forecast

The 1991 Water Resources Act puts a duty on the NRA to manage water resources. Hence the NRA forecasts future demand for water periodically to ensure all needs will be met and that resources are properly allocated between the companies. The most recent forecast for public water supply, which includes industrial supplies, was published in 1990 and is shown in the diagram.

The upper line represents continuing growth as in the past and is the NRA's estimate of the maximum likely demand. The lower line represents the best estimate of growth based on the more analytical approach to household water use devised by Paul Herrington of Leicester University.

We assume that the water companies will achieve the targets they have set for reduced leakage by 1996 and keep down at least to those levels thereafter.

Also shown in the diagram is the total reliable yield of sources currently available, 1,500 Ml/day. This reliable yield is assessed on the basis of a drought that occurs only once in 50 years. It can be seen that this is reached by the year 2005 by the upper line, but not until well after 2011 by the 'best estimate' line.

This overall regional balance does not tell the full story however, because:

- **Peak demands must be taken into account, particularly in groundwater dependent areas.**
- **The Region is long and narrow and it is not economical to transfer water over great distances by pumping.**

The diagram also illustrates the significance of reduced leakage, which is built into the forecast in the period up to 1996.

FUTURE OPTIONS

The NRA has a duty to ensure future public water supply demands are met in the least damaging manner to the environment. It is imperative that future increases in abstraction are kept to the lowest possible level needed to meet legitimate water supply needs. These must be located in those catchments best able to sustain the new load with the least environmental damage.

DEMAND MANAGEMENT

Demand management measures can be applied to water used in the home, industry, agriculture and both public water supplies and private abstractions. Experience in other countries has shown that pricing is an effective spur and this can be reinforced by appropriate byelaws.

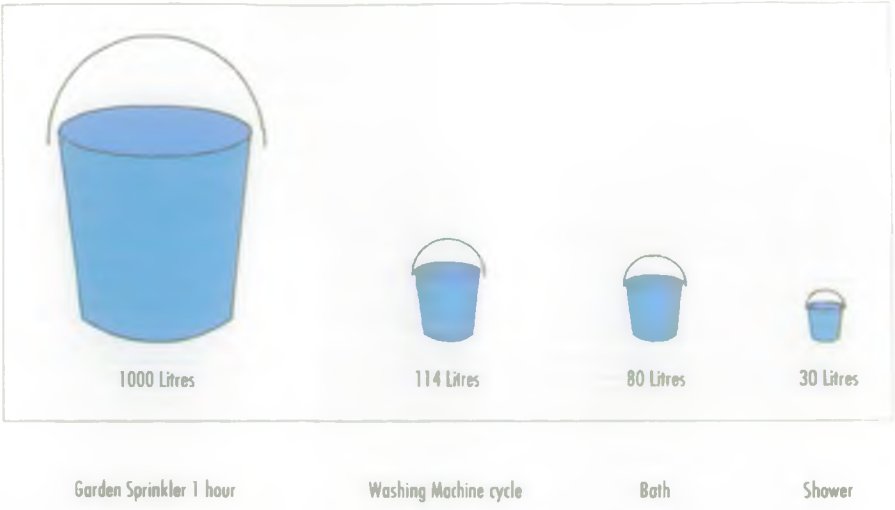
Examples of more economical use of water are provided by:

- W.C. cisterns having a 6 litre flush or less.
- Washing machines requiring less than 20 l/kg of load compared with a typical figure of 35 l/kg in 1980.
- Replacement of spray irrigation by the more efficient trickle or drip irrigation.
- Reduced losses from water company distribution systems by increased leak detection and repair activity.
- Reduced loss from household plumbing fittings by improved maintenance.

National Metering Trials

National trials have not yet been concluded. However, evidence indicates that net in-house domestic consumption is about 10% lower overall and that evening peaks due to garden watering are suppressed by as much as 30%.

Water use in the home



The effect would be to reduce the overall increase in demand for public water supplies to three-quarters of the amount required without metering.

In the longer term it is likely that consumers who are metered would adopt more economical water using habits as a way of life and would demand the more economical water using appliances which are becoming available.

Why Demand Management Now?

Demand Management is favoured because of the short time scale it takes to implement the reduction in consumption, which in turn reduces the load on rivers and aquifers and the fact that these measures may be staged flexibly through time and in different areas.

An important feature from the installation of meters is the considerable reduction in leakage from damaged and corroded supply pipes, which are renewed or repaired when the meter is installed. Metering also aids the detection of water losses in distribution systems and houses.

The Department of the Environment paper "Using Water Wisely" (July 1992) emphasises the role of demand management measures in achieving a satisfactory, sustainable environment.

SUPPLY MANAGEMENT AND DEVELOPMENT

As far as managing the supply side is concerned, it is possible to identify two stages in order of priority:

- Securing optimal use of existing resources.
- Developing new schemes.

Existing Resources

In order to obtain the optimum use of existing resources the construction of trunk mains between areas of surplus and areas deficit is necessary, together with the integrated management of separate resources to maximise yields.

Developing New Schemes

The Region's aquifers are now fully exploited, so any new water supply developments will largely be based on the development of regulated rivers and reservoirs, or a combination of the two. The NRA will ensure that abstractions are as far downstream as possible to minimise any adverse impact on the flow regime.

PROTECTING THE ENVIRONMENT

Licence Reductions

Southern Region is committed to identifying and alleviating problems caused by over abstraction. The NRA may vary or revoke licences in order to "conserve, redistribute, augment and ensure proper use of water resources" which is the duty of the NRA under the 1991 Water Resources Act. The holder of a licence may then seek compensation from the NRA.

Regional Licensing Policy

Pressure on water resources in the South East is reflected in a tough licensing policy. River abstractions are controlled by prescribed minimum flows and there is a general policy of presumption against further abstraction from the Chalk and Greensand groundwaters. Farmers are encouraged to store surplus winter rainfall in reservoirs or lakes for summer use.

As the greatest demand for new licences is for public water supply, the question of need is being carefully scrutinised. A recent statement by the NRA Chairman is particularly appropriate in the South East:

"Before any new sources are developed, it is essential that water companies make sure that they are doing all they can to reduce leakage and to carry out effective demand management. The NRA supports selective domestic metering, with an appropriate tariff, in areas where water resources are stressed."

WATER RESOURCE SCHEMES

These schemes have all been under consideration for a period of years in varying levels of detail. Any schemes that are constructed in future will be drawn from this list:

- Yalding intake on the River Medway.
- Rother-Medway Link between Bewl Water and Darwell.
- Broad Oak Reservoir.
- Darwell Reservoir enlargement.
- Hardham expansion.
- Testwood Lakes.
- Test Groundwater Scheme.
- River Itchen Development.
- Chillerton Reservoir on the Isle of Wight.
- Havant Thicket Reservoir near Portsmouth.
- Crawley effluent redirected southwards.

NRA STRATEGY FOR MANAGING SUPPLY AND DEMAND

Previous sections have shown how public water supply demand is likely to grow, where deficiencies may occur, the demand mangement measures that are available and the water resource schemes that might be developed to meet remaining needs.

Arriving at a satisfactory position in 20-30 years' time will depend on adopting a balance between these different measures in the meantime, such that environmental, water supply and cost considerations are all taken into account.

There is no doubt that the Southern Region can remain self sufficient in water resources for at least the next 20 and probably the next 30 years, without requiring transfers schemes from the North or West of the country.

Resource strategy: Main features and options