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Draft drought plan for South West Region

SUMMARY	2
1 PURPOSE	2
2 DROUGHT MANAGEMENT IN SOUTH WEST REGION	3
BACKGROUND INFORMATION ON THE REGION	3
2.1.1 PUBLIC WATER SUPPLY IN THE REGION	3
2.1.2 DROUGHT ISSUES IN THE REGION	4
2.2 REGIONAL DROUGHT TEAM ROLES AND RESPONSIBILITIES.....	8
2.2.1 ADMINISTRATION.....	9
2.3 RESPONSIBILITY AND INVOLVEMENT IN DECISION TAKING	12
2.4 RESOURCING	12
2.4.1 COST RECOVERY	13
3 DROUGHT MONITORING	13
HYDROMETRIC MONITORING AND REPORTING	13
ENVIRONMENTAL MONITORING AND REPORTING	14
MONITORING INFORMATION FROM WATER COMPANIES.....	14
3.4 WATER COMPANY ENVIRONMENTAL MONITORING.....	15
3.5 OTHER MONITORING	15
4 DROUGHT ACTIONS AND TRIGGERS.....	15
5 DROUGHT PERMITS AND DROUGHT ORDERS.....	18
WATER COMPANY DROUGHT PERMIT AND DROUGHT ORDER APPLICATIONS.....	18
5.1.1 WATER COMPANY DROUGHT PERMIT APPLICATIONS	18
5.1.2 WATER COMPANY DROUGHT ORDER APPLICATIONS.....	19
ENVIRONMENT AGENCY DROUGHT ORDER APPLICATIONS	21
6 DROUGHT COMMUNICATIONS.....	22
EXTERNAL COMMUNICATIONS	23
6.1.1 REGIONAL DROUGHT INTERNET SITE	24
6.2 INTERNAL COMMUNICATIONS	24
6.2.1 REGIONAL DROUGHT EASINET SITE	25
7 REFERENCES	25
APPENDICES	28
APPENDIX 1 – DROUGHT ACTIVITIES MATRIX FOR SOUTH WEST REGION DROUGHT TEAM	29
APPENDIX 2 - DROUGHT LOG SHEETS	31
2.1 TEMPLATE: DROUGHT KEY DECISIONS & ACTIONS LOG	31
2.2 TEMPLATE: DROUGHT RISK LOG	32
2.3 TEMPLATE: DROUGHT ISSUE LOG	33
2.4 TEMPLATE: LESSONS LEARNT LOG	34
2.5 TEMPLATE: DROUGHT RELATED CALLS LOG	35
APPENDIX 3 - NEECA AVAILABLE CONSULTANT SERVICES.....	36
APPENDIX 4 - EXAMPLE MONTHLY HYDROMETRIC REPORT.....	37
APPENDIX 5 - DROUGHT COMMUNICATIONS PLAN	39
TABLE 1: EXTERNAL COMMUNICATIONS ACTIONS FOR SOUTH WEST REGION DROUGHT TEAM	40
TABLE 2: INTERNAL COMMUNICATIONS ACTIONS FOR THE SOUTH WEST REGION DROUGHT TEAM.....	43
5.1 GENERAL FREQUENTLY ASKED QUESTIONS & ANSWERS	45

Summary

The contents of this plan tell you how we will plan for and manage drought in the South West Region of the Environment Agency. It sets out:

- the Region's drought management structure;
- the drought monitoring that will be undertaken by the Regional Drought Team;
- the drought management actions that the Regional Drought Team may need to take and the triggers for these actions;
- how the Regional Drought Team are involved with drought permit and drought order applications;
- the Region's drought communications actions;
- how the Region will report on drought.

1 Purpose

A drought is a natural event that we cannot prevent. If a drought is likely, we work with water companies and others to reduce the effects on people and the environment.

This document sets out the measures that the South West Region Drought Team will take to plan for and manage droughts. It should be read in conjunction with the South West Region's Area drought plans. The South West Region Drought Team covers Cornwall, Devon, Somerset, Dorset and parts of Wiltshire, Hampshire and Gloucestershire. It includes the cities of Truro, Plymouth, Exeter Bath, Bournemouth and Bristol.

The drought plan's main aims are to:

- give a structured and flexible framework to deal with droughts of different types (for example, groundwater or surface-water) and severity;
- set out a system of monitoring and reporting to identify and track the onset and progress of drought.

2 Drought management in South West Region

Background information on the Region

The South West Region is the largest region in England and the most rural. It has the most agricultural land with 80 percent of the land area under agriculture.

Devon and Cornwall are characterised by high moorlands and steep river catchments. Many of the river systems drain from the moorlands of Bodmin, Exmoor and Dartmoor. The largest river systems in Cornwall and Devon are the Tamar and the Exe. On the border of Devon and Somerset are the Blackdown Hills and in the north and east of the Region are the hill ranges of the Quantocks and Mendips. The Somerset Levels are one of the largest areas of low lying wetlands in England. The largest river system in the north is the Bristol Avon. In the south east of the Region are the chalk landscapes with uplands such as Salisbury Plain and broad river valleys and extensive water meadow systems. The largest river system in this area is the Hampshire Avon.

The hydrogeology of the Region is highly variable. Cornwall is dominated by hard impermeable granite intrusions into old deformed, sediments with no major aquifers. Devon is similar in geology to Cornwall but this geology gives way to permeable sandstones as you move further east in the county with the permo-triassic sandstone aquifer of the Otter Valley and breccia of the Dawlish Area. In the north of the Region there is the jurassic limestone aquifer to the east of Bristol and the carboniferous limestone aquifer of the Mendip Hills. In the south east of the Region in Dorset and Wiltshire are the upper greensand and chalk aquifers.

Rainfall across the Region is highly variable with Dartmoor, Exmoor and Bodmin Moor receiving on average between 1381 and 2584 millimetres (mm) of rain a year, whereas the east of the Region has on average less than 840mm of rain a year.

2.1.1 Public water supply in the Region

There are 6 water companies that supply water in the Region as detailed below.

- South West Water supply Devon and Cornwall and some areas of Dorset and Somerset. They operate three large strategic reservoirs, Colliford, Roadford and Wimbleball (shared with Wessex Water) which release water to support downstream river flows and subsequent abstraction. These sources are supported by a number of other smaller reservoirs and surface water abstractions. The most significant groundwater abstractions are from the Otter Valley in East Devon and the Dawlish Area just west of Exeter.

- Wessex Water supply Dorset, Somerset, most of Wiltshire and small areas of Gloucestershire and Hampshire. They obtain most of their water from groundwater sources, especially the chalk and limestone in the east and north of the Region. They also have a number of small reservoirs in Somerset including Clatworthy and Sutton Bingham.
- Bristol Water supply the city of Bristol and the area within approximately a 20 mile radius of Bristol. Their largest source of water is from the River Severn via the Gloucester Sharpness Canal. The company reservoirs at Chew, Blagdon and Cheddar are also important sources with the remainder of the supply for the company being made up from a number of groundwater and other surface water abstractions.
- Bournemouth and West Hampshire Water supply Bournemouth, part of East Dorset and West Hampshire. They are largely dependant on direct surface water abstractions from the Hampshire Avon and River Stour, with some bankside storage and some smaller groundwater sources.
- Cholderton and District Water supply an area of approximately 21km² on the Wiltshire/Hampshire border. They rely on a main borehole supported by a standby borehole in the chalk aquifer.
- Thames Water supply water to an isolated area on the edge of Salisbury Plain from the chalk aquifer.

Abstraction by both Wessex Water and Bournemouth & West Hampshire Water from the Hampshire Avon is currently under review. This review is being led by the Environment Agency in relation to its impact on the Hampshire Avon Special Area of Conservation and Special Protection Area.

The operation of three of Wessex Waters' sources in the Piddle (Alton Pancras source), Wylye (Chitterne source) and Malmesbury Avon (Cowbridge source) catchments are subject to a Statement of Intent signed by Wessex Water, Ofwat, The Environment Agency and English Nature. The Statement of Intent supported by an operating agreement, details a series of phased actions that will be taken to minimise the impact of the routine (non drought) operation of these three specific sources on the environment. At the end of 2007 the effectiveness of these actions will be determined. It is expected however that in the event of drought, these sources will need to be used in accordance with their licensed quantities to maintain adequate public supply. For further details please contact the Regional Drought Co-ordinator.

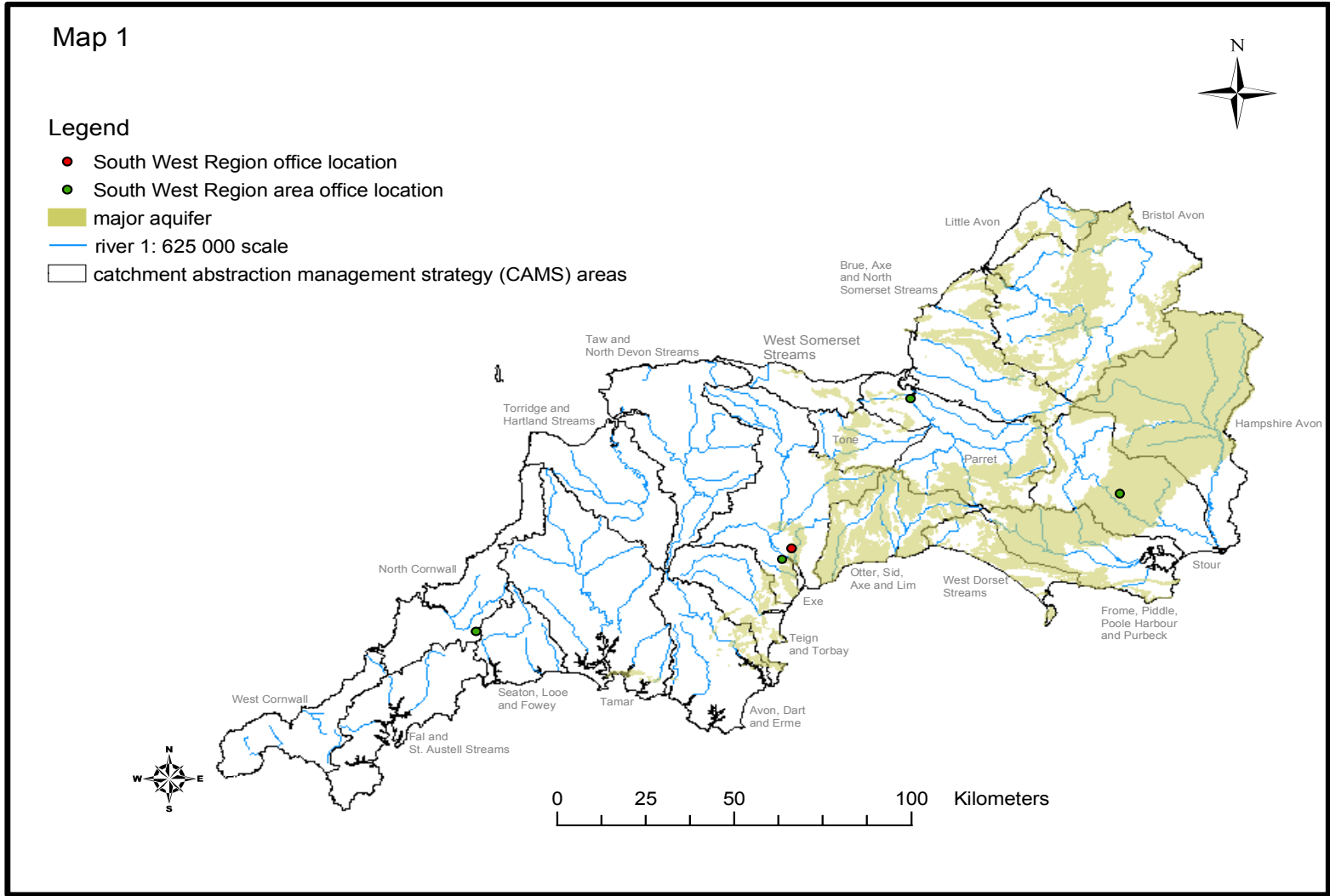
2.1.2 Drought Issues in the region

Notable droughts that have affected the Region occurred in 1933-34, 1975-76 and 1989-90. In addition shorter intense droughts have occurred in 1959, 1984 and 1995. More localised water supply droughts also occurred in 1921 and 1943-44.

Groundwater can maintain river flows in the groundwater fed river systems long after the last rain has fallen, but if these supplies are not replenished, flows can drop to very low levels. Rivers in Devon and Cornwall react more quickly to a reduction in rainfall than other rivers in the Region as they receive limited support from groundwater. The rivers supported by the oolitic limestones in the north of the Region exhibit a mixture of groundwater supported base flow with a rapid response to rainfall, which reflects the nature of the aquifer. In contrast, the rivers in Wiltshire and Dorset generally react more slowly to reduced rainfall, as they continue to be fed by seepage and spring flow from aquifers.






Sites in the South West Region which have been designated as special areas of conservation (SAC) or special protection areas (SPA) and which are water dependant are likely to be more sensitive to drought.

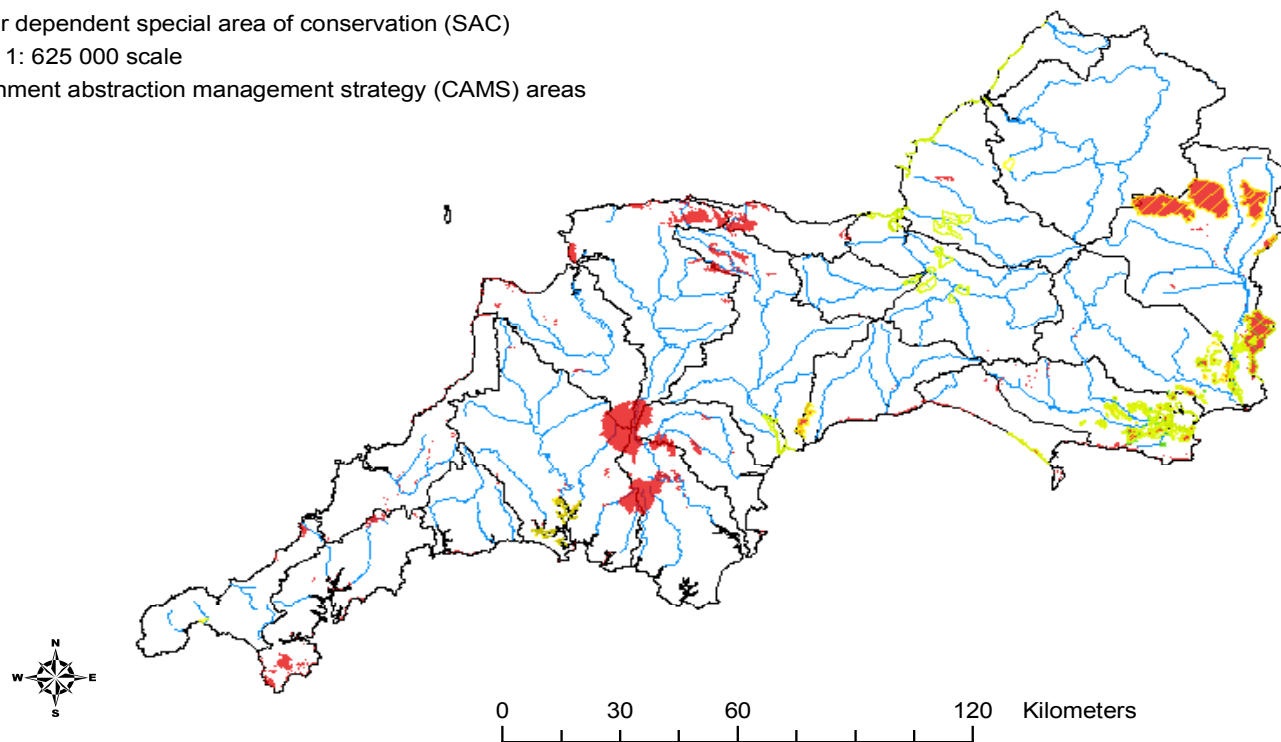
The Region's main river systems, aquifers and catchment abstraction management strategy (CAMS) areas are shown on map 1 overleaf. The Region's water dependant conservation designated sites are shown on map 2.



Map 2

Legend

-  water dependent special protection area (SPA)
-  ramsar site
-  water dependent special area of conservation (SAC)
-  river 1: 625 000 scale
-  catchment abstraction management strategy (CAMS) areas



2.2 Regional Drought Team roles and responsibilities

The main roles and responsibilities of the Regional Drought Team are to:

- support the area drought teams in the Region in managing a drought;
- keep the regional drought plan up-to-date;
- implement regional drought management actions and monitor the drought actions taken by area drought teams, water companies and other parties;
- assess the impacts of a drought across the Region;
- provide information to the Head Office Drought Team on the effects of the drought and actions taken across the Region;
- co-ordinate communication across the Region during a drought.

The Regional Drought Team will comprise of the following staff:

Role in team	Job title
Regional Drought Manager	Strategic Environmental Planning Manager
Regional Drought Co-ordinator	Principal Officer Water Resources
Cornwall Drought Co-ordinator	Water Resources Regulatory Team Leader
Devon Drought Co-ordinator	Environment Management Team Leader
North Wessex Drought Co-ordinator	Field Monitoring and Data Team Leader
South Wessex Drought Co-ordinator	Field Monitoring and Data Team Leader
Water Resource Planning	Principal Water Resources Planner
Strategic Licensing	Pan Area Regulatory Specialist
Hydrology	Pan Area Technical Specialist
Hydrogeology	Pan Area Technical Specialists
Communications	Regional Communications Manager
Incidents & Emergencies	Principal Officer Incidents & Emergencies
Assessment & Monitoring	Regional Monitoring Officer

The activities matrix in appendix 1, summarises the drought team members' roles and responsibilities.

2.2.1 Administration

It is important that an accurate record is kept of a drought event, which includes any work undertaken prior to a drought. Records are needed if we are audited, for producing post drought reports, and it is possible that we may be called upon to defend our actions at a public hearing, either during or after a drought.

The following procedures have been set up to create a record of events;

Filing – all filing in relation to drought management is filed electronically by the Regional Drought Co-ordinator in N:share\Drought SEP\....

Logs – the following logs must be maintained during a potential drought or drought situation. These logs are shown in appendix 2. The Regional Drought Co-ordinator will initially set up the logs but all staff must maintain them during an event.

- drought key decisions and actions log
- drought risk log
- drought issue log
- drought lessons learnt log
- drought related phone calls & emails

Hard copies of these logs must be retained for at least three years as they may be used in legal proceedings, investigations and enquiries.

National Incident Reporting System (NIRS) and Common Incident Classification Schemes (CICS)– these systems must be kept up to date by all staff involved with any reported incidents. A drought in the region is not, in itself an incident but reportable incidents are likely to result from a drought. Each separate incident should have a record of events maintained by the relevant Drought Co-ordinator or Base Controller.

Regional drought team meetings – the Regional Drought Team will have an annual meeting in March/April to confirm the following which will be the responsibility of the Regional Drought Manager to arrange:

- membership of the team;

- identify training needs;
- make updates to the drought plan and 'easinet' site if required;
- consider drought prospects for the coming summer;
- agree any actions.

As the situation develops into a potential drought, the Regional Drought Manager will arrange additional meetings as necessary (see Section 4 Drought triggers and actions).

A post drought meeting will also be required to review the management of the drought and consider making improvements/changes to the drought plan where required.

HELP reporting (Head office emergency liaison procedure) – HELP reports inform senior managers of exceptional events. The Regional Drought Co-ordinator is responsible for producing a HELP report for a drought 'notifiable event' as detailed in the table below, in consultation with the Area Drought Co-ordinator(s). The report is sent via the Regional Control Centre (RCC) and the aim of the report is to provide a comprehensive picture of the overall drought situation. Area officers may produce reports in relation to CICS and these should be copied to the Regional Drought Co-ordinator.

Notifiable event	HELP initial report	HELP update report	HELP closedown report
Regional Drought team	Regional Drought team formally established	Not required	Regional Drought team disbanded
Drought permit	As soon as you know that a water company has decided to make an application	Receipt of application from a water company Granting of drought permit Update reports may be required for other significant developments e.g. high profile public hearing	Expiry/"self-destruction" of permit or refusal of application or if applicant 'withdraws' application.
Drought order	As soon as you know that a water company has decided to make an application As soon as a decision has been made to make an application by the Environment Agency	Application by a water company or the Environment Agency to Department of Environment, Food & Rural Affairs (Defra)/Welsh Assembly Government (WAG) Granting of drought order Update reports may be required for other significant developments e.g. high profile public hearing, environmental impact following implementation	Expiry/"self-destruction" of order or refusal of application or if decision taken not to proceed with application

Notifiable event	HELP initial report	HELP update report	HELP closedown report
Emergency drought order	As soon as you know that a water company has decided to make an application As soon as a decision has been made to make an application by the Environment Agency	Application by a water company or the Environment Agency to Defra Granting of drought order Update reports may be required for other significant developments e.g. impacts following implementation	Expiry/"self-destruction" of order or refusal of application or if decision taken not to proceed with application
S 57 restriction on spray irrigation – see appendix 2 for further information	As soon as a decision has been made to implement a partial or total ban	Implementation of partial or total ban Escalation e.g. from partial to total ban Update reports may be required for other significant developments e.g. impacts following implementation	Removal of ban or if decision taken not to proceed with partial or total ban
<u>During a drought</u> any situation where there is an imminent or actual loss of public water supply to a village, town or city leading to tankering and/or standpipes and/or rota cuts whether caused by the drought and/or other factors (e.g. mains burst)	Within one hour of identification that the situation is notifiable	Regular update reports - to provide update on situation or on request to provide detailed information	When normal supplies have been restored or when there is no longer a major risk to supplies
Drought related incidents classified as Level A and / or Category 1 under CICS	Within one hour of identification that the incident is notifiable	Regular update reports - to provide update on situation or on request to provide detailed information	When Environment Agency incident response complete and update reports are no longer required
Other drought related events fulfilling HELP criteria for a "notifiable incident"	Within one hour of identification that the event is notifiable	Regular update reports - to provide update on situation or on request to provide detailed information	When Agency response to event complete and update reports are no longer required

Drought Reporting – As a drought event progresses, Head Office will produce a national drought briefing with input from each region. This will usually be on a weekly basis depending upon the severity of the drought.

2.3 Responsibility and involvement in decision taking

There are some drought decisions that can only be approved by certain staff. These are set out below.

Activity	Staff member authorised to approve
Approval of water company drought permits	Area Manager
Approval of our comments to the Secretary of State/National Assembly for Wales on water company drought orders	Regional Director
Approval of Environment Agency drought order applications	Regional Director
Approval of memorandums of understanding (MoU) that relate wholly to an area	Area Manager
Approval of memorandums of understanding (MoU) that are of regional concern	Regional Director

2.4 Resourcing

One of the roles of the Regional Drought Team is to address the increased workloads associated with a developing drought. In the first instance, staff from other teams and departments may be able to provide expertise and resources. The Regional Drought Manager will consult with the Area and Regional Management Team to assess availability.

As a drought progresses, it may be necessary to appoint consultants to provide additional resources to enable the Environment Agency to maintain normal service continuity.

Approach:

- Region or Area Drought Teams recognise the need to appoint consultants to assist with peak workloads;
- The Regional or Area Drought Manager consults the Regional Management Team detailing requirements, justification, implications and recommendations.

Consultants are appointed through the National Framework Agreement for Engineering & Environmental Consultancy Services (NEECA) contract. The second agreement (NEECA2) was finalised in October 2005 to provide us with access to professional consultancy services. The Agreement was primarily to support the delivery of the capital programme, although the wide range of services offered by the consultants are available to all functions and parts of the Environment Agency. The Agreement runs for four years and expires in October 2009. The available consultants are listed in appendix 3.

2.4.1 Cost recovery

The Region will actively seek to recover costs for technical work which the Environment Agency has carried out subsequent to receiving an application for a drought permit or being notified of an application for a drought order. For example, these might include costs borne by the Environment Agency in undertaking additional monitoring and mitigation measures required to audit issued drought permits/orders or in assessing impacts when determining applications for drought permits/orders.

3 Drought monitoring

We use drought monitoring to:

- detect and track the onset and progress of a drought;
- trigger actions to manage and ease the effects of a drought situation;
- identify the impacts of a drought on the environment and abstractors;
- monitor the outcome of drought team actions.

Responsibility for the collection and quality assurance of meteorological, hydrological and ecological data, which is used to detect the onset and monitor the impact of drought, lies with the area teams. Details of key data sources are included in the individual area plans.

Hydrometric monitoring and reporting

Monthly hydrometric reports from areas are routinely collated by the Regional Data, Information, Assessment and Monitoring Team. These reports summarise the rainfall, groundwater levels, reservoir levels, river flows and soil moisture deficits for the preceding month. These reports are used to inform decisions made by the Regional Drought Management Team and provide the monthly water situation report

published on the regional web page. As a drought intensifies the gathering of data and the production of the summary reports is increased to fortnightly.

An example of a monthly hydrometric report is attached as appendix 4.

Environmental monitoring and reporting

Area teams are responsible for carrying out baseline monitoring of environmental parameters, such as invertebrates, macrophytes and water quality. This monitoring is used to assess the impact of a drought on the environment and the possible need for mitigation measures during a drought. The Area Drought Teams collect and report on this data. Refer to area drought plans for further detail. Water companies are responsible for carrying out the monitoring required to support applications for drought permit/order applications and any monitoring required after an application is granted (see Section 3.4).

Monitoring information from water companies

We need to obtain information from water companies during a drought to monitor how they are following their drought plans. Copies of water company drought plans are held in the regional office by the Supra Regional Water Resource Planning Team.

We also use water company information to help us assess the impact of a drought and make decisions on whether to take our own drought management actions.

Examples of information we might request include:

- reservoir levels against control curves;
- groundwater levels in water company boreholes;
- details of unplanned outage events and the effect of any planned outages once in a potential drought or drought;
- details of water company drought management actions, publicity campaigns, hosepipe bans, enhanced leakage detection and repair;
- plans for drought permit/order applications;
- drought or supply/demand scenario forecasts;
- more frequent reporting of actual abstraction returns, from the routine monthly, quarterly or annual reporting required by licence conditions.

To maintain consistent contact with the water company, the requesting, collating and distribution of information from water companies should normally be done by:

- the Area Drought Co-ordinator where a water company operates only in one Area, copied to the Regional Drought Co-ordinator;
- the Regional Drought Co-ordinator where a water company operates in more than one Area, copied to the relevant Area Drought Co-ordinators.

The relevant drought co-ordinator will collate and distribute this information to the Supra Regional Water Resource Planning Team, the Pan Area Regulatory Specialist, relevant team leaders and the relevant technical specialists for any data processing or analysis that may be required.

3.4 Water company environmental monitoring

A water company must include details of all proposed sites for drought permits or drought orders in its own drought plan. An application for a drought permit or drought order must be accompanied by an environmental report. To enable a comprehensive environmental report to be produced water companies need to undertake environmental studies in non-drought conditions well in advance of making an application for a drought permit or drought order. The environmental report needs to include an assessment of the ecological, physical, amenity and recreational impacts of its proposed drought measures at each site.

Water companies have a duty to carry out necessary monitoring, however in rare circumstances, to avoid duplication of effort or unnecessary cost, it may be appropriate for the Environment Agency to carry out monitoring on behalf of the company. For example, where we are already carrying out relevant monitoring at or close to a proposed drought permit/order site. Similarly the Company are fully entitled to use existing monitoring data collected by the agency as part of its routine catchment monitoring work.

3.5 Other monitoring

During a drought we also collate other information including reports of private wells, springs, streams and boreholes drying up, incidents of fish poaching due to low river flows, the cutting in of abstraction licence restrictions and impacts on agriculture and industry. This informs the actions we take, the use of our communication plan and it allows us to assess the wider impacts of the drought.

4 Drought actions and triggers

Drought management is part of the range of water resources management activity. Drought impacts vary from minor to very severe. Our drought plans cover the whole range of drought management activities and decisions. As droughts become more severe, more effort and time is needed to manage our own activities.

We use drought triggers to identify whether drought actions need to be taken. The crossing of a drought trigger does not mean that the action must automatically be taken. The Regional Drought Team makes its decision on whether the action is needed based on a range of factors, including the present and forecast conditions and how effective the action would be. Local judgement is an important part of drought management.

Our drought triggers and actions will differ from water company drought triggers and actions. This is for a number of reasons including the need for us to organise our workloads and resources, prepare for and carry out increased monitoring, carry out increased enforcement and mitigation measures and prepare and put in place water saving campaigns for both public water supply customers and private abstractors. Refer to area drought plans for more information on specific drought triggers.

Action	Trigger(s) for considering if action required	Who monitors trigger?	Who makes the decision on whether to take the action?	Who is responsible for taking the action?
Normal climate and resource position	Monthly water situation report	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Review and if necessary, update the regional drought plan, including membership of drought team.	February of each year	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Convene annual regional drought team meeting	April of each year	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Review and comment on water company drought plans	Every 3 years	SRWRP	SRWRP	SRWRP
Maintain information on regional internet and easinet pages	Monthly	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Move to potential drought situation	When drought status changes to potential drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Convene regional drought team meeting and agree frequency of future meetings	Potential drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Increase frequency of water situation report from monthly to fortnightly	Potential drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Data, Information and Monitoring Team

Action	Trigger(s) for considering if action required	Who monitors trigger?	Who makes the decision on whether to take the action?	Who is responsible for taking the action?
Alert water companies and set up regular liaison arrangements	Potential drought	Regional/Area Drought Co-ordinator	Regional/Area Drought Manager	Regional/Area Drought Co-ordinator
Set up and maintain reporting to national team	When request by national team	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Implement communications plan	Potential drought	Regional/Area Drought Co-ordinator	Regional/Area Drought Manager/Corporate Affairs	Regional/Area Drought Co-ordinator /Corporate Affairs
Set up project management structure and finance code for drought expenditure	Potential drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Monitor and assess resource needs	Potential drought	Regional/Area Drought Manager	Regional/Area Drought Manager	Regional/Area Drought Manager
Create and maintain drought logs	Potential drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator sets up and maintains. All other relevant staff update
Increase monitoring of drought triggers	Potential drought	Regional/Area Drought Co-ordinator	Regional/Area Drought Manager/Corporate Affairs	Regional/Area Drought Co-ordinator
Monitor water company drought plans & discuss actions & any changes to operations	Potential drought	Regional Drought Co-ordinator and SRWRP	Regional Drought Co-ordinator	Regional Drought Co-ordinator and or SRWRP
Move to drought situation	Drought status	Regional/Area Drought Co-ordinator	Regional/Area Drought Manager	Regional/Area Drought Co-ordinator
Convene Fortnightly/weekly regional drought team meetings	Drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Timetable drought liaison meetings with water companies	Drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator
Respond to drought permit/order applications	Drought liaison meetings with water companies/receipt of application	Area Drought Co-ordinator	Area Drought Co-ordinator	Area Drought Co-ordinator
Increase frequency of water situation report from fortnightly to weekly	Drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Data, Information and Monitoring Team

Action	Trigger(s) for considering if action required	Who monitors trigger?	Who makes the decision on whether to take the action?	Who is responsible for taking the action?
Severity of drought monitored regularly by rainfall analysis	Drought	Regional Drought Co-ordinator	Regional Drought Co-ordinator	Regional Data, Information and Monitoring Team
Move to normal conditions	End of drought	Regional Drought Co-ordinator	Regional Drought Manager	Regional Drought Co-ordinator

5 Drought permits and drought orders

Water company drought permit and drought order applications.

This section sets out how the Regional Drought Team will be involved with water company drought permit applications and respond to drought order applications. [Chapter 12 of our abstraction licensing manual](#)¹ and the joint [Defra/ National Assembly for Wales/Environment Agency booklet](#)² contain further guidance on drought permit/order applications.

5.1.1 Water company drought permit applications

The Environment Agency may receive, and then must determine applications from water companies for drought permits. These can authorise abstraction from specified sources and can modify or suspend restrictions or obligations relating to existing abstractions.

Overall responsibility for the determination of a drought permit application will rest with the Team Leader (Water Resources Regulation) in the appropriate area, with support and guidance from the Pan Area Regulatory Specialist.

The task of determination will involve a significant amount of liaison/consultation both within the Environment Agency and outside.

Internal (and supra regional) input will also be required from at least some of the following:

- Supra Regional Water Resources Planning Team - advice related to the extent to which the company's stated needs are justified in the context of their own water

¹ Copies can be obtained from the Environment Agency, 08708 506 506

² Available on the Defra Web site at

<http://www.defra.gov.uk/environment/water/resources/drought/index.htm>

resource and drought plans, whether there are other alternatives and whether they have made sufficient efforts to limit demand;

- Regional Strategy Unit;
- Regional Solicitor - legal advice on the appropriateness of the drought permit to the particular situation;
- Regional Finance - advice on cost recovery after application;
- other regional teams, dependant on the specific nature of the application.

This input will be obtained on an 'as required' basis by the Area Officer responsible, calling on help from the Regional Drought Co-ordinator as necessary.

There will also be a need to maintain a liaison with, and provide information to:

- Regional Management Team;
- Head Office Drought Team;
- Regional Corporate Services Team;
- Regional Incidents and Emergencies Manager;
- other regional teams, dependant on the specific nature of the application.

The Regional Drought Manager/Co-ordinator will be responsible for maintaining these liaisons.

5.1.2 Water company drought order applications

Water companies may apply for either ordinary drought orders or emergency drought orders. Either can go further than drought permits and can deal with discharges of water, abstractions and discharges by other people, supply, filtration and treatment obligations. They can allow the company to prohibit or limit particular uses of water and can authorise the carrying out of works. Emergency drought orders, used where the deficiency of water supplies is likely to impair the economic or social well being of people, can give the water company complete discretion on which uses of water may be prohibited or limited and can authorise the use of stand-pipes or water tanks.

Application for drought orders must be made to the Secretary of State. In the case of an application from a water company, the Environment Agency's role is one of consultee and provider, to the Secretary of State, of technical evidence as to the appropriate course to take.

It is expected that there will be significant discussion between the Environment Agency and the relevant water company ahead of the submission of any application to the Secretary of State. Once the notice is published, the Environment Agency is expected to make a formal response to the Secretary of State (copied to the water company) which will make clear the extent to which the Environment Agency supports or objects to the application.

Any response to a drought order application will be signed off by the Regional Director, although both Regional and the relevant Area Drought Teams have a role to play in determining what the response should be.

The Regional Drought Co-ordinator will take the lead in this process with support and guidance from the Pan Area Regulatory Specialist, but will liaise closely with, and obtain the following information from:

- Supra Regional Water Resources Planning Team - advice related to the extent to which the company's claimed needs are justified in the context of their own water resource and drought plans, whether there are other alternatives, whether they have made sufficient efforts to limit demand. Also potential assistance with the preparation and presentation of the Agency case at any subsequent hearing;
- Area Drought Team through the Area Drought Co-ordinator - information/advice on any local environmental issues to which the proposals, if approved, will give rise and agree the text of the response. The Area Team will make provision for any necessary monitoring and enforcement activities which may be made necessary by the application and or subsequent grant of the order. Also potential assistance with the preparation and presentation of the Agency case at any subsequent hearing;
- Regional Solicitor - legal advice on the appropriateness of the drought order to the particular situation, assistance with the preparation and presentation of the Agency case at any subsequent hearing;
- Regional Finance - advice on cost recovery after application;
- other regional teams, dependant on the specific nature of the application.

There will also be a need to maintain a liaison with /provide information to:

- Regional Management Team;
- Head Office Drought Team;
- Secretary of State through appropriate contact at Defra;
- Regional Corporate Services team in respect of media responses;
- Regional Incidents and Emergencies Manager;

- The relevant water company;
- other regional teams, dependant on the specific nature of the application;

The Regional Drought Manager/Co-ordinator will be responsible for maintaining, and acting as a focus for these liaisons.

5.1.3 Environment Agency drought order applications

This section sets out the how the Regional Drought Team will be involved in applying for drought orders. [Chapter 12 of our abstraction licensing manual](#) and the joint [Defra/ National Assembly for Wales/Environment Agency booklet](#) contain further guidance on Environment Agency drought order applications.

The Environment Agency may apply for either ordinary drought orders, emergency drought orders (although, in practice there is little advantage to us over ordinary drought orders) or environmental drought orders. These can be for the benefit of a third party (ordinary) or the environment (environmental).

The Environment Agency is likely to apply for these, for example,

- to instigate a river augmentation scheme;
- to prevent excessive compensation releases where a reservoir is at risk of drying up and the water company has not applied for a drought order or permit;
- to prevent releases where a reservoir is so low that compensation water is likely to prejudice water quality, for example, with sediment.

Application for drought orders must be made to the Secretary of State. In the case of an application for an ordinary drought order to benefit a third party we would expect significant input to the process from that party.

Any drought order application made by the Environment Agency will be signed off by the Regional Director, although both Regional and the relevant Area Drought Teams have a role to play in drafting the application.

The Regional Drought Co-ordinator will take the lead in this process, with support and guidance from the Pan Area Regulatory Specialist, but will liaise closely with, and obtain information from:

- Area Drought Team through the Area Drought Co-ordinator - information/advice on the local environmental issues which give rise to the need to make the application. The Area Team will make provision for any necessary monitoring

activities which may be made necessary by the application and or subsequent grant of the order;

- Supra Regional Water Resources Planning Team - advice related to the impact the grant of the order might have on any water company's needs or ability to maintain public water supplies;
- Regional Solicitor - legal advice on the appropriateness of the drought order to the particular situation, assistance with the preparation and presentation of the Environment Agency case at any subsequent hearing;
- Regional Finance - advice on cost recovery if third party benefit is involved;
- Other regional teams, dependant on the specific nature of the application.

There will also be a need to maintain a liaison with /provide information to:

- Regional Management Team;
- Head Office Drought Team;
- Secretary of State through appropriate contact at Defra;
- Regional Corporate Services team in respect of media responses;
- Regional Incidents and Emergencies Manager;
- The relevant water company;
- Other regional teams, dependant on the specific nature of the application.

The Regional Drought Manager/Co-ordinator will be responsible for maintaining and acting as a focus for these liaisons.

We currently have no plans to apply for drought orders in the South West Region that could affect water company abstractions or other operations. Where environmental concerns arise as a result of water company abstractions or operations we will seek to work with the water company to address those concerns.

6 Drought communications

A large part of the Regional Drought Teams work will be communications and co-ordinating drought communications across the Region. This includes talking to the Area Drought Teams in the Region, neighbouring regional drought teams and the Head Office Drought Team. Externally, the Regional Drought Team will lead on communications with the general public and on communicating with organisations

spanning more than one area. The regional drought communications plan can be found in appendix 5.

Communications play a key role in managing drought planning, in maintaining trust in the Environment Agency and in encouraging the conservation of water. Water conservation is of major concern to us as regulation of water resources is one of our statutory duties. We are responsible for issuing and regulating abstraction licences and have powers to restrict licences if drought conditions threaten water supplies.

Climate change, which could have major effects on water supplies, has been identified as one of our regional priorities. We need to understand the implications of climate change and the link with both drought and flooding and fit all communications into this bigger picture.

External communications

The Corporate Affairs Team have prepared a strategy for dealing with the additional communications workloads created as a result of drought (appendix 5). Its main aims and objectives are:

Aims

- to ensure regionally consistent, clear and timely communications on the current dry weather situation and the state of water resources within the Region;
- protect the environment by minimising use of water by all sections of the community. Encouraging households and businesses to minimise their use of water and to take action now to secure supplies;
- protect and enhance the reputation of the Environment Agency. Focus on explaining and clarifying the role of the Environment Agency as the lead authority in safeguarding the nation's water resources and our regulatory role to ensure water companies secure public water supplies and minimise environmental damage.

Objectives

- stakeholders are aware of, understand and positively support the Environment Agency's role as the expert authority on drought and water resources regulation;
- the Environment Agency's profile is raised at a national level and in affected local areas by clear, timely communications;

- consumers and stakeholder groups in affected areas understand the information they are receiving, what it means for them and what action they need to take on an individual basis;
- drought messages are put in context with general weather patterns and climate change impacts.

The regional drought communications plan has identified a number of external communications actions. These are set out in table 1 in appendix 5.

6.1.1 Regional drought internet site

The Regional Corporate Affairs Team is responsible for maintaining the South West regional pages of the Environment Agency website. The Regional Drought Co-ordinator is responsible for providing up to date information to Corporate Affairs for the drought pages. The regional internet drought pages will contain:

- The regional and area drought plans;
- Monthly water situation reports;
- Links to water saving advice on Environment Agency national internet pages.

6.2 Internal communications

The regional drought communications plan has identified a number of internal communications actions. These are set out in table 2 in appendix 5.

The main aims of the internal communications plan are:

- To ensure staff in the Region understand our drought position and who in the Region is leading on what;
- To ensure the managers in the Region are aware of the drought management resource requirements and commitments and that any issues are raised quickly;
- To ensure the Head Office Drought Team are kept informed of the situation in the Region.

6.2.1 Regional drought easinet site

A regional drought easinet site will be created and maintained to consolidate all the regional drought information and will include pages covering area information. The Corporate Affairs Team will create and maintain the site with information provided by the Regional Drought Co-ordinator. The regional drought easinet site will sit within the regional strategic unit easinet site.

The regional drought easinet site will contain:

- Links to head office drought easinet page;
- Links to the regional drought plan and the area drought plans;
- Links to the regional drought internet page;
- The names, roles and responsibilities for the regional and area drought teams;
- Minutes of regional and area drought team meetings.

7 References

Environment Agency publications:

Water Resources for the Future, A Strategy for the South West Region, March 2001

Environment Agency AMS guidance:

Doc ref	Doc type	Document title
		Abstraction licensing manual
226_04	Policy	Drought Orders & Drought Permits - Cost Recovery
228_04 108_05	A.1 <u>A.2</u>	Drought Orders & Drought Permits - Cost Recovery Drought management
109_05 110_05	Work instruction	Organisation of drought teams Administration procedures during a drought

251_05		<u>Producing Environment Agency drought Plans</u>
380_05		<u>Managing Consultations with water companies on statutory drought plans</u>
96_04	Guidance	<u>Help reporting and incident management procedures during droughts</u>
227_04		<u>Drought Orders & Drought Permits - Cost Recovery</u>
252_05		<u>Producing Environment Agency Area drought plans</u>
253_05		<u>Producing Environment Agency Regional drought plans</u>
254_05		<u>Producing Environment Agency Head office drought plans</u>
	Templates	<u>DROUGHT RISK LOG</u> <u>DROUGHT ISSUES LOG</u> <u>DROUGHT LESSONS LEARNT LOG</u> <u>DROUGHT KEY DECISIONS AND ACTIONS LOG</u> <u>STRUCTURE AND CONTENT FOR ENVIRONMENT AGENCY AREA DROUGHT PLANS</u> <u>STRUCTURE AND CONTENT FOR ENVIRONMENT AGENCY REGIONAL DROUGHT PLANS</u> <u>STRUCTURE AND CONTENT FOR ENVIRONMENT AGENCY HEAD OFFICE DROUGHT PLANS</u> <u>SEE ALSO CHAPTER 12 OF THE LICENSING MANUAL</u> <u>Template: Statutory Water Company Drought Plan Issues log</u> <u>Template: Statutory Water Company Drought Plan risks log</u> <u>Statutory water company drought plan review process – highlight report</u>

Legislation

Environment Act 1995, Her Majesty's Stationery Office, London.

Habitats Directive 1992, Her Majesty's Stationery Office, London.

Water Industry Act 1991, Her Majesty's Stationery Office, London.

Water Resources Act 1991, Her Majesty's Stationery Office, London.

Water Act 2003, Her Majesty's Stationery Office, London.

Appendices

Appendix 1 Drought activities matrix for South West Region drought team

Appendix 2 Drought log sheets

Appendix 3 NEECA available consultant services

Appendix 4 Example monthly hydrometric report

Appendix 5 Drought communications plan

Appendix 1 – Drought activities matrix for South West Region drought team

Role \ Activity	Regional Director	Regional Drought Manager	Regional Drought Co-ordinator	Area Manager	Area Drought Manager	SRWRP	Regional Communications Manager	Regional Drought Team
Review and update regional drought plan annually		Ensure plan is reviewed and updated annually	Review and if necessary update plan		Input to review of plan	Input to review of plan	Input to review of plan	Input to review of plan
Regional Drought Team Meetings		Attend and chair meetings	Arrange meetings and maintain and monitor action lists		Attend meetings as required	Attend meetings as required	Attend meetings as required	Attend meetings as required
Drought logs		Update logs	Create review and maintain logs		Update logs	Update logs	Update logs	Update logs
Help reporting	Inform Drought Co-ordinator when HELP report is required	Inform Drought Co-ordinator when HELP report is required	Create HELP reports	Inform Drought Co-ordinator when HELP report is required	Inform Drought Co-ordinator when HELP report is required	Inform Drought Co-ordinator when HELP report is required	Inform Drought Co-ordinator when HELP report is required	Inform Drought Co-ordinator when HELP report is required
Water company drought order applications	Delegated sign off powers for Environment Agency input	Overview of and input to Environment Agency response	Co-ordinate information and draft Environment Agency response. Liaise with areas, HO and within region.		Ensure timely input to response from area	Support Region and Areas and provide input		Support Region and Areas and provide input
Water company drought permit applications		Overview of application and determination	Overview and support to areas. Liaise with areas, HO and within Region	Delegated sign off powers for permit	Ensure timely determination of application	Support Area and Region and provide input		Support Area and Region and provide input
Environment Agency	Delegated sign off powers for	Overview of and input to drafting	Co-ordinate information and		Ensure timely	Support Region and Area and		Support Region and area and

Role	Regional Director	Regional Drought Manager	Regional Drought Co-ordinator	Area Manager	Area Drought Manager	SRWRP	Regional Communications Manager	Regional Drought Team
Activity								
drought order applications	drought order applications.	application	draft application. Liaise with areas, HO and within Region		input from area	provide input		provide input
Water company liaison		Attend meetings as required	Arrange meetings and maintain and monitor action lists		Attend meetings	Attend meetings		Attend meetings (individuals as required)
RMT, Committees and Agriculture liaison		Attend meetings. Approve and provide input to papers	Prepare papers and attend meetings if required	Attend meetings	Provide input where required	Provide input where required	Provide input where required	Provide input where required
National water situation report		Overview	Co-ordinate area response and provide regional report to national		Ensure timely input to regional report	Provide input where required		Provide input where required
Financial and staff resource management		Assess and co-ordinate resource needs	Support Regional Drought Manager with assessing resource needs		Ensure timely notification of resource needs to Regional Drought Manager	Provide information where required	Provide information where required	Provide information where required

2.4 Template: Lessons learnt log

Drought lessons learnt log			
Drought manager:		(Insert name and position)	Area/ Region: (Insert name)
Drought team:		(Insert names and positions)	Period covered in log: (Insert approximate dates)
ASPECT	DATE OF ACTIVITY	WHAT WENT WELL OR WHAT COULD HAVE BEEN DONE BETTER?	LESSON LEARNT
1.0 [Heading e.g. Communication within the Environment Agency]			
1.1			•
1.2			•
1.3			•
2.0 [Heading e.g. Communication with stakeholders]			
2.1			•
3.0 [Heading e.g. Press Activity]			
3.1			•
4.0 [Heading e.g. Environmental Monitoring]			
4.1			•
4.2			•
4.3			•
4.4			•

Appendix 3 - NEECA available consultant services

Consultant	Expertise/retainer service	Environment Agency lead for contract/arrangement
Atkins Ltd	To be advised by Procurement	Regional SEP Manager and Procurement Department
Halcrow Group Ltd	To be advised by Procurement	Regional SEP Manager and Procurement Department
Haskoning UK Ltd	To be advised by Procurement	Regional SEP Manager and Procurement Department
Jacobs UK Ltd	To be advised by Procurement	Regional SEP Manager and Procurement Department
Ove Arup & Partners Ltd	To be advised by Procurement	Regional SEP Manager and Procurement Department
Black & Veatch Ltd	To be advised by Procurement	Regional SEP Manager and Procurement Department

Appendix 4 - Example Monthly Hydrometric Report

ENVIRONMENT AGENCY - SOUTH WEST REGION WATER RESOURCES SITUATION REPORT TO 31/08/04

Overview

During August the South West Region received above average rainfall, which fell as intense heavy showers throughout the month. This rainfall resulted in an increase in river flows over the whole Region, however the overall groundwater situation continued to decline. Reservoir storage levels remained similar to those expected for the time of year.

River Flows

River and Station	Flow m3/s	% LTA
South Wessex		
Avon at Knapp Mill	7.62	95
Stour at Throop	4.06	102
Piddle at Baggs Mill	0.98	93
Frome at East Stoke	2.32	76
North Wessex		
Avon at Bath	4.91	100
Tone Bishops Hull	0.87	88
Frome at Tellisford	1.26	95
Brue at Lovington	0.43	59

River and Station	Flow m3/s	% LTA
Devon		
Exe at Thorverton	5.83	99
Taw at Umberleigh	8.11	152
Torridge at Torrington	7.32	161
Axe at Whitford	2.11	95
Cornwall		
Tamar at Gunnislake	14.52	194
Camel at Denby	2.98	129
Fowey at Restormel	2.28	125

Please note all flow values are monthly mean averages

Rainfall

Area	Total (mm) for period	As % Monthly LTA
Cornwall*	138.7	196
Devon*	117.6	178
N. Wessex	88.6	128
S. Wessex	83.8	135

*Devon and Cornwall estimated using 3 and 4 rainfall sites respectively

Soil Moisture Deficit

	SMD Week ending 23/08/04
Cornwall	11
Devon	16
N. Wessex	75 (79, 31/08)
S. Wessex	77 (82.8, 31/08)
South West	43

Groundwater

Site	Area	Aquifer	Level (MAOD)	Date	Monthly LTA (MAOD)	Status compared to LTA
Atworth No.3	North Wessex	Great Oolite	59.18	16/08	56.69	Above
Brokenborough	North Wessex	Great Oolite	72.56	24/08	71.2	Above
Chantry No.1	North Wessex	Old Red Sandstone & Devonian	144.91	13/08	145.39	Below
Tilshead	South Wessex	Upper Chalk	81.14	31/08	82.1	Below
Woodyates	South Wessex	Upper Chalk	71.85	31/08	73.93	Below
Ashton Farm	South Wessex	Upper Chalk	64.98	31/08	65.32	Below
Longmead	Devon	Triassic Sandstone	79.33	25/08	79.97	Below
Bussells No 7A	Devon	Permian Sandstone	23.35	13/08	23.52	Below
Woodleys No 1	Devon	Triassic Sandstone	30.67	25/08	31.39	Below

Reservoir Storage Levels (as from 30/08/04, #22/08/04)

Bristol Water	% gross storage	South West Water	% net storage	Wessex Water	% net storage
Blagdon	57.5	Colliford	55.4	Clatworthy	63.5
Chew Valley	70	Roadford	51.1	Sutton Bingham	53
Tot. BW	66.1	Wimbleball*	68.8	Tot. WW	62.9
		Tot. SWW	60.2 [#]	*Wimbleball is shared between SWW & WW	

Appendix 5 - Drought Communications Plan

Table 1 External communications actions for South West Region

Table 2 Internal communications actions for South West Region

5.1 Frequently asked generic questions and answers

Table 1: external communications actions for South West Region drought team

Interested Parties?	Objective / Information Required?	Owner of communication with interested party?	When to contact?	How frequently will information be provided?	What method of communication will be used?	Information Provider?	Who will receive information?
General public	Water saving messages to secure supplies and help the environment	Corporate affairs	Areas move to potential drought or drought status. Future concerns identified	As required	Press releases, leaflets, posters, roadshow events and articles in local newspapers	Regional drought team	Public
MPs MEPs	Update on situation and keep informed of implications to constituents (business and householders). Explain and clarify the role of the Environment Agency	Area managers	Areas move to potential drought or drought status. Future concerns identified	As required	Drought reports, press release and MPs briefings	Regional drought team and corporate affairs	Regional MPs and MEPs
Defra	Update on situation	HO drought team	As advised by HO	Weekly	Drought report	Regional drought team	Defra
Government Office South West (GOSW)	Update on situation	Regional drought manager	Areas move to potential drought or drought status. Future concerns identified	As necessary	Scheduled Meetings	Regional drought team	GOSW
Water Companies	Technical issues and plans for press releases. Influence re: promotion of water saving message	Regional drought co-ordinator	On-going and before planned activity	On-going	Meetings to share and discuss information and technical issues	Regional drought team, SRWRP and area teams	Water company water resource managers and relevant staff. Water company PR managers

Interested Parties?	Objective / Information Required?	Owner of communication with interested party?	When to contact?	How frequently will information be provided?	What method of communication will be used?	Information Provider?	Who will receive information?
English Nature	Update on situation and specific environmental impacts	SEP	Areas move to potential drought or drought status. Future concerns identified	As necessary	Meetings	Regional drought team	English Nature staff
National Farmers Union (NFU) and Country Landowners Association (CLA)	Update on situation, impacts on agricultural activities and water saving messages	Regional drought manager	Areas move to potential drought or drought status. Future concerns identified	As necessary	Scheduled meetings	Regional drought team	NFU and CLA representatives for cascade to members
British Waterways	Water saving message	Regional drought manager	Areas move to potential drought or drought status. Future concerns identified	As necessary	Meetings	Regional drought team	British waterways staff
Abstractors	Update on situation and possible restrictions	Area water resources regulatory teams	Areas move to drought status	As necessary	Letter	Area drought team	Abstractors
Angling clubs	Update on water levels and quality and explain and clarify the role of the Environment Agency in drought	Area fisheries teams	Areas move to potential drought or drought status. Future concerns identified	As necessary	Scheduled meetings and/or letter	Area drought team	Angling clubs for cascade to members
Fish farm operators	Update on water levels and quality	Area fisheries teams	Areas move to potential drought or drought status. Future concerns identified	As necessary	Letter and/or briefings	Area drought team	Fish farm operators
Wildlife and conservation groups	Update on situation and environmental impacts	Regional drought co-ordinator/Area drought teams	Areas move to potential drought or drought status. Future concerns identified	As necessary	Letter and/or briefings	Area and/or Regional Drought Team	Wildlife and conservation groups and relevant site managers
Local authorities	Update on	Area external	Areas move to	As necessary	Letter	Area drought team	Relevant local

Interested Parties?	Objective / Information Required?	Owner of communication with interested party?	When to contact?	How frequently will information be provided?	What method of communication will be used?	Information Provider?	Who will receive information?
	situation and possible restrictions. Inform re: possible impacts to authority operations of drought and/or restrictions.	relations teams	potential drought or drought status. Future concerns identified				authority staff
South West Regional Assembly	Update on situation	Corporate affairs with SEP	Areas move to potential drought or drought status. Future concerns identified	As necessary	Scheduled meetings	Regional drought team	Regional assembly staff
South West Regional Development Agency	Update on situation and drought implications for businesses Encourage promotion of water saving message	Corporate affairs with SEP	Areas move to potential drought or drought status. Future concerns identified	As necessary	Letter	Regional drought team	Regional development agency staff
REPAC/RFERAC	Update on situation	Regional drought manager	Quarterly committee meetings	As necessary	Committee papers/briefings	Regional drought team	Committee members
Trade and industry Associations	Update on situation and possible restrictions and promote responsible water use	Regional drought manager	Areas move to potential drought or drought status. Future concerns identified	As necessary	Letter	Regional drought team	Trade and Industry associations for cascade to members
Regional media	Update on situation and water	Corporate affairs	Areas move to potential drought	As necessary and in response to	Press releases, lines to take and	Regional/Area drought teams	Regional media

Interested Parties?	Objective / Information Required?	Owner of communication with interested party?	When to contact?	How frequently will information be provided?	What method of communication will be used?	Information Provider?	Who will receive information?
	saving message		or drought status. Future concerns identified. In response to enquiries	enquiries	Q&As		

Table 2: internal communications actions for the South West Region drought team

Interested Parties?	Objective / Information Required?	Owner of communication with interested party?	When to contact?	How frequently will information be provided?	What method of communication will be used?	Information Provider?	Who will receive information?
Head office drought team	Update on situation	Regional drought co-ordinator	As required by HO	As required by HO	Report	Area water resources teams and regional drought team	HO drought team
Head office press team	Updates Early warning of likely restrictions	Regional press office	As necessary	As required by HO	Press releases and lines to take	Regional drought team	HO press team
Regional and Area drought teams	Log all media interest, calls & press releases	Corporate affairs	On going	Electronically available & at regional drought team meetings	Updates	Corporate affairs	Regional and Area drought teams
Regional and Area drought teams	Monitor delivery & success of communications plan	Corporate affairs	On going	Updates at regional drought team meetings	Updates and meetings	Corporate affairs	Regional and Area drought teams
Regional and Area drought teams	Updates	Regional and Area drought team	As necessary	Weekly	Reports, lines to take and Q&As	Regional drought co-ordinator	Regional and Area drought teams

Interested Parties?	Objective / Information Required?	Owner of communication with interested party?	When to contact?	How frequently will information be provided?	What method of communication will be used?	Information Provider?	Who will receive information?
Regional Management Team and Regional Strategy Unit	Updates	Regional drought team	As necessary	Monthly when area(s) in potential drought and step up to weekly when area(s) in drought status	Meetings, papers and briefings	Regional drought co-ordinator	RMT, RSU

5.1 General frequently asked questions & answers

These questions and answers have been prepared to help answer queries during a drought.

What is a drought?

A drought happens when a period of low rainfall leads to a shortage of water – for people, agriculture, industry or the environment. Some droughts are short and intense – for example, a hot dry summer – while others are long and take some time to develop. Some droughts affect a large area while others are concentrated in a few places. Every drought is different and each has a different effect on people and the environment.

We realise a drought is starting when total rainfall is well below average for several months. Other signs of drought include: unusually low river flows, low groundwater levels, low reservoir levels, very dry soils, reduced crop yields or even crop failure, and algal blooms in reservoirs and lakes.

Why do droughts happen?

The climate of England and Wales is variable. Droughts occur naturally as a result of lack of rainfall. In long periods of dry weather, water levels in rivers and in the ground drop and the amount of water in aquifers (water-bearing rocks below ground) and reservoirs falls. Each drought is different in severity, location and duration.

How does it affect our water supplies?

Water companies get most of our water supply from aquifers and reservoirs. Aquifers are natural stores of underground water (known as groundwater) while reservoirs are man-made, but both are replenished by rain. Water supply systems are designed to cope with extended periods of dry weather, so most dry periods do not give us any water supply problems. In very long droughts, water levels in reservoirs and groundwater drop, and we need to take steps to make sure supplies can last as long as possible.

How often do droughts occur?

It varies. Drought is a natural phenomenon caused by long periods of low rainfall. We had notable droughts in 1995, 1975-76, 1943-44, 1921 and throughout the 1880s. Short droughts of 3 to 6 months mainly affect abstractors and the environment. Widespread public water supply problems usually occur only during droughts of a year or more.

We have had several long droughts in the past. Many people will remember 1975-76. The hot, dry summer of 1976 followed a dry summer and winter in 1975. By the summer of 1976, there were widespread water restrictions and serious water shortages in some places.

A long sequence of dry weather with two dry winters is very unusual. Over much of south east England the period from October 2004 to January 2006 was much drier than the same months of the notable drought of 1974-76. In the Thames Valley, this period has been as dry as the same months in 1932-34, which was the third driest period in the last hundred years. Further south and east, the rainfall has been even lower than the same period in 1932-34 but still some way above the exceptionally dry weather of 1920-1922.

Of course, water company systems have improved dramatically since the 1970s, so we are in a much better position to deal with drought than we were 30 years ago. But we can't be complacent – when it is dry, it still pays to save water, both to safeguard supplies and to protect the environment.

When does dry weather become a drought?

Some droughts develop quickly – for example, a hot dry summer that dries up streams and wetlands and causes obvious environmental problems. With this sort of drought we know quite soon after the start that we're in a drought. Other droughts develop more slowly – many consecutive months of slightly low rainfall eventually have an effect on the environment and the availability of water. We start to notice the effects after some time and can then work out when the drought started. We wouldn't have known at the time because our climate is so variable that a few months of dry weather is perfectly normal. Our natural environment and our water supply systems are easily able to cope with weather that is slightly drier than normal for several months.

It's also hard to know when a drought is over. Some places recover more quickly than others, so the residual effects can linger for months. Droughts are not necessarily

over when we've made up the lack of rainfall compared to the average. A drought is over when its impact is no longer felt.

Is this the impact of climate change and global warming?

We cannot attribute an individual weather phenomenon to climate change. We have seen many droughts before and the present weather conditions are well within the normal range of our climate. We do know that our weather patterns are likely to change in the future and as a result droughts may occur more frequently.

What are the environmental impacts of droughts?

Lower flows in rivers lead to lower levels of dissolved oxygen and lower dilution of effluent discharges. In hot weather, the water in rivers and streams heats up more quickly when flows are low.

Low flows lead to a reduction in fish spawning areas and can reduce fish migration. Low oxygen levels, especially in lakes and slow-moving water, can kill fish. Algal blooms in lakes, ponds and slow-moving water turn rivers green and kill fish and other aquatic life. They can also be dangerous for the wildlife that drinks from rivers, livestock like cattle, and pets and children – dogs can die from drinking water affected by some sorts of algae, and children can become ill from swimming or paddling in affected water.

Aquatic and marginal plants can find it hard to survive when flows are low and the edges of rivers and streams dry out. Wetlands can also suffer – drying of wetlands sometimes leads to irreversible changes in the ecology of these sensitive areas.

Away from rivers and wetlands, drought affects natural vegetation and crops. Crops may fail or yields may be low. Long, hot summers with very dry soils may kill some trees. Some trees respond to moisture-stress by dropping their leaves early, so early leaf fall is not automatically a sign that a tree is dying.

Why don't you ban hosepipes, sprinklers, car washes and other 'wasteful' uses?

Decisions on restrictions of public water supply, such as hosepipes, sprinklers and other non-essential uses like car washes and ornamental fountains, are imposed by water companies and not the Environment Agency. Water companies can decide to

ban hosepipe and sprinkler use without permission from the Environment Agency or government. As a drought becomes worse, we expect water companies to impose such bans.

Does a drought reduce the risk of flooding?

Dry soil and low rivers have more capacity to absorb rainfall, but soil baked hard by a spell of dry weather can become too compacted to absorb a sudden downpour quickly enough. The combination of hard ground and heavy rainfall can cause flash floods. The rain hitting the hard soil runs down hillsides, swelling rivers and streams, and the sudden extra volume of water can cause these rivers and streams to flood very quickly, often with very little warning.

Can more be done to reduce leakage and water being wasted from supply systems?

It's true that some water is lost through leaky pipes. However, some leakage needs to be tackled with long-term mains replacement programmes, which requires investment by water companies, and takes time as well as money. At the moment we are dealing with a lack of rain due to a very dry winter and that is why we are asking people to be more water-wise.

Water companies will need to make sure that they are putting extra effort into leakage control this summer, to reduce the risk of wasting water. In some places, dry conditions can increase leaks because the drying soil puts more strain on the joints in the pipes that supply water. People can help – report any obvious leaks to your water company so that they can be fixed as quickly as possible.

Why not build more reservoirs?

Reservoirs take a long time to plan and build - up to 20 years or more. Our water supply systems are designed to cope with the worst droughts we have seen over the last hundred years and still have some water to spare. It would be hugely expensive to water customers for water companies to build more reservoirs in order to cope with a drought that is likely to occur only once every 50 to 100 years. These reservoirs would rarely be used. Instead, we can all use the water we have more carefully.

We have enough water for all but the most severe droughts, though we all have to save a bit of water through hosepipe bans sometimes. Building new reservoirs would

let us get through droughts that happen really rarely – so most of the time, they'd sit there doing nothing!

Why can't we take more water from rivers?

Most rivers cannot support more abstraction in the summer. This is why water companies build reservoirs in which to store water taken from rivers in the winter, for subsequent use in summer, when direct river resources are more stressed.. If the drought becomes more severe, water companies can apply to use river and groundwater supplies that would not usually be available to them. These applications are considered carefully to ensure that abstraction results in minimal environmental impact.

What about water metering?

Metering is a way to help people to save water and we encourage increased water metering – with appropriate safeguards to aid those who really need to use more water than average.

On average, each person in England and Wales uses 150 to 160 litres per day in households without water meters. As a rough guide, a bucket of water holds 10 litres, so that's 15-16 buckets of water a day each. Households with water meters use less water, on average 130 to 140 litres (or 13-14 buckets) per day per person.

This is partly because the people who choose to have meters do so because they will save money – so they're already likely to be lower water users. However, people who switch to meters also tend to start saving water when they switch – typically between 5 and 15 per cent less water.

Metering isn't a quick solution and won't deliver new water savings for this summer. But we can all act to save water – by cutting down on garden watering, showering instead of bathing, and using water sensibly.

What about a national grid?

There are already transfers of water between different areas, but building a big pipe network would be very expensive. Water is very heavy and expensive to pump around. That's why we think that making the best possible use of the water we have, makes sense.

It's up to the water companies to ensure they manage their water supplies. However, in their 25-year plans, none of the water companies have recently raised the idea of a national grid as a possible option to manage supplies.

We are undertaking a preliminary study to look at how much a big pipe network would cost and the environmental impacts. This will be completed in the next couple of months.

Other, drier countries don't seem to have as much of a problem as we do, why?

Our high population density means that parts of England have low water availability for each person – less than in most of Europe and some parts of Africa and the Middle East. It is not economic to design systems to supply water to meet the most severe of droughts. Typically, water supply systems are designed to meet a drought of a severity expected once every 50 years or so.

Do drought conditions and low river levels reduce the quality of drinking water?

No. The treatment of drinking water ensures that its quality is not affected. Droughts can affect the quality of untreated water, for example rivers can suffer higher water temperatures, which can increase the growth of algae and lower summer flows will reduce the dilution of sewage and agricultural discharges.

What is the Environment Agency's role in a drought?

We are responsible for monitoring, reporting and acting to reduce the impact of drought on the environment. We work with water abstractors to manage the demand and availability of water and decide whether water company applications for drought permits are reasonable. Water companies are responsible for maintaining supply to meet the needs of their customers, while still protecting the environment.

We have drought plans for all of England and Wales. These set out how we will manage water resources during a drought. These plans aim to balance the competing interests of the environment and the need for public water supply. They contain a range of environmental indicators that determine the action we will take to achieve this aim. Actions to manage drought include increased environmental monitoring, liaison with water companies, public awareness campaigns and assessments of drought permits and orders.

How does the Environment Agency work with water companies to manage a drought?

Water companies are responsible for maintaining supply to meet the needs of customers, the environment and other water users. All water companies have drought plans. These plans set out the actions water companies will take during a drought to maintain public water supply, including hosepipe bans, leakage control, drought permit applications and publicity campaigns encouraging water conservation. We review these plans to make sure that companies take appropriate action to balance the need for public water supply with the needs of the environment.

Water companies can apply to us for drought permits to abstract more water than they would normally be allowed to. When determining these permits, we need to be satisfied that the water company is acting in line with its drought management plan and that additional abstraction will not result in long term or significant damage to the environment.

We do not advise water companies on whether they should implement hosepipe bans and other water restrictions. These decisions are taken by the water company in line with their drought management plans. But we will tell water companies if we believe that they are not acting quickly enough.

What are drought orders and permits?

Drought permits and drought orders allow water companies to abstract extra water or change the conditions of their existing abstraction licenses. They can use them only when there is a shortage of water caused by drought. The public and other organisations have the opportunity to object to any proposed drought permit or order.

Water companies can decide to ban hosepipe and sprinkler use without permission from the Environment Agency or government. Non-essential use bans – stopping for example fountains and car washes – require a drought order.

Are we running out of water in England and Wales?

No. Demand for water is greatest in the east and south-east of the country, and long-term planning aims to find the best way to meet new demands in these areas. Using the water we have as sensibly as possible must be part of the solution.

How much water do we use?

On average, each person in England and Wales uses 150 to 160 litres per day in households without water meters. As a rough guide, a bucket of water holds 10 litres, so that's 15-16 buckets of water a day each. Households with water meters use less water, on average 130 to 140 litres (or 13-14 buckets) per day per person.

How much water is available?

Despite being commonly perceived to have a wet climate, England and Wales actually have less water available per person than most other countries in Europe and even some countries in Africa and the Middle East. While some parts receive large volumes of rain, we also have a high population density. The result is that, for each person, there is relatively little water.

Is drought made worse by development and housing growth?

No. Drought is the result of lack of rainfall. Housing growth and development increases the demand for water. The increase in demand can be minimised by simple measures that will help to protect the environment. For example, new homes can be fitted with water saving devices, such as low-flush toilets, to improve water efficiency and minimise environmental impact.

What can the public do to help?

Saving water at home or in the garden takes very little effort, but makes a surprisingly big difference. In general, this involves simply cutting out the amount of water we are wasting through our day-to-day habits.

Turning the taps off when you brush your teeth can save up to 5 litres a minute. If the entire adult population of England and Wales did this, we could save a total of 180,000 litres a day, enough to supply nearly 500,000 houses.

For more information on what people and businesses can do, see:

<http://www.environment-agency.gov.uk/savewater>.

**Would you like to find out more about us,
or about your environment?**

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