



ENVIRONMENT
AGENCY

DROUGHT MANUAL

INITIAL DRAFT

VOLUME 032

WATER RESOURCES

CHAPTERS 1-11

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DOCUMENT CONTROL SHEET

Project: DROUGHT MANAGEMENT

Title: DROUGHT MANUAL: INITIAL DRAFT

File Ref: 683/17/7

Document Approval and Amendment Record

Version No.: 1

Status: Internal working document.

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Previous Draft Checked By:

Approved: Unapproved
Date: 8th May 1997

Distribution: Internal for comments.

Document History

Previous Version Number	Date	Comments



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1 EXECUTIVE SUMMARY

1.1 Introduction

The Environment Agency cannot cure drought, but it can help to manage it. The Agency's role is to ensure that rivers and wetlands are protected from permanent damage and that the needs of the public, industry and agriculture are balanced.

The water companies, industry, agriculture and the public all have a role to play in helping to conserve water supplies. Other organisations including Internal Drainage Boards, navigation authorities and conservation bodies can help to minimise the impact of water shortages on the environment.

This manual contains the Agency's drought policies and gives guidance on the planning and management of droughts.

1.2 Droughts

The following statements summarise the Agency's position to droughts:

- Droughts are caused by a prolonged period of below average rainfall.
- Droughts are natural events. The Agency cannot cure a drought but can help to manage it.
- During droughts:
 - aquifer levels will be low and rivers will suffer reduced flows.
 - impounding and pumped storage reservoirs will not fill as high as normal.
- The Agency's role is to protect the water environment from permanent damage.
- The water companies, industry and agriculture and the public have a role to play in helping conserve water supplies.
- Saving water helps to protect the environment and helps the limited resources meet the needs throughout a prolonged drought.
- The Agency will expect abstractors to have contingency plans based on a "plan for the worst and hope for the best" scenario approach.
- The Agency will not support Drought Order or Permit proposals which may have an impact upon the water environment unless suitable measures have been taken by the abstractor to make best use of existing resources. Normally, there will be an expectation that restriction will involve a ban on the use of hosepipes or other measures which achieve a similar saving in water. Restrictions on "non essential" water may be appropriate where the environmental impact is judged to be severe.
- The Agency will normally support Drought Order applications by the water companies if environmental mitigation measures are included in the proposals and where appropriate where the company has already taken steps to restrict non essential uses of water.
- Short term drought management and longer term water resource planning should not be confused.
- The impact of drought should not be confused with the impact of over abstraction, poor planning or mismanagement of resources by the abstractor.
- The impact of the drought on the environment must be monitored. In general, nature is remarkably resilient and experience suggests that recovery of species after a drought can be rapid.
- Drought is part of the natural variability of the water environment.

2 ORGANISATION OF THE MANUAL

This manual is to help anyone involved with the planning and management of droughts. It provides general guidance on drought management, for the benefit of all staff involved. Although it is primarily for internal use, it is not confidential to the Agency. Indeed, part of the reason for producing it is to show the public, if they wish to see, that the Agency is adopting a fair and nationally consistent approach to this important activity.

The manual should be read in conjunction with related documents including

- Environment Act 1995
- Water Resources Act 1991
- Scheme of Delegation
- Licensing Manual Chapter 12: Drought Orders and Drought Permits

(More to be added to list)

2.1 Layout

The manual is organised in topic sections, roughly chronologically (eg. drought planning before drought management). The manual is in three parts -

- M** Main section - contains the main discussion, approved nationally.
- A** Appendix section - contains supplementary material.
- R** Regional section - contains region specific guidance and materials. It is up to regions to complete this section as they wish.

In the "M" (and to some extent the "A" sections) the date of issue of the material is shown at the foot of each page. The footer on each page also shows the section number (§), the section type (M, A), and the page number. The "M" sections are numbered from the beginning of the manual (starting at 101) to the end, so that the manual can be indexed in due course for ease of reference. There are some gaps in this numbering to cope with additions/amendments: about 100 pages have been allowed per "M" section. It is impractical to paginate the "A" sections fully or to index them, though page numbers and tables of contents are given where possible. It is up to regions how they organise "R" sections.

2.2 Updating the manual

The manual is meant to be a useful document. Comments and criticisms about it or about procedures etc. it covers are therefore encouraged so it can be revised and updated. Address them to your area or regional manager responsible for water resources.

Updates will be issued from Headquarters to each region with sufficient copies for each area office plus one for each region. It will be the responsibility of each area/region to keep its manual up to date.

2.3 Constraints on the manual

There are constraints in producing any document like this -

1. It is not practical to produce a final and definitive version all at once.

The manual will therefore be issued in stages. The first edition stages will be produced during 1997. After that, subsequent material will be issued for adding in, or substituting for what is already there.

2. The Agency nationally does not want to prescribe the exact approach that all regions and areas should adopt to all matters. This is neither possible, or indeed desirable. Regions and areas must have some degree of flexibility, recognising -
 - Their unique water resources and priorities.
 - Their particular management structures.
 - The way the Agency nationally has evolved from its regions.

Each section of the manual therefore has the "R" section, referred to above.

3. Not everyone will have use for all of the manual. Each section is therefore as self contained as reasonably practicable. If you would find it useful to have a particular section with you, copy it and bind/file it as you wish. However, remember to watch out for updates.

2.4 Contents of regional management plan

The content of the regional management plan is at the discretion of the region but should be appended to this manual as a regional insert. As a guideline, the regional drought management plan should cover the following aspects:-

- structure of drought management team
- appointments to drought management team
- financial resources
- use of consultants in drought management or to substitute those undertaking drought management
- empowerment of individuals with particular reference to the non financial scheme of delegation
- reporting requirements
- reference to supporting documentation (drought operational manuals, drought reports, environmental surveys etc.)
- actions undertaken to date and proposed actions under the following areas with timescales
 - public water supply
 - environment
 - agriculture
 - industry
 - private supplies
- communications plan and public relations strategy
- Gantt chart summarising actions and timescales

3 INTRODUCTION

3.1 Role of the Environment Agency

The Environment Agency has responsibility for both long term planning to cope with future demands as well as having responsibility for managing resources during droughts. The Agency needs to be proactive in ensuring that timely and appropriate actions are taken by organisations who could make a difference to the impact of a drought on the environment.

Drought management and long term planning issues are often confused and should be separated from each other. Drought should not be used as a justification for longer term proposals to be implemented with less rigour involved in the assessment process. It is the success of previous long term planning that is tested in a drought situation; once in a drought the focus should be on drought management.

Anecdote Box:

Company x wanted to speed through licence applications during a drought to avoid the Drought Order/Permit process. Company y sought to change licence conditions after a drought, again to avoid the nuisance of Drought Order proceedings.

Various actions can be undertaken in advance of droughts, including:

- ensuring that adequate resources are developed to reduce to acceptable levels the frequency with which water companies seek Drought Order powers which impact on the environment.
- monitor the state of water resource systems in order to plan, with abstractors, ways of minimising drought impact
- advise the Government on the state of water resources and future prospects
- promote catchment based liaison groups where appropriate to make the best use of scarce resources during droughts

The absence of adequate medium to long term planning can lead to increased problems for abstractors and the environment during droughts. During severe droughts problems will occur but these can be minimised by adequate planning ahead.

The key Agency actions during times of drought are:

- general monitoring of the state of water resources in the environment
- making assessments of the future state of water resources
- with water companies:
 - dialogue with companies to understand their drought plans
 - responding to the DoE with views on Drought Order applications including the need for mitigation measures
 - making public statements on the need for companies to take steps to alleviate the potential shortage of water resources (and hence alleviate potential environmental threats)
 - encourage the use of sources to benefit the environment, for example reduction

of groundwater abstraction near springs in favour of increased loading on reservoir sources.

- responding to requests from the Secretary of State for an assessment of the current state and future prospects for water resources and supply
- making public statements on the need to use water wisely to "save water to save the environment"
- operate Agency augmentation schemes to minimise drought impact
- implement, if appropriate, early warning systems for the benefit of private abstractors (including spray irrigators)
- work with spray irrigators to make the best use of resources and restrict them when necessary to protect the environment.
- respond to applications for Drought Permits

3.2 Drought triggers

There are no industry agreed definitions of drought in anything other than general terms. Drought is generally recognised as a decrease of water availability in a particular period and over a particular area. For the application of Section 57 restrictions or the imposition of hosepipe bans by water companies the applicants are required to demonstrate an "exceptional shortage of rain". The Agency has to be assured that the water company is applying restrictions on use or for a Drought Order because of an exceptional shortage of rain and not due to poor management or lack of long term planning by the company.

The severity of a drought in a locality could be defined in terms of either the hydrological situation, the environmental impact or the water supply impact. For the Agency it is appropriate for it to consider the combination of hydrological impact that leads to environmental impacts.

The use of guideline descriptors "moderate, serious and severe" would help both the Agency and its customers understand and plan for appropriate drought management measures to protect the environment if the drought increases in severity.

Criteria for defining different drought severity levels in the terms of likelihood of particular management actions being taken help ensure the Agency is seen to be adopting a consistent approach to drought management. The specific indicators in terms of likely environmental condition at each stage will need to be defined by regional/area staff on the basis of local knowledge of each catchment. This approach helps the Agency in its dealings with water companies and others by providing a framework for agreeing which types of Drought Permit or restriction may be appropriate at a particular stage of drought severity, if a company has a resources/demand imbalance, and unexpectation of particular demand management measures. The following examples may be appropriate:

	Moderate	Serious	Severe
Groundwater Fed Streams	80% recharge over one winter refill season	70% recharge over 18 months	70% recharge over 2 years or 50% over 1 year
etc.			

Anecdote Box:

During January 1997 the Agency's Southern Region had two applications from water companies for Drought Orders/Permits. Both of these resulted in public hearings at which the need for, and proposed impact of, the authorisations was brought into question. Of particular significance was a representation from, and the presence of, the Yorkshire Wildlife Trust (YWT) who questioned whether an 'exceptional shortage of rainfall' had been experienced. At the first hearing (Permit) the applying water company were cross examined on this point by YWT, this proceeded to dominate the hearing leaving little time for many of the main environmental issues. A week later at the second hearing (Order) the DoE inspector whilst giving YWT the opportunity to substantiate their representation refused to let it be the main point of the hearing. In fact he refused to defer the hearing as YWT had requested.

In his judgement report on the Order hearing the Inspector stated "Much has been said about the lack of a clear definition of the phrase 'exceptional shortage of rainfall' and a request has been made that I recommend guidelines be produced. I do not propose to do so. The imprecise nature of the phrase permits the Secretary of State to use discretion in judging whether or not the terms of the Act have been met and a Drought Order is appropriate or not in each particular case. In my view, this discretion is important because of the many factors involved. The determination of a specific Drought Order application is not the vehicle for establishing major policy positions".

In both cases the applied for Permit/Order was granted. However, additional monitoring and contingency measures were taken by the companies by separate agreement with the Agency.

3.3

Long term planning

It is important that in all press releases and briefings that short term drought impacts and activities are separated from long term planning. During a drought demands can be managed by hosepipe bans and other restrictions and it is possible to increase leakage activity to make an impact on the quantities of water into supply. The reliability of groundwater sources can be improved by lowering pumps or deepening boreholes where test pumping or reassessment of yield characteristics shows it is worthwhile. Satellite boreholes can be drilled to provide additional security within an existing aggregate quantity but even these can take several months to complete.

Other short term initiatives include improvements to intake pumps, recommissioning of sources, increases in weir crest heights, infra-structure changes and reductions in minimum residual flows to allow more water to be taken.

4 LEGAL DUTIES AND POWERS

4.1 Introduction

The Environment Agency's drought duties and powers are detailed in the Water Resources Act 1991 and the Environment Act 1995. Appendix ? lists relevant sections of the Acts.

The Environment Agency has responsibilities to conserve, re-distribute or otherwise augment water resources in England and Wales and secure the proper use of water resources. This duty does not relieve any water company of its obligations to develop water resources as part of its general duty to develop and maintain an efficient and economical system of water supply within its area.

4.2 Application of general duties

ME to do.

The Agency's general duties, such as its responsibility to contribute towards sustainable development, its responsibility to take costs and benefits into account in applying its powers and its responsibilities to having regard to the needs of rural communities, all apply to drought management. The sustainable development duty is not considered to impact significantly upon drought policies as actions are aimed at furthering the aims of a sustainable environment. Later sections explain how the cost benefit duty applies to specific drought actions.

4.3 Enforcement

Abstracting water without a licence is usually an offence. During a drought the Agency will step up its enforcement and ensure licence conditions are adhered to.

Further details on enforcement are given in the Licensing Manual Chapters ??.

4.4 Drought Permits and Drought Orders

The Water Resources Act 1991 (as amended by the Environment Act 1995, which added a new s.79A to deal with Drought Permits - see also Schedules 8 & 9) allows for three mechanisms for dealing with drought situations: **Ordinary Drought Orders**, **Emergency Drought Orders**, and **Drought Permits**.

The pre-requisite for both Drought Orders and Drought Permits is an **exceptional shortage of rain**, and the lack of rain means that a **serious deficiency of water supplies** exists or is threatened. They can authorise abstraction from specified sources, and can modify or suspend restrictions or obligations relating to the (existing) abstraction of water from any source.

Ordinary Drought Orders can also be granted for **environmental reasons** ie. where the lack of rain poses a serious threat to flora and fauna dependant on affected inland waters.

Emergency Drought Orders may be granted where the deficiency is likely to **impair the economic or social well being** of persons in the affected area.

Ordinary and Emergency Drought Orders may go further than **Drought Permits**. They can deal with discharges of water, abstractions and discharges by other people (ie as well as the undertaker affected), supply, filtration, and treatment obligations. They can allow water companies to prohibit or limit particular uses of water. They can authorise the carrying out of associated works. **Emergency Drought Orders** can go further still: the water company has complete discretion on the uses of water that may be prohibited or limited, and they can authorise supply by stand-pipes or water tanks.

By contrast **Drought Permits** can only-

- Authorise a water undertaker to take water from specified sources.
- Modify or suspend restrictions or obligations to which that undertaker is subject relating to the (existing) taking of water from any source.

The "taking" of water in practice will usually mean abstraction but is widely defined in the legislation and includes the collection, impounding, diversion or appropriation of water. **Thus Drought Permits can, if appropriate, also authorise eg. temporary impoundments.**

Ordinary and Emergency Drought orders are granted by the **Secretary of State**. The **Agency** grants **Drought Permits**.

Chapter 12 of the **Licensing Manual** explains the **Drought Order** and **Drought Permit** process and how the **Agency** deals with applications. It also helps water companies judge when it is best to apply for a **Drought Order** rather than a **Drought Permit** and vice versa.

The non financial scheme of delegation currently states that with regard to the issue of drought permits, the appropriate Head of Function should sign in consultation with the **Regional General Manager**.

4.5 Water company legislation

Water companies are governed by the **Water Industry Act 1991**. Companies have a duty to develop and maintain an efficient and economical system of water supply. This covers providing supplies to people and maintaining, improving and extending the mains network.

A water company may impose temporary hosepipe bans covering watering of private gardens or washing private cars if it considers a serious deficiency of water available for supply exists or is threatened. A company has to give notice of the restriction and the date on which it will come into force, in two or more local newspapers. Legal advice is divided on whether metered customers, who pay by volume for water use can be exempted. The **Agency's** view is that all customers must be treated equally. Hosepipe bans are imposed because of a deficiency of water and garden watering is a totally consumptive major use of water during hot dry weather. If restrictions are required metered sprinkler users should also be restricted.

4.6 Powers to restrict water use and abstraction

Table ?? outlines the various powers available to the **Agency** and water companies.

Measure	Legislation	Who can apply Agency W.Co.		Powers	Duration	Criteria
Hosepipe Bans	Water Industry Act 1991		✓	Prohibition of use of hosepipes & garden sprinklers	Unlimited	Water company's power applied at their discretion
Ordinary Drought Order	WRA 1991 S73/75	✓	✓	Abstraction from existing licensed or new source. Modify obligations eg. comp releases discharges. Can be applied for on behalf of 3rd parties	Initial 6 months + 6 months extension	Exceptional shortage of rain and threatened or actual deficiency of supplies
Restriction of Use (ordinary) Orders	WRA 1991 S73 S73/76		✓	Prohibit or limit particular non-domestic uses of water (see DoE Guidance)	Initial 6 months + 6 months extension	Exceptional shortage of rain and threatened or actual deficiency of supplies
Emergency Drought Orders	WRA 1991 S73/75	✓	✓	As ordinary plus discretion on prohibition/limit of use (rota cuts & standpipes)	Initial 3 months + 2 months extension	Exceptional shortage of rain and serious deficiency of supplies likely to impair social and economic well being
Environmental Drought Orders	WRA 1991 S73 Environment Act 1995	✓	✓	Abstraction from existing licensed or new groundwater surfacewater sources. Modify obligations eg compensation	Initial 6 months + 6 months extension	Exceptional shortage of rain and deficiency in flow or water level posing a threat to flora and fauna
Drought Permits	WRA 1991 Environment Act S79A		✓	Abstraction from a specified source, modify or suspend obligations. Nothing else	Initial 6 months + 6 months extension	Exceptional shortage of rain and threatened or actual deficiency of supplies

Measure	Positive Aspects	Negative Aspects
Hosepipe Bans	Good demand side management message. Cuts peak demand and luxury use. Now associated with meters and general control of water use. Agency see as necessary precursor to further measures under most summer shortage conditions.	Bad PR for Water Companies. Effects unpredictable therefore not reliable in estimating amount of water saved. Unpopular with public. Poorly enforced. Discourages meters.
Ordinary Drought Order	Based upon sound strategy and contingency plans, can enable management of drought with minimum environmental detriment.	Impact of flow changes may be difficult to predict and quantify. Agency response to applications needs to be robust in examining needs and potential environmental effects.

Restriction of Use (ordinary) Orders	Good demand side management within Agency range of actions - positive message of concern over supplies. Limits non-essential use reducing pressure on essential supplies and potential environmental impact.	Limited impact on actual use and unpopular with business community. One-off reduction in demand.
Emergency Drought Orders	Very extensive powers eg, interruptions of supplies, standpipes where supplies seriously threatened. Will help to extend availability of dwindling essential supplies.	More likely to have environmental effects due to severity of circumstances. Social implications.
Environmental Drought Orders	Can be environmentally beneficial. Useful positive water conservation measure which doesn't compromise supplies. Agency can use to be proactive in carrying out its duties.	Potentially seen as Agency doing water company's job.
Drought Permits	Part of Agency's suite of drought policies and powers. Enables Agency to be proactive in promoting pre-permit conservation measures and any necessary environmental mitigation. Winter permits encourage supply recovery and reduce risk of orders/permits in following summer.	Restricted in their powers and cannot deal with discharges etc. Since granted by Agency must ensure process is transparent, and auditable, otherwise may be perceived as an extension of the water company.

4.7 Priority for water

The Agency does not have a priority list for water, although essential public water supply will take precedence over most other uses. It is not the responsibility of the Agency to decide the relative merits of priority of specific uses and to decide who should receive preferred treatment. The Agency's remit is to try to balance all needs including those of the water environment itself and to manage water resources in such a way as to achieve this.

4.8 Spray irrigation

The Agency may restrict or ban spray irrigation surface licences "by reason of exceptional shortage of rain". The same applies to groundwater licences if the abstraction affects river flows. All the licences from the same source of supply and not far distant from each other must be treated the same.

4.8.1 Legal basis for spray irrigation restrictions

Water Resources Act 1991. Section 57 defines the available powers and their use; in particular

- restrictions may be imposed "by reason of exceptional shortage of rain or other emergency",
- abstraction from groundwater may only be restricted if "abstraction is likely to affect the flow, level or volume of any inland waters" (refer to Section 33 for some exemptions),
- where there is more than one abstractor from the source, all should be treated equally.

Water Resources Act 1991. Section 33 defines the 'inland waters' which can be protected (it does so by defining exemptions), and

The Sprav Irrigation (Definition) Order 1992 defines those activities to be classed as spray irrigation for the purpose of restrictions (again by defining exemptions).

The reader should refer to the above before taking action.

5 PUBLIC WATER SUPPLY

The water companies have the responsibility to supply their customers with wholesome water. They have their own powers under the Water Industry Act 1991 to impose sprinkler or hosepipe bans if necessary and can seek Drought Orders under the Water Resources Act 1991 which allow tougher restrictions on the public use of water.

There is no prescribed sequence of water restrictions in a drought, but the usual procedure as a drought intensifies is to impose increasingly severe restrictions. Broadly the restrictions fall into three phases:

- i) precautionary measures eg publicity, use of winter Drought Orders
- ii) demand management measures eg hosepipe bans, restrictions on non essential water use and restrictions of industrial and agriculture abstraction
- iii) emergency measures eg pressure reductions, rota cuts and standpipes.

5.1 Water company applications for Drought Orders/ Drought Permits

The Agency expects water companies to develop and manage their water supply system to avoid the need for Drought Orders or Drought Permits which would significantly damage the environment during a period of severity for which the system was designed. Historically water resource systems have been designed to cope with droughts which could be expected to occur on average once every 50 or 100 years, but in the light of recent science this may have to be reviewed.

In exceptional circumstances, there is a legitimate need to seek Drought Orders or Drought Permits which allow more water to be taken for public water supply from surface waters and groundwaters. The frequency with which Drought Orders or Permits will be acceptable would depend on the type required. It is proposed that one in 20 years would be a possible guideline, subject to consideration of costs and benefits and sustainability issues in individual cases. However, this would depend on the willingness of water companies to impose restrictions at the same frequency and upon the severity of the drought.

In responding to applications for Drought Orders or Permits the Agency will seek to balance the needs of the water company against the needs of the environment. This will normally mean that the Agency will require the companies to apply restrictions on the use of water by their customers, if they seek extra water resources through a Drought Permit/Order. The Agency will be proactive in the lead up to such circumstances:

- in the first instance, the Agency will have worked with the companies in relation to their plans to provide adequate resources to meet the reasonable needs of their customers. In the interest of the environment the Agency is keen to ensure that water companies have adequate resources. Sometimes this will mean further work needs to be done to better manage existing resources but in some instances it may lead also to the need to increase water resources.
- however, if additional water is needed due to an exceptional shortage of rain the Agency requires/presses companies to:
 - take action when least environmental damage will occur, such as seeking Drought Orders in the winter;
 - locating sites for additional water where the minimum environmental damage will occur;

- include measures within their plans to mitigate the most serious impacts, such as increased monitoring of the environment, fish rescues etc.
- deploy measures which will reduce the amount of water needed such as increase attention to leakage, use of hosepipe bans, promotion of water conservation by users.
- where the Agency is not satisfied with water company drought plans or they are not being implemented in timely fashion, the Agency will notify the company that it will not support Drought Order or Drought Permit applications by the water company.

5.2 Hosepipe bans

The Agency has no powers to impose hosepipe bans. Water companies can if they are of the opinion that a serious deficiency of water available for distribution by that undertaker exists or is threatened (Section 76, Water Industry Act 1991). In practice they do so for a number of reasons:

- i) peak demands are so high that the distribution system cannot cope and demand needs to be reduced to avoid low pressure problems, service reservoirs going dry;
- ii) water resources are stretched and the company needs to reduce demands to ensure resources are maintained until groundwater levels or reservoir levels recover;
- iii) as a prerequisite to obtaining Agency support for a Drought Order.
- iv) to show "solidarity" with an adjacent water company during a severe drought;
- v) to gain good publicity for imposing restrictions that help benefit the environment if environmental damage is apparent;

For this last reason, the Agency needs to be proactive in identifying sites where problems are occurring and to demonstrate that a reduction in abstraction would benefit the environment. The Agency cannot insist that there should be a hosepipe ban.

5.3 Flexibility in abstraction

Linked to this are requests to the water company to reduce abstraction or move abstraction from one point to another if an environmental problem is being caused which could be rectified.

5.4 Drought management with water companies

Planning with water companies and other abstractors should be on a scenario basis including a "worst drought scenario" eg no further recharge of groundwater. The "plan for the worst, hope for the best" approach should help to ensure that the Agency and the companies are not caught unawares.

The Agency should have plans in order to ensure that timely and appropriate actions are taken by organisations who could make difference to the impact of a drought upon the environment.

This means that the Agency will need to seek drought contingency plans from the water companies, to make an assessment of their adequacy and to continue to monitor their actions against plans as appropriate.

Where companies do not provide the Agency with their contingency plans, or where the

Agency feels the plans are inadequate, the Agency should draw attention to this through press/radio/tv etc, Ofwat and DoE/Welsh Office.

There is a presumption that requests for information and responses to the water companies are recorded in writing. This helps to put our case for legislative change, should this be necessary.

The Agency should not share media platforms with water companies if it is purely to defend the position of the water company. Other situations are at the discretion of Regional General Managers. Joint use of the media needs to be carefully considered.

5.4.1 Agreements with water companies

Drought Orders and Permits make changes to existing licences or effectively become licences for the duration of the Statutory Instrument. These temporary arrangements can be enforced in the normal way. Any associated arrangements for monitoring and mitigation, however, are not usually included in the document itself but somehow must be read in conjunction with it.

The Agency is faced with the requirement to demonstrate, document, verify and audit arrangements which may need to change as the drought deepens or alters in its effects.

It is very important to bear in mind two essential, but apparently conflicting matters:-

- the Agency must act as an independent regulator.
- the Agency must maintain good communications and negotiate with the water company so that it is responsive to changing circumstances.

Once drought authorisations are being considered, the Agency should consider what conditions and arrangements must be in place to minimise their impact. Various methods have been employed. Like so many aspects of drought management, there is no one right way, although the Agency should aim to be consistent. Three methods are outlined which have achieved the objective of good management.

- **Section 20 Agreement.** This can be used effectively where certain operational actions need to occur unaltered throughout the term of the authorisation. One example is stipulating a regular compensation flow where one is normally absent. It is useful where the Agency knows exactly what it requires, where, when and how even though circumstances may alter. It could cover releases, sluice or intake operation for example. The DoE has included such requirements in Orders by indicating in its decision letter that they constitute a Section 20 arrangement. This gives them legal status by virtue of the Secretary of State's sanction should the applicant fail to comply. The major disadvantage to this approach is lack of flexibility as circumstances change. Don't use them unless a rigid framework for control is being sought, or use in conjunction with some other agreement.
- **Memorandum of Understanding.** This can be a detailed document drawn up through discussion and negotiation. It is signed by both parties, covers the understanding of operational requirements arising from the Order or Permit and remains in force for its duration. It can include everything from resource management to environmental mitigation and demand management.

It has proved very useful both during and after the application, to have such a summary of mutual agreement. For the Inspector at a hearing, the issue is what is under dispute between the parties. The process of drawing up schedules or memoranda makes it clear where actions are acceptable, subject to operational measures or still unresolved.

The great advantage of this route is flexibility. It is difficult and sometimes risky to prescribe an approach when the surrounding circumstances are unpredictable. This keeps lines of communication open.

Conversely, its legal status is limited. The Agency cannot enforce it per se and must rely on professional and media pressure should difficulties arise.

- **Exchange of Correspondence.** Where Orders are complex or affect a number of sources of supply it may be very difficult to draw up an MOU (especially at short notice). An exchange of letters between the Agency and applicant outlining the high level requirements and commitments will set the overall framework. The detail can be agreed subsequently but remember to document decisions, changes and deliverables. This approach offers more flexibility but potentially more room for latter disagreement once the pressure is off.

5.4.2 Balancing drought measures against drought severity

to be provided by CT.

5.5 The role of Ofwat

The regulation of water companies supply of water to their customers is the responsibility of Ofwat. The Agency has to "have particular regard to the duties of water companies" to supply their customers. The Agency will help to ensure that customers of water companies receive an adequate supply of water whilst protecting the environment. Where there is a serious threat to continued supplies which is likely to impair the economic and social wellbeing of society then measures could be necessary which could significantly impact on the water environment.

5.6 Long term planning

In the longer term, the Agency supports the twin track approach proposed in the DoE/Welsh Office report "Water Resources and Supply: Agenda for Action". This means that the first priority is to make the best use of the water resource schemes that have already been developed and to manage demands through leakage control, metering and water efficiency programmes before constructing new ones. In parallel, there will be some situations where it would be prudent to undertake the preparatory work which will be associated with a new water resource scheme. Not least among the reasons for this parallel activity is that major new schemes could well take twenty years or so to come to fruition. National water resource planning is an ongoing process that involves consideration of a range of water conservation and demand management measures as well as identifying possible new water resources schemes. These processes are not covered by this manual.

5.7 Planning techniques: The use of short and medium-term control curves

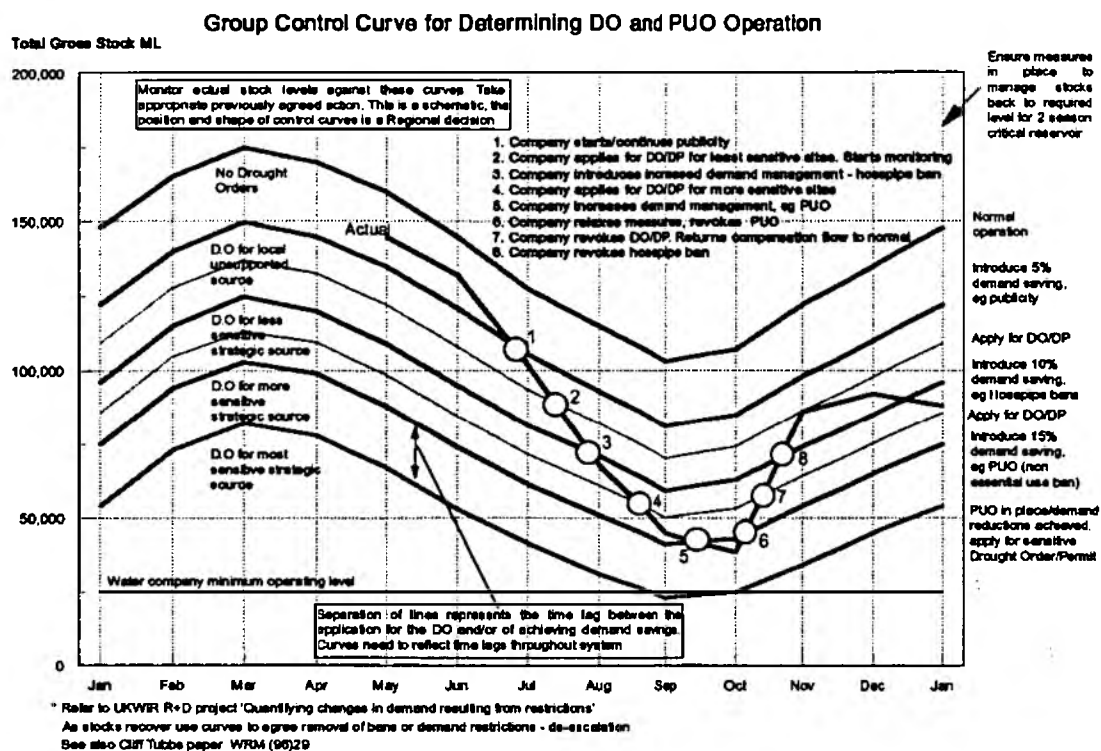
5.7.1 Purposes of short and medium-term control curves

Most reservoirs are operated using some form of control curves; these are usually designed to ensure long-term reliability, or to protect an ongoing requirement for water, such as recreational needs. However during the drought in the North West, medium and short-term control curves were also developed for a number of purposes. One of the most useful was to provide an objective way to introduce or remove restrictions (de-escalation).

As mentioned these were developed during the drought which was not ideal. Better would have been to agree them with the Water Company, well ahead of urgent need. The control curves provided an objective decision making framework which avoided controversy. They are recommended

5.7.1.1 Triggers for introduction/ removal of restrictions

A "puo" (prescribed use order) curve (a curve to help decide when to apply for a Drought Order to ban the non essential use of water) was agreed with North West Water in advance of summer 1996 (Figure x). It was based on combined storage in a representative set of regional sources, and was designed to indicate when a prescribed uses order should be in force. An additional curve was an indicator that major Drought Orders in the Lake District were necessary. Recognising that such mechanisms take time to put in place, trigger curves can be set at a higher level. The puo trigger level was set higher by 4 weeks' supply at the prevailing rate, to allow (optimistically!) for a public hearing and the Inspector's determination. A curve was also included at full system yield to indicate when conditions had returned to normal. In practice some leeway is desirable in order to avoid changing policy if a line is only temporarily crossed; however the curve was found by both sides to be a useful component of management plans and a valuable monitoring tool. A systematic development of this approach could result in a series of curves indicating the levels at which progressively more severe restrictions should be applied. These could either be operating restrictions or more public and political events such as hosepipe bans, puo, and ultimately stand-pipes.



Other uses of control curves are:-

- **Managing at reduced take**

Control curves can be derived to protect a variety of constant takes, which may well be less than the normal hydrological yield.

- **Impact of environmental minimum level**
(see also section **environmental minimum level)

This may mean a change in the active capacity of the reservoir, necessitating a new control curve.

- **Can special releases safely be made?**

New control curves were derived for Stocks reservoir during the drought to confirm that the current levels of take were sustainable if special releases were also made for 100 days. (The Dee in N. Wales has long-term special release rules to indicate whether flows can be increased for canoeing.)

5.7.2 Derivation methods for control curves

This section does not set out to provide detailed methodologies but rather to indicate the generic methods which exist. It is expected that each Region will develop its own specific detailed methods to suit its own technical requirements. Some examples are provided for reference

[Examples will include Wimbleball (but unidentified as such), Hanningfield, and Windermere]

Methods for control curve derivation include:

5.7.2.1 Special releases, environmental minima etc

A zone in the reservoir can be allocated on a permanent basis, ie the reservoir is effectively made smaller for water supply. Its size may vary seasonally if required. The same principle is operated in reverse to reserve empty storage for flood/snowmelt control. These allocations should all be done first, before calculating curves to protect supply based on the remaining active storage.

5.7.2.2 Trial and error

Define a curve, simulate your system over a long historic record, and modify the curve. Not recommended if you have a more objective alternative!

5.7.2.3 Drawdown curves

From a given starting point, for any defined take and inflow sequence, a drawdown curve can be calculated, giving a risk of failure. If an end-date for the drought is assumed, the process can be inverted to indicate what the storage needs to be on any given date to survive the drought. However this can be dangerous if the drought continues for longer than expected.

5.7.2.4 Refill curves

A target is defined, eg 95% full by 1st April. Required take and the inflow sequence are used to draw refill curves. If the storage is above curve, the target will be met.

5.7.2.5 Combined method

For direct supply NW use an automatic calculation method which calculates inflows for all durations (up to 60 months), giving a complete combined curve for both single and multi-seasonal reservoirs. This does not require any assumption about drought end-date, nor length of critical period.

5.7.2.6 Optimisation

For large systems with multiple operating criteria and a number of sources, optimisation is used to produce seasonally varying operating policies which maintain reliability (and minimise cost). In practice this would not be used in a drought unless it was in routine use already.

5.7.3 Points to consider

- What take is your supply curve designed to protect?
- Against what severity of event? eg worst historic, 1% exceedance
- Have you adjusted the active storage to reflect non-supply objectives?
- Could the system be multi-seasonal (this may depend on the take) and if so, does your method cope?

- Is the level of system aggregation appropriate for the intended use of the curve? The NW puo curve was designed as a management indicator, specifically so it was difficult to manipulate by changing operation. But for checking source reliabilities too much aggregation may give over-optimistic results.

5.7.4 Tools to help you

- Logic and common sense!
- BHS Occasional Paper no 1 breaks down derivation into logical stages. But many of these may not apply to your system, or may be inappropriate.
- Automatic derivation of combined curves - NW have a hydrologist-friendly pc-based package (PX) which will do this. There are plans to make it available soon on request.
- Optimisation - MOSPA from Water Systems Consultants has been extensively used in the Northwest. Not a drought panic measure!

5.7.5 References

1. NRA NW 1997 Introduction to PX
2. Lambert, A.O. 1988 An Introduction to Operational Control Rules using the 10-component method, BHS Occasional Paper no 1
3. BHS Occasional Paper No 4 gives an introduction to MOSPA and some other systems with control curves.
4. Smithers, H.A. 1997 (in prep) Control curves revisited. NW region.

*****refer to Thames ccs - BHS symposium?

5.8 Planning techniques: Planning for environmental minimum reservoir levels

Traditionally, the minimum level in a reservoir has been taken to be the "dead water" level, often that of the lowest drawoff. Experience during the '95/96 drought in Northwest England showed the value of a more multifaceted approach.

For reservoirs with Drought Order proposals, a number of zones were identified:

	Level	Zone	Comments
Increasing depth ↓	Agency Environmental minimum	Interruption to regional backup (say 2 days)	Many of these reservoirs were receiving substantial backup from regional sources, via temporary infrastructure. This allowance designed to cover short-term failure of eg pumps
		30 days compensation	May be at reduced rate under Drought Order
	Fish zero		Minimum level required to sustain reservoir fish population, taking into account water quality
		Dead water	typically below bottom drawoff to supply: May be accessible by opening scour valves, but likely to be very poor quality

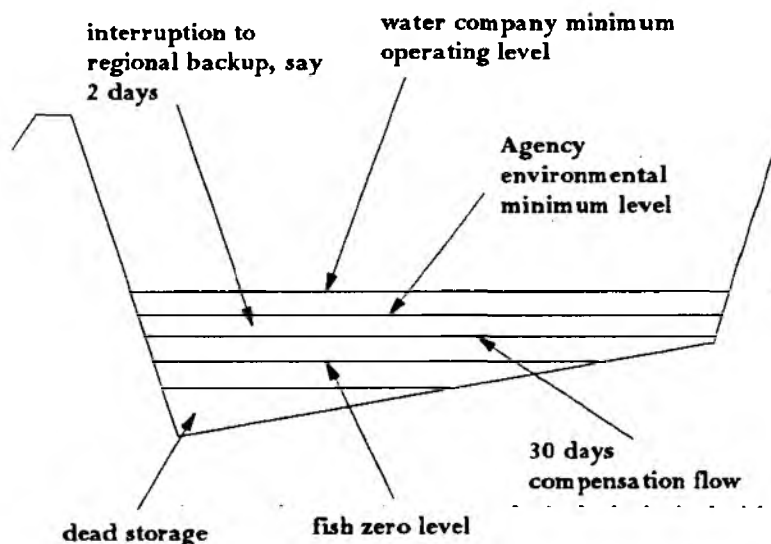
In this way an environmental minimum level was identified by allocating water to relevant uses. In most cases this turned out to be below the current NWW operational minimum, thus posing no conflict. Otherwise a condition of not objecting to a Drought Order proposal

would be the adoption of the Agency's environmental minimum level as the new operational minimum by the water company.

Ideally this approach should be adopted for all reservoirs (including compensation-only sources). Steps might include:

- Obtain level-storage relationship for the reservoir (may not be fully-known)
- Identification of bottom drawoff level
- Are there any fish/biota etc to protect?
- If so, what are their requirements for survival
- Calculate volume required to maintain say 30 days compensation
- Any other relevant features eg Agency concerns regarding supply reliability which might require allocation of water
- Add up all these requirements, convert to minimum level
- Compare with water company operational minimum. If Agency level is lower, no problem. If higher, negotiate with company.

It has been suggested that this approach could be used as a planning tool. Several of the steps identified above could indeed be carried out in advance. As written they refer specifically to a drought situation, for example referring to fish *survival*. More active management of environmental criteria in general may include seasonal variations in compensation water, and reservoir level management criteria to protect fish. These may well result in conflicts between different water uses. Progress in these areas should significantly reduce the need for Drought Orders and Permits. However in a drought there will always be a need to retain flexibility to respond to conditions at the time, and these criteria may need to be revisited.



As long as the total storage required for the above environmental needs falls below the Water Company minimum operating level there should be no problem. If the company minimum is below the Agency minimum then the water company is eating into the environmental safeguards and negotiations, for example as part of a Drought Order/Permit application, are required. All this should be planned when there is no operational difficulty.

5.9 Planning techniques: Groundwater scenarios

The Agency should be able to assess the problems which may arise resulting from low groundwater levels leading into a drought. Relative to surface water, the response of aquifers to drought conditions is slow. During these longer lead in times, predictions using groundwater models or recession analysis can be made. It is important to start any analysis early so that follow up work and contingency actions can be planned and implemented if necessary.

Consideration should be given to jointly undertake projects with water companies as they would form a framework for discussion/negotiation during later months.

Aspects to be considered should cover:

- groundwater levels resulting from different rainfall/recharge scenarios;
- comparison with low groundwater levels previously experienced (have we been here before);
- the impact of likely groundwater levels on yields, water quality, etc;
- identification and assessment of problems in vulnerable areas in terms of resource reliability;
- assessment of the likely impact on base flows and wetlands and ecology;
- assessment of different abstraction scenarios on the above;

Contingency actions which may be recommended to the Agency and water companies (not all are appropriate for the Agency) include evaluation of the potential for:-

- short term overdraw of aquifers;
- new source development, particularly satellite sources for the short term;
- control through use of leakage control, metering and water efficiency programmes, Drought Orders, hosepipe bans;
- spray irrigation restrictions;
- liberation of resources through the relaxation of quality control constraints;
- increasing resources through the introduction of additional treatment;
- reviewing the permissible 'hands off flows' within rivers and to estuaries;
- resting sources through the winter by using surface water sources to a greater extent;
- developing recharge schemes (not a short term option);
- reducing supplies to neighbouring regions/companies subject to their resources situation
- increasing supplies from neighbouring regions/companies subject to their resources situation
- increasing recharge through land use change or drainage network management

6 AGRICULTURE

6.1 Introduction

Although agriculture forms only a small percentage of the total licensed quantity for abstraction on an annual basis, spray irrigation is a particular problem because:

- the majority of the abstraction is concentrated into a very short period. Peak rates can be as high as the demand for public water supply on occasion;
- the peak demands occur when water resources are most scarce;
- little or no water is returned to the environment after abstraction, it is either consumed by crops or evaporates.

Use of water for the spray irrigation of crops is important to the farming industry as it provides increased quality and quantity (which is essential to maintain orders). Farmers require a reliable supply through the irrigation season and wish to avoid total bans. Farmers can help during periods of droughts by minimising their use of water.

6.1.1 Spray irrigation restrictions

In many regions a large number of licences contain 'hands off flow conditions'. These are built in clauses stating that abstraction must cease or be reduced, should a reference groundwater level or river flow fall below a threshold value. However, during exceptionally dry periods, reliance on this alone may not be enough as many of the older licences issued in the 1960's and 1970's do not contain such conditions. There may then be a need for further restrictions.

Under Section 57 of the Water Resources Act 1991, the Agency can restrict the taking of water for spray irrigation at times of exceptional shortage of rain in order to protect the environment or to conserve resources for the benefit of others.

6.2 Guidelines for identifying catchments where restrictions are required - Anglian Region

Elements of regional guidelines adopted in Anglian Region follow.

6.2.1 Purpose of the guidelines

- To help identify those catchments where continued abstraction for spray irrigation (from surface and/or groundwater sources) during drought periods will cause unacceptable damage to the water environment or affect the rights of other users.
- To enable any restrictions to be introduced in accordance with Section 57 of the Water Resources Act 1991 and justified in this context.
- To allow an appropriate balance to be made between the needs of irrigators, other abstractors and the environment.
- To identify problems in a timely manner so that any restrictions can be introduced in accordance with the Agency procedures identified in "Prospects for Spray Irrigation" or its equivalent, and in a framework which will allow irrigators and IDB's to take voluntary action in appropriate cases.

6.2.2 Objectives of spray irrigation restrictions

The objective of restrictions is usually to prevent environmental damage being caused by abstraction, where any such damage is over and above that which would occur naturally, and significant enough to result in a quantifiable deterioration in the characteristics of the river or wetland.

Water companies have powers to restrict irrigation through the use of Drought Orders. Practice in this region to date is that the Agency would normally look to companies to protect their own interests through the use of these powers, but would take action during a catastrophic drought to protect essential supplies.

6.2.3 Categorisation of rivers

Despite the caveats given above about the varying nature of our rivers, they can be categorised by physical and flow characteristics which determine their response to drought.

Ponded Rivers and Drains

Problems arise when losses from the river (either through abstraction for irrigation, slackers or natural seepage) exceed inflows. Restrictions are generally required to hold level, and in some cases a residual flow may also be required to control saline intrusion. Action during a drought should aim to maximise storage of water within the available freeboard and cut back consumption at the right time to maintain supplies for as long as possible by:

- liaison with IDB's and abstractors before the drought to establish principles, form embryonic self help groups, and agree a program of voluntary restrictions (for instance irrigation to be restricted to specified times with agreed rules for slacker opening),
- early warning (as per "Prospects for Spray Irrigation") to allow IDB's to build up levels at the start of the summer,
- Agency action to build up levels in highland carriers, including emergency works wherever appropriate,
- operational planning, during the drought but before the irrigation season, to put the agreed program into action, and
- management during the drought in accordance with the above with imposition of total bans only if voluntary action has not achieved the required saving.

Lowland Rivers and those fed by Confined Aquifers

Opportunities for water conservation and management are limited. There is little scope for self help groups and savings should be achieved through mandatory restrictions accompanied by good local liaison. Action should be based on flow triggers set at levels identified by experience that can cause problems. Caution is needed:

- on rivers where any need for action depends on the effectiveness of Agency support works (Ancholme, Witham, lower Glen, some reaches supported by GOGWS, Waveney, Stour, Blackwater),
- on rivers in the west with a high effluent component and some reaches with flora and fauna tolerant of very low flows (Bedford Ouse, Nene, Welland), and
- on the Broads which have unique ecology and amenity requirements.

Anecdote Box:

Trigger levels for some Chalk fed rivers have been based on the 95 percentile flow. When this is reached, notice is given for a 50% reduction in abstraction from licensed quantities. When the flow reaches half of the 95 percentile flow, notice is given for an 80% reduction in abstraction from licensed quantities. And so forth...

"Upland" Streams and Tributaries

These watercourses can recede rapidly during a drought and timely action is required if restrictions are to be introduced in time. Previous drought experience is important together with early liaison (in some cases it may be difficult to give 14 days notice). Opportunities for water conservation & management are limited and savings should be achieved through mandatory restrictions. Triggers for action are site specific.

Groundwater

It is anticipated that restrictions on abstraction from groundwater will only be required in the most exceptional circumstances and should be introduced if:

- aquifers are exceptionally depleted (in 1991 and 92 they were the lowest ever recorded),
- surface water restrictions have failed to produce the required savings,
- the situation is continuing to deteriorate,
- abstraction quantities are significant, and
- abstraction has a direct affect on river flows with a lag time of a few days (ie it will affect flows well within the current irrigation season).

Triggers for action will be similar to those for upland streams and tributaries. During the 1989-92 drought groundwater abstractors in central and northern areas volunteered to reduce abstraction to half of their normal annual entitlement in an attempt to save water for key times later in the season. This type of action should be encouraged.

6.3**Guidelines for imposing and enforcing spray irrigation restrictions - Southern Region**

All regions deal with the imposition of Section 57 restrictions in different ways. These vary as a result of unique water resource problems and customer liaison channels in each particular region. However, the legislation to be worked to is the same and therefore some attempt at consistency should be made. An example for consideration and input to best practice is the manner in which they are imposed and enforced in Southern Region. This is as follows:

Stages: (in ascending order)

1. Routinely monitor water resource situation, stepping up where appropriate.
2. Agency liaise with National Farmers Union (NFU) and key abstractors informing of worsening situation.
3. Prescribed flow conditions reached on licences tied to minimum residual flows. Initial restriction.

4. Two weeks before S.57 ban imposed the Agency notify NFU of intentions.
5. Agency determine which resource areas will be affected.
6. Write to licence holders informing them of being affected. Letter is formal 'notice' referred to in S.57 (2) of WRA. Letter includes:
 - Brief resume of WR situation and statutory obligations of Agency
 - Formal notice
 - Statement on type of restriction. This is normally an allowance to abstract only 50% of the remainder of the licence holders authorisation.
 - A returnable slip for completion of residual licence quantity available and revised authorised quantity for rest of season. This must be completed by the licence holder and returned immediately. Details to include meter readings.
7. Chasing up by licence inspectors/enforcement staff of slips not returned. Generally the process is self-policing as the onus is on the licence holder to return information if he wishes to continue to abstract.
8. Continued monitoring and enforcement of situation.
9. Notification to licence holders of lifting of restrictions when appropriate. Includes a thank you for their co-operation.

The key to the whole process is communication. Maintaining the customers confidence in the integrity of the Agency and the need to impose restrictions. This would apply to whatever method adopted.

6.4 Groundwater restrictions

Careful consideration should be given before applying restrictions on abstractions from groundwater. Abstraction from groundwater would not be seen in the environment for several weeks due to the dampening effect from the aquifer. If restrictions are to be applied, these should be brought in early in the season having had regard to the likely impact on spring flows.

to be completed: waiting for information from P.Sones

6.5 Checklist

- What is the time of year?
- Have we set "Prospects for Spray Irrigation" procedure into motion?
- If this is a groundwater drought we have long lead times and should concentrate on good local liaison before the irrigation season; it will save time and effort later.
- What is the crop pattern in the catchment and usual irrigation practice (beware - they change from year to year)?
- What happened during previous droughts; what were the critical triggers for action; what lessons were learned; has anything changed through time?
- What are the antecedent conditions (temperature, rainfall, evaporation etc)?
- What are the current conditions (ditto)?
- What are predicted future conditions (ditto) from any long term forecasts; irrespective of forecasts, are meteorological conditions stable?
- How low are levels in relevant aquifers?
- What are current river flows (levels in some cases); how do they relate to master recession curve?
- What is our best estimate of current daily abstraction; if we restricted or banned abstraction, what difference would it make to river flows?

- What is the maximum daily abstraction from the catchment (ie potential demand); what is the likelihood of it materialising?
- Is irrigation increasing or decreasing day by day (relates to time of year and crop pattern); can we buy time with interim voluntary measures?
- What other information is available; water quality, salinity etc; any trends which point to future problems?
- What are the physical signs of stress; fish kills; reports from the public, field officers etc?
- If there is a problem, what other causes might be contributing eg low level pollution, leaking gates, poor quality runoff?
- How serious is the problem; is it temporary; will the river recover; should we be prepared to live with the short term problem?
- Have all possible ameliorative measures been explored eg oxygen bubbling for low DO, temporary weirs to maintain pool level?
- What are the other losses from the river; can other abstractors help by reducing abstraction or changing their pattern of use?
- Are we making full use of transfers / augmentation, either formal or informal?
- Can we improve our river management; can other riparian owners help eg sluice & gate operation?
- Have we set voluntary self help schemes in motion; if we have, are they working; can they be improved; are they achieving the desired saving; can we limit abstraction further by voluntary measures?
- Is there a direct link between aquifers and river flows; is borehole abstraction contributing to the problem?
- Do proposed formal restrictions comply fully with Section 57 and the Spray Irrigation Definition Order?

6.6

Procedures for communication and implementation of spray irrigation restrictions

Various leaflets have been produced to advise the agriculture community on the procedures in each Region. The Anglian Region "Prospects for Spray Irrigation, Make Every Drop Count" explains the procedure for restrictions and the actions that irrigators can undertake to increase the efficiency of the use of water and make scarce resources go further.

In summary the procedures are a three stage process:

- **Initial Forecast of Prospects**
In late winter each year the Agency will issue a statement on the prospects for summer irrigation in the Region. As the situation develops, the Agency will increase dialogue with the agricultural community. Following on from this, further forecasts will be issued to abstractors in those areas likely to be at risk of water shortages later in the year.
- **Request for Voluntary Savings**
If restrictions appear likely, the Agency will issue a request for voluntary savings in areas most at risk. The request, where possible, will give farmers and growers two weeks' notice of formal restrictions. However, if circumstances dictate, the Agency may need to impose formal restrictions sooner.
- **Imposition of Formal Restrictions**
If monitoring shows that water levels, quality of flows are becoming critical, the Agency will impose formal restrictions. Where possible, they will be phased in but will increase in severity as resources become more scarce and the threat of

environmental damage grows. Total bans will only be used as a last resort. Spray irrigators who fail to observe them will be liable to prosecution and a fine.

These restrictions under Section 57 are independent of any restrictions that come into force as a result of conditions in abstractors licences.

6.7 Opportunity to promote winter storage reservoirs

The procedure of implementing restrictions often results in the opportunity to promote agricultural winter storage reservoirs.

As the problem stems from abstraction during the period when resources are most scarce, the Agency encourages irrigators to build storage reservoirs to hold water abstracted during the winter period when more water is available. Irrigators then have a supply which is more secure and which is exempt from restrictions and which is more environmentally friendly. Drought provides an opportunity to further promote their use.

6.8 Cost benefit duty with regard to irrigation restrictions

The Agency has a duty to take costs and benefits into account and to have regard to the needs of rural communities before applying restrictions. The following procedure illustrates the methodology to be used.

(to be completed) following completion of ongoing study by Silsoe College

6.9 Quality of water used for spray irrigation

The Environment Agency does not guarantee the quality of abstracted water. It is the abstractors' responsibility to ensure that the quality of water is suitable for the purpose intended. During droughts when river flows are low there can be an increased risk of poor water quality.

Anecdote Box:

Tomatoes in Essex

The following notice was approved by the Ministry of Agriculture, Fisheries and Food and now goes out with new abstraction licences:

Quality of water used for spray irrigation

All inland water can be subject to pollution of one kind or another and to differing degrees. Chemical pollution (including saline contamination) can be toxic to crops whereas bacterial, fungal, viral, or other microbial pollution may introduce plant disease into soils or organisms onto crops which can accelerate rotting and wastage.

Microbial contamination may cause human disease and there could be a public health risk if the crop is consumed raw.

Water quality varies both with the amount of polluting matters and with the flow of water available to dilute it.

It is very important, therefore, that you ensure that the quality of water from the source of supply to which your application relates is suitable for the use to which you intend to put the water, especially if the aerial parts of the crops can be consumed raw.

Advice can be obtained upon request from the **Soil Science and Microbiology Department of the Ministry of Agriculture, Fisheries and Foods**: contact should be made through your local Agricultural Advisory Officer.

A regional reminder may be appropriate during drought at the beginning of the irrigation season.

6.10 The role of internal drainage boards

to be completed: waiting for information from S.Wheatley

carrying out any of their functions as such an authority.

What is not currently clear, and particularly relevant during drought, is whether navigation companies/British Waterways, if claiming exemption from licensing under Section 26, have the power to exceed the quantities laid down in the more ancient legislation which set them up. It is believed that where water is being taken through an intake that was not set up as directed in the relevant Act, there would be a case, for insisting on there being an abstraction licence at that site.

It is felt that the navigation company/British Waterways must demonstrate to the Agency that they are entitled to take water without need of an abstraction licence and that by doing so they are not exceeding their powers.

7.3

Fish farms

CT to do.

8 ENVIRONMENT

8.1 Agency actions to protect the environment

To minimise the effect on the environment the Agency would firstly inform all holders of authorisations, in particular abstraction licences, of the likelihood of problems in the foreseeable future. This could be done by an effective PR campaign or routine liaison with licence holders, NFU and other outside bodies. The next stage would be the imposition of any restrictions the Agency considers necessary and is able to put in place. This would go some way to protecting the environment but further measures may be necessary.

Such measures may include the stepping up of water quality, land drainage, fisheries, navigation and conservation activity. For example, increased PR will initially raise public awareness and further measures may be required during the drought lifecycle. These could include:

- Operation of transfer schemes
- Ordinary 'environmental' drought orders
- Low flow alleviation
- Fish rescues
- Out of season sluice operation
- Penning of navigation levels
- Salinity monitoring for tidal ingress
- Opening of storm sewage overflows

These would be supported by increased monitoring for all functions of the Agency in local problem areas and on a regional basis eg. river habitat surveys for baseline conditions, ammonia sampling.

Any statutory emergency measures in a drought are limited for the Agency to those allowed under the Water Resources Act 1991.

8.2 Environmental monitoring

8.2.1 Background

During droughts there are three basic reasons for monitoring:

- to identify the impact of drought generally (including the rate of recovery and any permanent effect).
- to identify the impact or likely impact at sites affected by drought restrictions
- to provide data to form the basis of setting river flow objectives

The first question is mainly for internal use, as a sound bite for media interest. The Agency should pay particular attention to existing and potential environmental problems caused by the drought and needs to be proactive in putting them in the public domain.

The second is much more fundamental because it has become an increasingly technical issue at Drought Hearings. It has culminated in the rejection of a Drought Order on the River Lune in North West Region.

Anecdote Box:

The detail of the Lune hearing

For the Agency, where contingency plans could lead to the need for Drought Orders or Drought Permits for abstractions/reduce compensations, work should be initiated to set up environmental monitoring programmes. In order for monitoring to be established, the following procedure should take place:-

- water company to identify a list of possible sites where Drought Orders/Permits may be sought;
- Agency vets the list and agrees a final list;
- base line monitoring can take place following identification of indicator species and frequencies.

Water resources need to be prepared to fund and ensure that resources are made available to undertake the detailed studies that would be necessary to answer some of the questions.

8.2.2 Objective of section

To set out guidelines for coherent monitoring for environmental change due to drought.

Studies should be undertaken with the objective of being able to present a coherent case with respect to the likely impact of drought order imposed restrictions on the waters to which they apply. Areas where Drought Orders are important should be targeted at the very least.

If drought orders were applied for then a scientific rationale would exist as justification; if not then the data collected would act to answer the more general enquiries.

It will also be necessary to be able to predict the likely impact of flow reductions not only to help mitigate such effects but also to gauge their seriousness (costs) compared with the benefits to Public water supplies or, conversely, by not endorsing drought orders the costs to the Public water supply system compared with the benefits to the environment

predicted effects of flow reductions	cost to environment of reducing flows	benefits to environment of not reducing flows	costs to water company of not reducing flows	benefits to company of reducing flows
	support of river amenity vs support of reservoir amenity		alternative supplies, political costs of restrictions	public goodwill, deflect responsibility

8.2.3 Approach

The ideas developed from a practical perspective.

- where should monitoring be carried out
- when should it be done and once started at what frequency
- what parameters
- who should do it
- how should they do it
- how should it be reported.
- who should pay for it

The answers to the above questions are important because they could represent a huge investment of resource- perhaps with little payback if a drought were not to recur for several years although one approach would be to argue that the monitoring is not just for drought but for unexpected change generally which could be for land use change or pollution.

One key evaluation is to check how much monitoring is being done already. Some typical parameters are shown in Table..

Data may be held in many formats. Use of photographic evidence before, during and after is valuable.

Table x: Summary of data that may be held within the region.

Fishery data.	Fish Counter data Strategic Survey data Anglers Rod catch Returns Commercial Netting returns Anglers Log Book returns Migratory Fish Catch Stats Redd Count data Electro fishing survey data No of Dry Becks No of fish rescues carried out. Location and condition of spawning grounds
Ecology / Biology	Indicator species data Invertebrate data Macrophyte data Physical data River habitat survey data River corridor survey data Algal data Weed control Urban waste water treatment data Site constraints maps.
Water Quality	Routine sampling points data. Sensitive areas sampling data. Historic WQ logging stations Pollution incidents

Hydrometry (eg. Hydrometric Year Book)	Groundwater levels Aquifer data River level and flow data Rainfall data Catchment profiles Classification of gauging stations Temperature (Met Office) MORECS - soil moisture deficit etc. British Geological Survey /Institute of Hydrology monthly data
Licensing	Surface water abstractions Groundwater abstractions Licensed quantities Annual returns data

When should it be done and at what frequency is made difficult by the creeping nature of droughts or other change. You do not know when they have started until it is too late to start monitoring, yet you cannot monitor frequently all the time.

Some of the above issues are addressed in Table...

Where	<p>Water Resources Interests</p> <ul style="list-style-type: none"> • Sites with history of Drought Order applications by the water Company • Control sites (natural) • Sites likely to be subject to Agency Drought Orders • Sites with potential to be subject to Drought Orders • Sites stressed under normal conditions due to abstractions. <p>Water Quality Interests</p> <ul style="list-style-type: none"> • Sites associated with Treatment Works • Sites associated with Ecology routine sampling sites. • Down stream of major abstractions. <p>Fishery / Ecology</p> <ul style="list-style-type: none"> • SSSI / cSACs / SPAs • Salmonid rivers / Spawning grounds <p>Recreation</p> <ul style="list-style-type: none"> • Angling clubs • Sailing clubs • Where landscape may be impacted / Archaeology.
When	<p>Continuous monitoring for key sites. Frequency to be determined by parameters being monitored.</p> <p>Routine sampling for additional information at a lower frequency if adopting a blanket approach or more frequently if prioritising sites and catchments. May be influenced by seasonality and breeding periods.</p> <p>Frequency also governed by the expected impact , increase stress on catchment i.e. increase in frequency during Droughts.</p>

Who	Agency Staff (Acquisition and/ or collation of data from external sources) External consultants and Contractors i.e. IFE , IH , BGS. Others i.e. Fishing Associations, rambblers, other environmental groups (English Nature, Countryside Commission , RSPB), Water companies, industry, farmers.
What	NE document " guidelines for monitoring methodologies for water resources projects ". Standards on data requirements.
How	Build into functional work programmes. Bid for resources, financial and manpower. Seek contributions from external sources in partnership.
Reporting	Baseline information for key / all sites. Deviation away from baseline information. (Consider different ways of reporting) Information provided internally to Agency Staff nationally, externally to contributing external organisations. Changes in key indicator species Use GIS to effectively and efficiently disseminate information.

The recommendations which flow from this analysis are as follows:-

8.2.4 Checklist

- Establish what data is available, from whom, where and when, and its format.
- Generate list of key species which can be monitored.
- Establish harmonised sites for monitoring. This will not only produce useful data but move the agency towards an integrated approach to environmental monitoring.
- Establish key sites for monitoring, SSSI, SPAs, cSACs, as part of European designated sites.
- Coordinate works with other regions, i.e. sharing of methodologies and determinants.
- Use national E-mail to inform or be informed of other related environmental monitoring projects. Sharing of lessons learned.
- Review the NE Region document "Guidelines for the scoping and environmental assessment of Water Resources Projects", Volumes 1 and 2 (Copies attached). Establish if this methodology is appropriate to the Agency generally.
- Develop a GIS system which will capture spatial environmental data. (i.e. Countryside Information System).
- Ensure objectives of forthcoming R&D projects are widely circulated to ensure common knowledge.
- Ensure that outputs of area, regional and R&D projects are disseminated appropriately.
- Review the appropriate use of RIVPACS, PHABSIM, Micro Low Flows, and their suitability across the region for key sites.
- Review data held by external organisations to establish compatibility with Agency data, which may be used to supplement existing data, or infill gaps in data records.
- Produce a checklist of easily identifiable physical properties which could be identified measured on site, by all staff. i.e. when taking an ecology sample, the physical characteristics of the river at the time of sampling could be useful additional information.
- Need to reexamine existing long term data, cross functionally, to see what effects or

influences may be identified. This will help to establish existing key sites are potential new sites for future monitoring.

- Establish monitoring programmes which integrate functions so that sampling is coordinated and conducted within appropriate timescales.
- Establish a Regional GIS system which can present information gathered.

It is intended to retain a consultant to draw up an environmental monitoring action plan to synthesise the above into an active programme for North West Region.

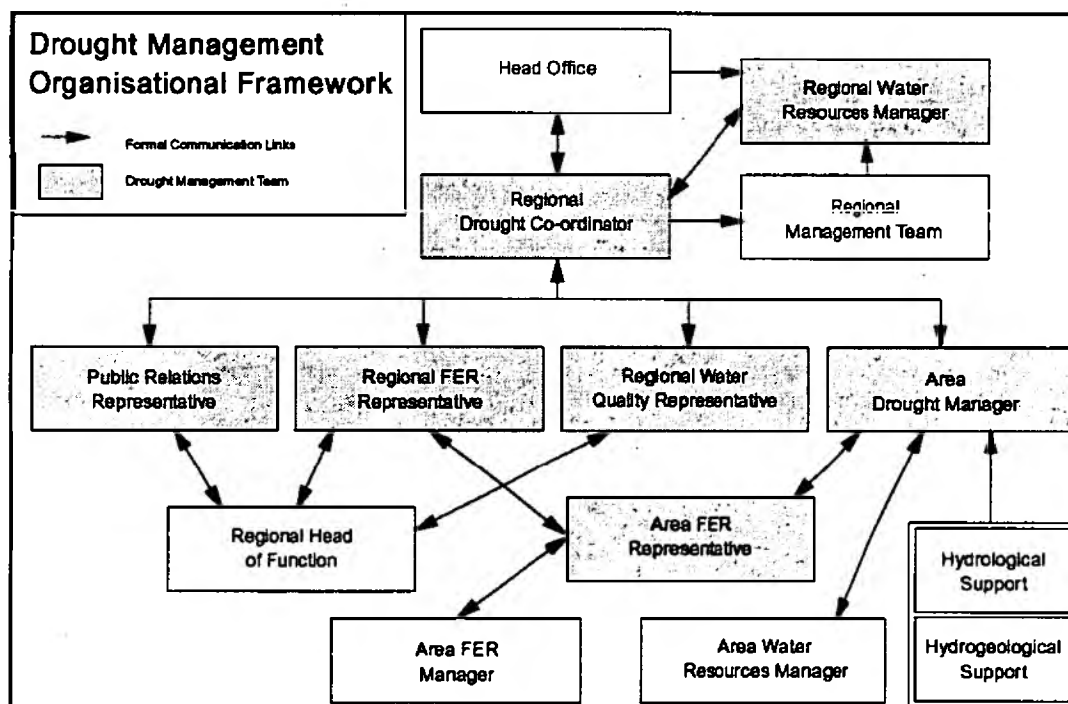
The output of that project will be available to draw on for generic approaches.

ORGANISATIONAL MODELS

There are many different organisational structures that enable a drought to be managed effectively. One common approach is the use of a drought management team which has the following key features:-

- area delivery (for spray irrigation restrictions in particular)
- functional representation
- region and area representation
- inclusion of a senior manager to steer the team
- appointment of drought co-ordinators responsible for the day to day co-ordination of drought management activities - one at region and one for each area
- inclusion of public relations and legal staff when relevant
- defined roles, responsibilities and linkages (particularly with external organisations)
- regular liaison meetings, increasing with frequency as the drought develops
- establishment of area drought teams on a similar basis if appropriate
- regular and frequent feedback to the wide range of stakeholders

The roles referred to in the following diagrams are not all substantive posts, they may be undertaken by staff who have other duties and responsibilities. The diagram below relates to the Anglian Region structure.



The main roles of each member of the drought management team are as follows:-

Regional Water Resources Manager

- to direct and approve regional drought management activities
- to translate national drought policies to a regional level

Regional Drought Co-ordinator

- to co-ordinate the regional drought management activities on a daily basis
- to act as the interface between Head Office and the region
- to act as the interface between the region and areas
- to liaise with external organisations on a regional level
- to act as the interface between internal functions at a regional level
- to provide regional information to the media

Area Drought Managers

- to implement drought related policies at a local level
- to act as the interface between the Agency and its customers
- to act as the interface between internal functions at area level
- to liaise with external organisations at a local level
- to provide local, site specific information to the media

Public Relations Representative

- to provide advice on public relations specifically regarding the content and timing of press releases and drought related literature
- to translate the national public relations strategy to regional level

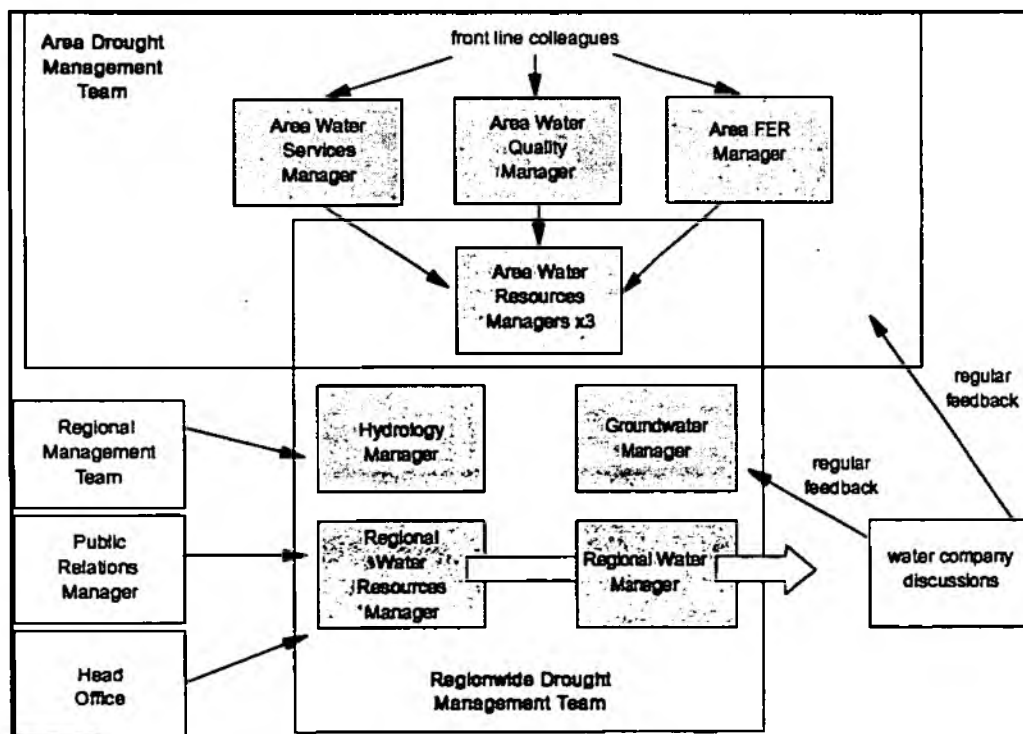
Regional and Area FER representatives

- to provide fisheries, ecology and recreation input to, and advise on, drought related activities
- to provide input to environmental monitoring programmes

Regional Water Quality Representative

- to provide water quality input to, and advise on, drought related activities

The following diagram relates to the approach adopted in North West Region.



Each regional drought management team links in with Head Office and the Drought Cabinet. The respective roles of each are as follows:-

Drought Cabinet

The Drought Cabinet is a sub group of the Board comprised of a Board member, Regional General Managers of the affected areas, the Head of Water Resources, the Director of Water Management and the Head of Corporate Affairs. Their role is to co-ordinate drought related activities on a national level and develop policy and national public relations strategy.

Head Office

- policy advice
- reporting to the Department of the Environment and Welsh Office
- consultation with Ofwat, the Water Services Association and the Water Companies Association
- lines to take with regard to public relations

An alternative approach is to manage the drought as a project through project management procedures although this may prove unwieldy and inflexible at the height of drought situations where rapid action is required.

It is recommended that the drought management team option is implemented in order to provide a strong co-ordination role. Appropriate elements of drought management such as drought planning and post drought monitoring could then be treated as projects in their own right.

In addition to the consideration of the organisation of a drought management team, the manager responsible for water resources should ensure that adequate cover is arranged during holiday periods and that use of temporary staff (consultants) is considered to maintain existing non drought workloads, particularly licensing.

10 COMMUNICATIONS PLAN AND PUBLIC RELATIONS STRATEGY

In order for drought management to be effective, a structured communications plan needs to be established. The plan should identify the steps to be taken for communication externally and internally. It should be produced as a region and cover local variations.

The Agency has to balance the demands from a number of abstractor groups with those of the environment and other users. It is essential that the right mix of messages are provided externally in order to reflect this balancing role.

The plan should be drafted by the public relations department in consultation with water resources well in advance of the visibility of drought impacts.

It needs to be a 'living document' in order to reflect the changing nature of plans and initiatives as the drought progresses.

10.1 Purpose

A public relations strategy should have a specific aim and identify what it aims to achieve. This should cover the following aspects-

- Raise awareness of the water resources situation and its likely impact on the environment.
- Manage potentially conflicting messages.
- Define the Agency's role and its position in relation to other organisations.
- Highlight the roles that individuals and organisations have in influencing outcomes.
- Encourage those individuals and organisations to take necessary actions to participate in alleviating problems.

10.2 Content of communications plan

The following headings may be used as a framework for producing a communications plan. The precise content will reflect Regional issues and the nature and extent of the drought in question.

- Objectives
- Key messages
- National issues
- Regional issues
- Local issues
- Positive action since the last drought
- Audiences, specific messages and actions
 - water companies, their customers and the public
 - farmers and agriculture
 - industry
 - environmental groups
 - local communities
- Conclusions
- Gantt chart for forward planning of actions

10.3 Key messages

The communications plan should incorporate the key messages associated with the drought. These may differ depending upon the extent, severity, duration and location of the drought. However, a few key messages are generic-

- Emphasis of the linkage between water use and the environment. The need for the public to be waterwise. Individual action can help to protect the environment.
- The Agency's role is to balance the needs of abstractors and other users with those of the environment.
- Drought is a natural event.
- Resources are stressed and that without good planning and management from both the Agency and others, problems may be encountered. A balance needs to be struck between scaremongering and building confidence in the public that a professional approach is being taken.
- The Agency undertakes the following in drought management
 - monitoring of rainfall, river flows and groundwater.
 - communicates the resources situation to stakeholders.
 - transfers water to augment resources, secure supplies and protect the environment.
 - imposes spray irrigation restrictions where necessary.
 - imposes navigation restrictions where necessary.
 - continues to press water companies to reduce leakage, promote metering, and develop drought contingency plans.
 - determines Drought Permits and is a consultee in the process of the determination of Drought Orders.
 - remediates, where within our powers, for example, pumps oxygen into waters where wildlife are suffering from low levels, or effects fish rescues where necessary but only as a last resort.
- Drought affecting surface waters and reservoirs is a highly visible phenomenon. Problems may also result from drought which affects less visible groundwater and wetlands.
- Actions undertaken since the last drought to mitigate problems.

Politics often dictate the nature of the approach to a situation. An individual should not make a unilateral decision unless they are confident and able to do so. A firm response should be made in the event of a decision, if not, state that "we will get back to you."

10.4 Key audiences

External audiences are covered under section 2.4. The following internal audiences should be considered-

- Functions at area and region including a public relations representative should be represented on the Drought Management Team.
- General staff should be informed of the key aspects through media such as team brief, staff magazines and Email bulletin boards.
- Regional Management Team should be appraised of the drought situation and drought management initiatives on a regular basis.
- Agency committee members (Regional Environmental Protection Advisory Committee, Regional Advisory Panel, Regional Fisheries Advisory Committee, Area Environment Groups etc.) should also be appraised of the drought situation and drought management initiatives on a regular basis.

- Standard reports should be prepared by regions and collated by Head Office to enable the Drought Cabinet, the Department of the Environment and others to be appraised of the national picture.

Consideration should be given to tailoring a standard set of words to meet each reporting requirement in order to minimise workload and to maximise consistency.

In addition to consideration of audiences, it is important to decide the purpose of the communication.

Is it to say "save water"?

Is it to shape opinion of the agricultural community?

Is it to comment on water company activities?

The Agency should not share media platforms with water companies if it is purely to defend the position of a water company. Other situations should be at the discretion of the Regional General Manager.

When the communication involves water company business, experience suggests that the Agency should wait for the company to take the lead and consider our message carefully.

Anecdote Box:

For much of the 1995/6 drought, North West Region were considerably reactive - on the advice of the public relations manager. Press releases were issued (which invariably attracted requests for interviews) only when North West Water applied for or were granted Drought Orders. It worked well. The one time when North West Region were proactive, and issued an advert off their own bat, encouraging people to save water, they were criticised for not also insisting that North West Water saved water too.

10.5 Proactive opportunities

Many activities planned by the Agency both nationally and regionally will provide opportunities to raise the awareness of drought issues, to publicise action being undertaken by the Agency and groups with which it is working in partnership, and to suggest actions that should be taken by the various audiences.

The timing of such messages can be pre-planned to tie in with milestones associated with drought management (eg. Initial Forecast of Spray Irrigation Prospects).

Some suggested actions include-

- Graphical representation of the resources situation (examples are given in **Appendix x**)
- Preparation of news releases and photo opportunities.
- Development of user specific literature (existing literature should be used and shared between Regions where possible).
- Marketing strategies for the distribution of literature.
- Preparation of trade and press articles.

- Preparation of display boards for shows and exhibitions (these can also be used reactively).
- Careful use of third parties to convey messages eg. priming TV weather forecasters with information.
- Use of the Internet.
- Preparation of a list of anticipated questions and answers on drought.
- Provision of speakers at internal lunchtime seminars.
- Provision of speakers at conferences and local groups (eg Women's Institute).

10.6 Reactive opportunities

In order to be in a position to respond quickly and effectively to media interest, it will be important for the Agency to be prepared in advance.

A list of prepared answers to anticipated questions, a short briefing note containing useful statistics (eg driest year this century) and punchy 'one liners' should be considered in order to prepare those who respond to such opportunities. The briefing notes should be updated frequently.

In addition, when a story reaches the press, a 'line to take' should be prepared in order to communicate an informed and consistent message.

Anecdote Box:

To be prepared by National PR.

Subject - line to take on hosepipe bans if gardeners grumble

10.7 Channels of communications with other organisations

In the planning stage prior to a drought, a list of stakeholders should be identified covering all aspects of water management. As a minimum it is suggested that contacts are established with environmental groups, and agricultural organisations in addition to water companies.

Regular and frequent liaison meetings with the key stakeholders are an important part of the communication process. These may need to be on several levels, for example at water resources officer level and at managing director level.

It is important that nominated contact points are made with external organisations whom communications should be channelled through in order to provide consistency and clarity. This may be with several individuals in an organisation, dependant on their responsibilities, for example with water company officers, and public relations staff.

Depending upon the frequency and urgency of communications, direct line telephone numbers, mobile numbers and fax machine numbers should be exchanged in advance. This is particularly important for operational aspects of drought management (eg. Agency transfer schemes where the water company is a beneficiary).

Requests for information from the Agency to other organisations should be made formally

where possible and filed appropriately to enable future reference and audit.

Information provision can take up a large element of drought management time. It is therefore essential to keep situation reporting to other organisations as concise and consistent as possible. Preparation of a standard weekly/monthly update which can easily be tailored to meet the needs of different user groups is advised. Information presented in a graphical format is particularly desirable.

10.8 Media training

The communications plan should address the requirements for basic, advanced or refresher courses in dealing with the media in order to ensure that there are sufficient staff, with appropriate technical expertise, able to undertake press, radio and television interviews, particularly in Area offices.

It should be ensured that staff are available, aware and informed of the situation. Selection of the right staff to deal with media enquiries is important, elements of both technical expertise and good personal skills are required. It is often useful to have one or two familiar faces which PR can use, the public can identify with and the press get to know.

The key points made in media training are included in Appendix xx.

DROUGHT REVIEW

Following a drought it is important that the lessons learned are recorded. After the drought has ended there is less of a momentum and staff are now faced with trying to catch up with the backlog associated with their normal job. A project at this stage would help to drive the review to completion.

Actions identified need to be approved by Regional Management Team and included onto revenue or capital programmes or they will be forgotten.

Pressure should be put on water companies where infra-structure could have prevented Drought Orders or prevented a 'threat to water supplies' in the first instance. It is important that water companies keep their promises made during drought negotiations. Some written agreement may be needed during drought negotiations themselves.

It is recommended that reports are completed which highlight the nature and extent of the problems encountered during the period. In particular FER staff should be able to identify environmental impacts in conjunction with external groups such as Wildlife Trusts, English Nature, in order to identify if and how water dependent sites were affected during the drought and how quickly they recovered after.

Further detailed accounts of prevailing hydrometric conditions, water transfers and catchment summaries of restrictions should be produced.

Operational manuals should be reviewed which should contain the following information where relevant.:

- monitoring
- establishment of drought management teams and areas of activity
- operation of transfer schemes and river support schemes
- communications plan
- triggers for abstraction licence conditions and irrigation restrictions

It is important for these spray irrigation restrictions that some form of market research is undertaken to see how farmers reacted to both the communication channels used and the impact of the restrictions themselves.

If monitoring over a period of years indicates that long term environmental impact is still occurring then a wholesale review of compensation flows, and in-river need allocations should be carried out. The Agency should review evidence of long term environmental impacts of both the natural low flows experienced and of any additional measures taken to conserve water supplies, eg by reducing compensation flow.

Lack of hydrometric data may identify where projects are necessary to bridge any gaps in the groundwater network, gauging station or rainfall station network.

There is also the need for management to recognise what has not been done and the impact on workloads, priorities and finances.

Managers should given proper recognition, not necessarily financial, for staff efforts during the drought.

APPENDICES TO BE ARRANGED IN ORDER

HANDLING PRESS INTERVIEWS

Never say 'No comment'

You'll sound as if you have something to hide and you may miss a valuable opportunity for positive publicity.

Be assertive

Remember, the journalist has come to you because you know something s/he doesn't. That makes you important. Don't let yourself be bullied.

If you get a phone call out of the blue, you have every right to ask for time to collect your thoughts and then call back. But don't forget the reporter does have deadlines.

If you're worried, use a tape recorder or Dictaphone to record your answers.

Check

- who you're talking to ... if necessary phone back
- whether it's news or features ... features may pass broader comment
- which publication they're from ... there could be a political slant to the story

Local reporters are more likely to be kind to you than national journalists because they'll need you again. Try and get to know individual reporters.

Prepare your facts beforehand

- have the facts at your fingertips - who? what? when? why? how? where?
- anticipate obvious questions and prepare answers. For example:

Good news: what are you proposing?
 why?
 who will benefit?

Bad news: what's gone wrong?
 why?
 who's responsible?

Decide on the main points you want to put across

Think how you can turn questions to your advantage. Summarise the points *you* want to make and work them into your planned answers.

Be prepared to brief the reporter

Unless s/he is a specialist correspondent, the reporter will almost certainly know less about your subject than you do. Take time to explain the story and its content.

Give comprehensive answers

In radio and TV what you say is what goes out ... more or less. Newspaper reporters can put words

in your mouth, or misunderstand what you say. Give comprehensive and unambiguous answers and correct misconceptions.

Give positive answers to negative questions

Anticipate unpleasant questions and think through all the *positive* things you can say about the situation. Never let a negative assumption go unchallenged.

Assume all you say will be reported

'Off the record' is a useful device for explaining the broader, possibly confidential, context of a story so the reporter keeps the story itself in proportion. But be very careful, unless you know and trust the reporter. To be safe, assume what you say *will* be published.

If you do go 'off the record', remember:

- don't say anything which will cause serious damage if it does get out
- don't alternate between on-and off- the record, reporters may forget which is which
- reporters may obtain the same information from another source

Beware the sympathetic approach ... everything you say is still being taken down.

Finally ... DON'T relax until the reporter has gone ... some of the best quotes come from a passing shot at the door.

THE RADIO INTERVIEW

You have a right to know:

- is the interview live or pre-recorded?
- are you the sole interviewee or one of a number?
- how will the material be used ... on its own or in a 'package'?
- if it's a package, who else is to be included?
- where and when will the interview be used?
- what's the area of questioning - don't expect a detailed list, you won't get one!

Make sure the interviewer knows:

- your name and position
- the essential facts
- what you're qualified to talk about and what you're not

Types of interview:

In the Studio

- 'head-to-head' with the presenter or a reporter
- as part of a discussion panel
- as a phone-in expert

'Down the Line'

As above, but you will be asked to make your contribution from an unmanned remote studio, or possibly the radio car.

By Telephone

The most frequently used technique in local radio.

Pre-recorded on location

The reporter comes to you with a portable tape recorder. If you are arranging the location try and find a room with curtains and soft furnishings to avoid the 'bathroom effect'. Be aware the reporter will want background sounds if possible.

HANDLING RADIO INTERVIEWS

Prepare your arguments

- have the facts at your fingertips - who? what? when? why? how? where?
- anticipate the obvious questions and thoroughly prepare your answers
- prepare the points *you* want to make - and make sure you do!

Aim to make 2 or 3 points only

What's the message you want to put across? Radio interviews usually last just three or four minutes. Slim your argument down to *two or three main points* only.

You may also be asked for a *clip* or *sound bite* - a 30 to 40 second summary of your main argument for use in news bulletins.

Make the most of your voice

In radio, *how* you say what you say is important. Speak clearly, and at a reasonable speed. Let your voice reflect the mood you want to convey.

Keep your arguments simple, concise and self-contained

Make sure your answers are simple and easy to understand. A radio audience has only one chance to grasp your meaning. Imagine you're talking to a bright child.

Keep your answers concise. You'll be able to pack more information in, and there's less chance your interview will need to be edited.

Make your answers self-contained, eg:

Q:	"What did you have for lunch?"	NOT	Q:	"What did you have for lunch?"
A:	"For lunch I had sandwiches"	A:	"Sandwiches"	

It helps prevent your answers being used out of context.

Avoid jargon

A general audience won't understand specialist words or concepts:

- use everyday words instead of specialist words
- use everyday analogies and examples to illustrate specialist concepts
- avoid discussion of procedures ... the audience just wants to know the end result!

THE TELEVISION INTERVIEW

You have a right to know:

- the general area of questioning ... but don't expect a list of questions!
- what programme?
- location or studio?
- live or pre-recorded?
- who else is being interviewed?
- how much air time will you have?
- will anyone be appearing with you?

Type of interview:

Location

Usually, you will be asked to pre-record an interview with a film crew and a reporter. More rarely, the location interview may be 'live', using a mobile outside broadcast van.

The crew will want to film you against a suitable backdrop, and will also need shots of you and what you do. Allow ample time, and try to be patient.

Look at the reporter, not the camera.

Studio

Both the BBC and ITV may ask you to do a 'down-the-line' interview from a sub-studio; or you may be asked to do a 'live' (or 'as live') interview with the presenter in the main studio.

In a 'down-the-line' interview your only contact with the interviewer will be through an ear piece. Look at the camera unless told otherwise.

CRISIS MANAGEMENT

Preparation

Inevitably, a crisis will happen one day. Prepare in advance:

- anticipate likely crisis situations
- select a press spokesperson, preferably one with a good 'bedside manner'
- set up efficient lines of communication

In a crisis the PR department will field calls, arrange press conferences and corral, feed and water the journalists. But you're the person journalists will want to interview:

- give the press something to chew on as soon as you can
- issue regular updates as soon as more information comes in

In the interview

- try to sound confident, concerned and authoritative
- give as much information as you can, but don't bare your soul
- always emphasise *positive* aspects of the situation
- be politely assertive, and don't be bullied!

Handling the unexpected

In a crisis you may be pounced upon, or 'door stepped', by the journalist 'rat pack'.

This can be intimidating. Stay calm, and take the initiative in imposing order on the chaos around you. You may be surprised how readily journalists respond to a little discipline — The following tips will help:

- insist on taking questions one at a time
- ask each journalist to identify him/herself
- offer quotable reassurances
- stress remedial action taken
- try and sound calm and positive

HANDLING TELEVISION INTERVIEWS

Make the most of how you look and sound

Like it or not, the image you project is important in television:

- use your voice to its best effect: speak clearly and naturally
- keep your attention on the interviewer. Resist the temptation to look away or avoid eye contact - you'll look shifty!

Wear smart but comfortable clothes. Avoid:

- very light colours, they may make you look fat
- very dark colours, they make you look severe
- 'busy' patterns, like a fine dog tooth check, they strobe and pulsate
- fussy accessories which will distract the audience
- sunglasses or *Reactalite*™ spectacles, they make you look sinister

Prepare what you want to say

What's the message you want to put across? Television interviews usually last just two or three minutes. Slim your argument down to *two or three main points* only.

Keep your answers simple, concise and self-contained

A television audience gets only one chance to absorb your message. Keep it simple and easy to understand. Avoid jargon, and use everyday analogies or examples to explain complicated ideas.

The reporter will often be looking for a *sound bite* of 25 to 40 seconds long. Try and keep individual answers to that length.

Make your answers self-contained. It helps prevent your answers being used out of context, eg: Q: "What did you have for lunch?" A: "For lunch I had ...".

RADIO AND TELEVISION INTERVIEWS KEY POINTS

DO:

- Find out what type of interview.
 whether its live or pre-recorded.
 who you're up against.
 where, when and how the interview will be used.
- Keep it simple make just two or three main points.
- Voice use pitch, tone, speed and emotion to keep the listener interested.
 Enthusiasm is catching!
- Appearance maintain eye contact with the reporter or camera. Avoid distracting clothing
 or personal accessories.
- Answer the question! But turn it to your advantage. Always emphasise the positive
 aspects of the story.

DON'T

- Say 'Good morning everyone', or talk about the audience as if s/he isn't there.
- Read scripted answers, though notes can be handy in radio.
- Get complex long explanations lose the listener.
- Use jargon it'll lose or annoy the listener.
- Waffle the audience will see through it.
- Get annoyed keep cool.
- Worry everyone wants you to sound and look your best - it makes better
 broadcasting!

APPENDIX ? LEGAL DUTIES AND POWERS

Environment Agency duties and powers

The legal duties and powers are set out in the Environment Act 1995 (EA'95) and the Water Resources Act 1991 (WRA'91). Key elements are summarised below.

Remember if you really need to know the law, read the Act or ask a lawyer.

General Management of Water Resources

The Agency "must take all such action as it may ... consider ... necessary or expedient for ... conserving, redistributing or otherwise augmenting water resources " ... and of securing their proper use.	EA '95 6(2)
The Agency's prime concern is to protect the environment. It must exercise its powers so "as to further the conservation of flora, fauna and geological or physiological features of special interest" and "take into account any effect which proposals would have" on the above.	EA'95 7
In addition the Agency must "generally promote ... the conservation and enhancement and natural beauty ... and the conservation of flora and fauna which are dependent upon an aqua environment".	EA'95 6(1)

Drought orders and drought permits

The Secretary of State may make ordinary drought orders if "by reason of an exceptional shortage of rain, a serious deficiency of supplies of water exists or is threatened "	WRA'91 73(1)
In the 1991 Act, drought orders could only be justified by "a serious deficiency of supplies of water ..." The ambiguity as to whether this included 'supplies' for the environment is now resolved by adding to Section 73(1):- "or (b) such a deficiency in the flow or level of water in any inland waters as to pose a serious threat to any of the flora or fauna which are dependent upon those waters ".	EA'95 Schedule 22 Para 139
The Secretary of State may make emergency drought orders , if the deficiency is bad enough to " impair the economic or social well being of persons ... "	WRA'91 73(2)
Secretary of State can <u>only</u> make drought orders if asked to by the Agency or a water company.	WRA'91 73(3)
Schedule 8 sets out the mechanics of drought orders	WRA'91 73(4)

<p>The Agency can ask for ordinary drought orders authorising:</p> <ul style="list-style-type: none"> a) the Agency or others to abstract b) the Agency or others to discharge c) the Agency to prohibit or limit abstractions which "would seriously affect supplies ..." d) modification of conditions on any <ul style="list-style-type: none"> i) abstractions ii) discharges iii) supply of water (quantity, pressure, quality etc) iv) water treatment e) the Agency to modify any discharge consent conditions. 	WRA'91 74(1)
<p>A water company can ask for ordinary drought orders authorising:</p> <ul style="list-style-type: none"> a) it to abstract b) it to prohibit or limit water uses; but only those specified by the Secretary of State for restriction by ordinary drought order c) it to discharge d) the Agency to prohibit or limit abstractions which seriously affect its supplies. e) prohibition or limitation of the Agency's abstractions which seriously affects its supplies. f) modification of conditions on its: <ul style="list-style-type: none"> i) abstractions ii) discharges iii) supply of water (quantity, pressure, quality etc.) iv) water treatment g) the Agency to modify any discharge consent. 	WRA'91 74(2)
<p>Ordinary drought orders last for six months, and may be extended for a further six months.</p>	WRA'91 74(3-4)
<p>The Agency can ask for emergency drought orders authorising the <u>same</u> provisions as for ordinary drought orders.</p>	WRA'91 75(1)
<p>A water undertaker can ask for Emergency Drought Orders authorising:</p> <ul style="list-style-type: none"> a) the same provisions as for ordinary drought orders. b) it to prohibit or limit any use of water. c) it to supply by stand-pipes or tank. 	WRA'91 75(2)
<p>Emergency drought orders last for three months and may be extended for a further two months.</p>	WRA'91 75(3-4)
<p>Secretary of State can specify the manner in which emergency drought order powers are exercised.</p>	WRA'91 75(5)
<p>Restrictions must be publicised, and be subject to at least three days notice.</p>	WRA'91 76(1)
<p>Secretary of State can change ordinary drought orders restricting water use.</p>	WRA'91 76(2-4)

Orders affecting inland navigations can include knock-on provisions restricting abstractions or discharges from them.	WRA'91 77(1)
Where water undertakers are granted drought orders authorising the Agency to vary abstractions or discharge consents for their benefit, the Agency must do so "so far as reasonably practical" such that the undertakers' supplies are not seriously affected.	WRA'91 77(3)
Abstraction charges apply to drought order abstractions.	WRA'91 77(4)
Water undertakers may impose knock-on modifications to trade effluent agreements.	WRA'91 77(5)
Drought Orders can authorise emergency works by the Agency or by water undertakers, including powers of entry etc, subject to 24 hours notice.	WRA'91 78
Schedule 9 specifies payment of compensation arising from Drought Orders	WRA'91 79

Schedule 22 of the EA'95 extends Section 79 of the 91 Act to authorise the Agency (<u>not</u> the Secretary of State) to issue water undertakers with drought permits , making "such provision ... as appears to the Agency to be expedient with a view to meeting the deficiency" of supplies.	EA'91 Schedule 22 Para 140
Permits may either authorise unlicensed abstractions, or modify licence conditions.	EA'91 Para 140(2)
They expire after at most six months , but can be extended up to a year	" " (4) " " (5)
Navigation authorities must be consulted where relevant.	" " (6)
The procedures for drought permits are the same as for drought orders, except that the Agency plays the role of the Secretary of State, ie it allows a quick fix in an emergency - but <u>only</u> if that emergency is due to exceptional shortage of rain.	" " (7)
Drought permit water is chargeable as though it were licensed.	" " (8)

Miscellaneous provisions relevant to droughts

Rights to Abstract Small Quantities

5m³ one off abstraction exempt. 22m³ one off abstraction exempt, if with Agency consent. Up to 20m ³ /d exempt for domestic use for any source, and for agriculture (non - spray) from surface water only. These are protected rights and the exemptions extend to sinking boreholes and installing pumps in them.	WRA'91 27(1) WRA'91 27(2) WRA'91 27(3-5)
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Emergency Variation of Spray Irrigation Licences

The Agency may, by notice, restrict or ban spray irrigation surface licences "by reason of exceptional shortage of rain or other emergency".	WRA'91 57
The same applies to groundwater licences, but only if the abstraction affects river flows.	WRA'91 57(3)
All the licences from the same source of supply not far distant from each other must be treated the same.	WRA'91 57(4)

Water Company Legislation

Water Industry Act 1991

<p>It is the duty of every water undertaker to "develop and maintain an efficient and economical system of supply" and to ensure arrangements have been made to:</p> <ul style="list-style-type: none">- provide supplies of water to premises in the are and make supplies available to people- maintain, improve and extend the water mains and other pipes.	WIA'91 37(1)
<p>If the water undertaker is of the opinion that a serious deficiency of water available for distribution exists or is threatened, the undertaker may for such period a it thinks necessary, prohibit or restrict, as respects the whole or any part of its area, the use for the purpose of:</p> <ul style="list-style-type: none">-watering private gardens- washing private cars <p>of any water drawn through a hosepipe or similar apparatus.</p>	WIA'91 76(1)
<p>The water undertaker shall give notice of it and the date on which it will come into force in two or more newspapers circulating in the locality.</p>	WIA'91 76(2)
? OTHERS	