Broads Forum
5 April 2012
Agenda Item No 5

A Review of the Current Drought Conditions in the Region and Especially the Broads

Report by Head of Strategy and Projects

Summary: This paper summarises the latest situation about the drought as at mid March and considers some of the implications for the area. It particularly reflects on the main issues for agriculture and the demand conflicts that can arise. The likely climate trends are touched upon leading to an exploration of how we might have to alter how we cope with the climate into the future. Members are asked to give any observations about what the priorities and possible actions could be for the area and for the Broads Authority.

1 Introduction

1.1 Following discussion at the last meeting of the Broads Forum, it was agreed to bring a report on the potential drought facing the area. With the help of Forum member Andrew Alston and the Environment Agency we have produced a background paper to put the issue in context.

2 The Drought – What is the Situation?

2.1 Summary

- We are now formally in drought.
- Below Long Term Average Rainfall for many months.
- Compares badly with 2011 and last drought in mid 70s.
- Monitored via rivers and groundwater.
- Triggers additional powers to review and control abstraction for spray irrigation.
- Triggers additional powers for water supply companies to control use and Anglian Water have announced domestic hosepipe bans.

2.2 Detail as of mid March

2.2.1 Rainfall

(i) Following a very dry spring and autumn last year we have had average rainfall in December and January but again February was very dry with only 8 – 15mm of rainfall (note the bulk of the precipitation was as snow fall over the first weekend of the month) representing about 30% of what we would normally expect to receive this month.

(ii) Looking at the rainfall deficits across the period of March 2011 through to 7 March 2012, in Norfolk we have had about 72% of Long Term Average (LTA). The recent rainfall, between 1 and 7 March was welcome with 46mm falling in Norfolk (over 108% of the long term monthly average), which has improved the figures.

		Daily total rainfall averaged over each county (mm)					
		NORFOLK	% LTA	SUFFOLK	% LTA	ESSEX	% LTA
5 day	1-7 March 2012	46 mm	108	29 mm	71	17 mm	44
1 month	1 Feb- 7 March	59 mm	68	44 mm	55	23 mm	30
2 month	1 Jan -7 March 2012	98 mm	68	87 mm	65	68 mm	54
6 month	1 Oct 2011 - 7 Mar 2012	209 mm	62	199 mm	64	184 mm	63
1 year	1 Mar 2011- 7 Mar 2012	468 mm	72	435 mm	72	423 mm	74

2.2.2 **Soil Moisture Deficit**

Soils are abnormally dry with the soil moisture deficit for Norfolk as a whole being 20 -30mm To put this in context, the previous highest recorded deficit for the area (1970 to 2006) was 19mm and normally we would expect the value to have reached zero in January.

2.2.3 **River Flows**

There has been some response to rainfall in early March provided a short respite but the underlying situation is of Norfolk rivers flowing at exceptionally low levels for this time of year

2.2.4 **Groundwater Levels**

Chalk groundwater resources are a significant concern. Many of the Norfolk rivers rely on inputs from the chalk to support river flows, and as yet recharge of the chalk aquifer is still to start in earnest.

2.2.5 **Agricultural Abstraction**

(i) In river catchments in Suffolk and Norfolk, which are reliant on a significant groundwater contribution, storage reservoir uncertain over the remaining weeks to the end of March and it may be beneficial for licence holders to extend their refill season into April. The Environment Agency is offering to support them in line with a regulatory position statement that they have issued nationally.

(ii) If the dry weather continues it is expected that formal restrictions on abstraction for spray irrigation may be required by June. The Environment Agency has written to all groundwater abstractors asking for voluntary reductions to try and conserve the resources available.

2 What are the Possible Impacts on the Broads

2.1 There are a range of impacts starting to be felt and could become more significant the longer the drought continues. These include:

- Low flows in rivers and low river levels at times which may have impact on the navigable water depth (under keel clearance) as well as reducing the level of oxygen held within the water.
- Shallow ponds and lakes dry up.
- Larger lakes and reservoir water levels fall and possibly dry up altogether.
- Drying out of habitats and the allied stress on species – particularly significant for the fens, grazing marshes and wet woodlands.
- A prolonged drought can dry out the peat and then this can be subject to oxidation which damages its structure and biodiversity value, making it friable and prone to fire, and reducing its capacity for holding water when soil moisture levels return.
- Risk of fires within dry habitats.
- Less flushing of salt tides and salinity increases upstream.
- Less flushing /dilution of nutrients /pollution coming into the water. This pollution can lead to more obvious blue green algae blooms with their potential toxicity.
- Diffuse pollution may actually temporarily decrease due to reduced run-off.
- Heavy rain falling on hard ground however will cause an increase in run-off.
- Soil moisture decreases – important even in normally "dry" sites.
- Impacts on agriculture (see below) especially if restrictions are brought in on abstraction to maintain environmental water levels.
- Controls on public water supply are likely to increase to retain a balance of need between the environment and users.

3 The Drought from the Perspective of Farmers

3.1 Farmers have been conscious of the low water levels for some time and many have entered voluntary agreements to reduce abstraction and pumping. In some locations abstraction licence controls have already been applied. If the drought continues it is likely Section 57 controls on Spray Irrigation will be brought in that can create severe constraints on crop production. To counter this many farmers are working within abstractor groups to develop advanced voluntary reductions in demands to avoid severe constraints suddenly arriving and giving greater clarity on what might be available throughout the season. This is having knock-on effects on the amount of land put down to vegetables with a view it is better to grow 70% of the possible crop well, rather than 100% badly.

3.2 The recent growth in long term and highly specific contracts with supermarkets and wholesalers does create stresses with the potential of crops not able to meet the high specifications. The implications could be supermarkets looking to producers elsewhere in Europe to supply the goods

although as low rainfall is not confined to the UK, this in turn is likely to push up European prices.

3.3 NFU Deputy President, Meurig Raymond said: “Farmers and growers take water management extremely seriously. It is good to see that constructive dialogue between water companies, the EA, government and farmers, as well as better forward planning, has ensured that water resources have been available for essential uses such as food production.

3.4 “Most agricultural production in England and Wales is rain-fed, with only one per cent of water resources nationally being taken from ground and surface water sources for agricultural use. The NFU is now discussing with water companies how drinking water will continue to be made available for livestock and with the EA on how restrictions on crop irrigation could be phased in to allow advance planning and use of voluntary restrictions wherever possible.

3.5 “People need to realise that there is no quick fix to this issue. Increasing investment in on-farm water storage capacity will be vital going forward. To that end the NFU would urge to reinstate the tax relief for the cost of farm reservoirs in next week’s Budget.”

3.6 Local and wider farming groups and the Environment Agency are working together to try and manage the situation in a fair and equitable way.

4 The Longer Term Implications of Changing Rainfall

4.1 The climate predictions for the region suggest that the trend will be for lower summer rainfall, maybe wetter winters, and the likelihood of more extreme events. All this suggests that there is a need to adjust to a new range of coping. For example, if winter rainfall continues there will be the chance to establish more localised reservoirs for crop irrigation. More water control structures may enable water to be held back in habitats and peat-land during the winter to cope with drier summers. More extreme events will increase the need for buffer protection of waterways to try and ensure flash flooding does not wash in excessive sediment and nutrients exacerbating the chance of algal blooms.

4.2 There may be a requirement to review the balance of needs and priorities for water use and the environment. It is highly likely that there will need to be an even greater effort in investment to meet demands. This would be a continuation of work to reduce and ultimately remove leakages from the water supply network; investment in water transfer and storage infrastructure; more efficient use of water within business and an awareness by domestic users leading to greater water conservation measures (including proactive management of the complete water cycle, holding back water in the system for more gradual release).

4.3 New research and investment will also be needed in the agricultural industry to make it more resilient. The development of varieties with less water demand or greater tolerance of variations; a move towards differing crops

more suited to the new climatic conditions; greater water on land conservation measures including holding water for habitat benefits (which may also help with issues such as flood management).

4.4 A challenge within all this is identifying who should be leading on the new research and investing in the development of new approaches – taking on the additional risk management.

5 Observations on what a local response could be?

5.1 As the drought develops we are likely to see conflicting demands on a finite resource. We will also potentially start to see environmental impacts. Forum members may like to make observations on where they feel the emphasis should be for the Broads, and for the Broads Authority, to help inform the strategic response to such situations. Questions that might be considered include:

- What is needed to make better decisions?
- How do we balance competing demands?
- What might the biggest concerns / priorities be?
- What incentives are needed and where?
- What is the Authority's role in all this (conservation; recreation and navigation; planning control; innovation; education) ?

Direct action that could be considered includes:

- Supporting the drive to minimise water use.
- Other information and interpretation initiatives reaching out to the residents, users and visitors to the area.
- Highlighting sites of concern such as drying wetlands.
- Reporting fish in distress.
- Provision of monitoring data to the Environment Agency.

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Appendices: None