

The Challenge of Sustainability Reductions to Groundwater Abstractions

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A history of concern of 'overabstraction'

- 1988-92 drought – 40 ALF low flows sites
- National Environment Programme – investigations & solutions
- Water Resources Environment Programme – investigations only
- Habitats Directive Review of Consents – implementation of solutions
- Water Framework Directive Characterisation – areas under stress
- A programme for 'Restoring Sustainable Abstractions'

Legislation

EU Habitats Directive and UK Habitats Regulations

New abstraction licences, variations and 'renewals'

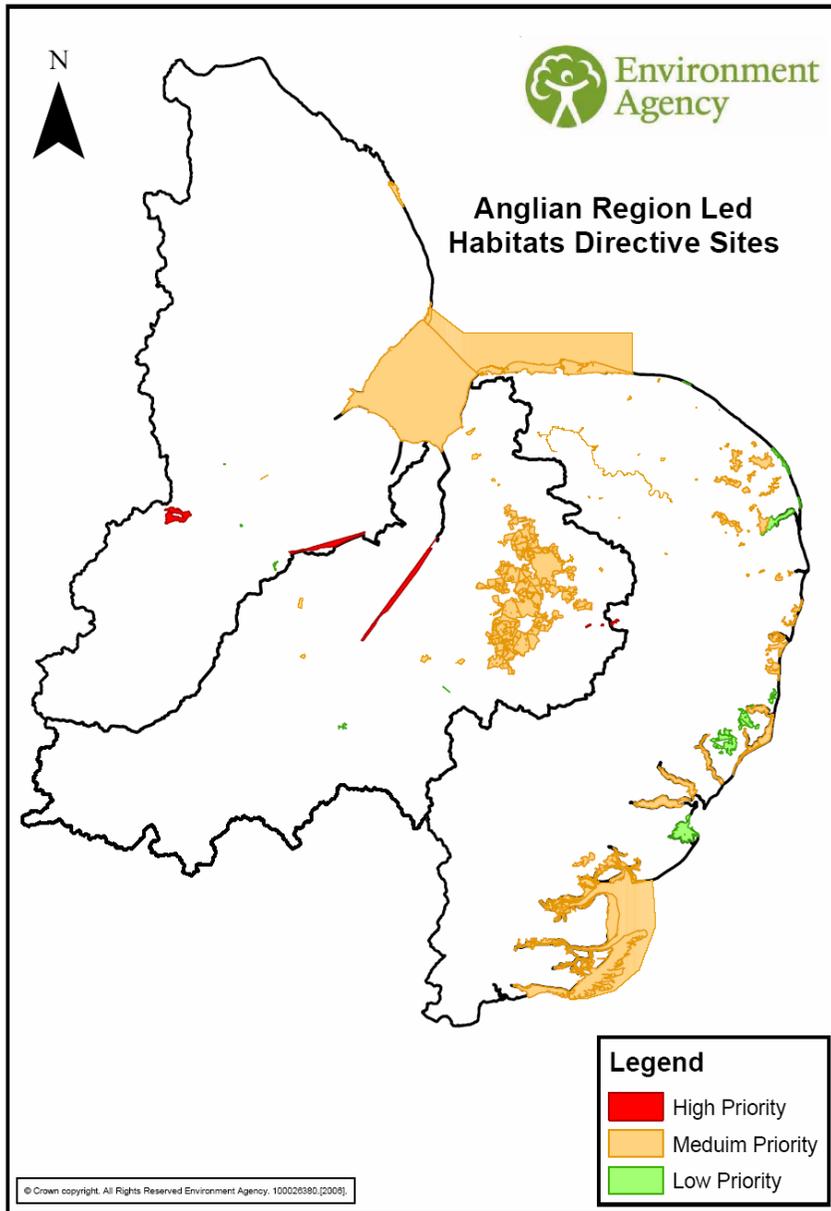
- require an Appropriate Assessment as a plan or a project if considered likely to have a significant effect on a designated site

Existing abstraction licences

- subject to the Review of Consents to determine if the licence should be affirmed, modified or revoked to protect designated conservation sites

Water Framework Directive

- Definition of measures required to achieve favourable conditions / status and hence a further review of impact and a programme for abstraction licence changes



HDRoC sites in the Anglian Region

- Led by EA as the Competent Authority
- 40% of the SAC / SPA sites in the UK
- Majority of AW licences included
- Assessment of impact on:
 - wetlands, fens, lakes etc.
 - river corridors
 - tidal estuaries and coast
- Targets for completion by site priority
 - high 2006
 - medium 2008
 - low 2010

The appliance of science

Site investigations through signal testing of sources

- response of monitoring boreholes in pathway between source and site to changes in the normal abstraction regime

Hydrological and ecological monitoring

- evidence of response within sites to pumping and climatic factors

Theoretical calculations and groundwater models

- estimation of drawdown in aquifers and superficial deposits for comparison to target conditions

The legal steps and tests

Stage 1 - identification

- exclusion if no linkage between a licence and a conservation site

Stage 2 - screening

- significance of the hydrological effect of the licensed abstraction
- likelihood of ecological effects on the protected habitats and species
- subject to the Precautionary Principle

Stage 3 - Appropriate Assessment

- more detailed review of effects using best available information
- proof needed that licence will not affect the integrity of the site
- most licences have progressed to stage 4 with Precautionary Principle

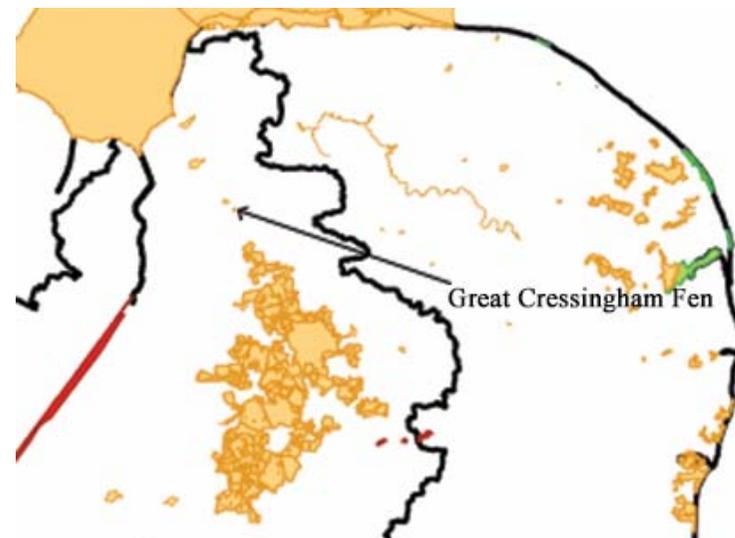
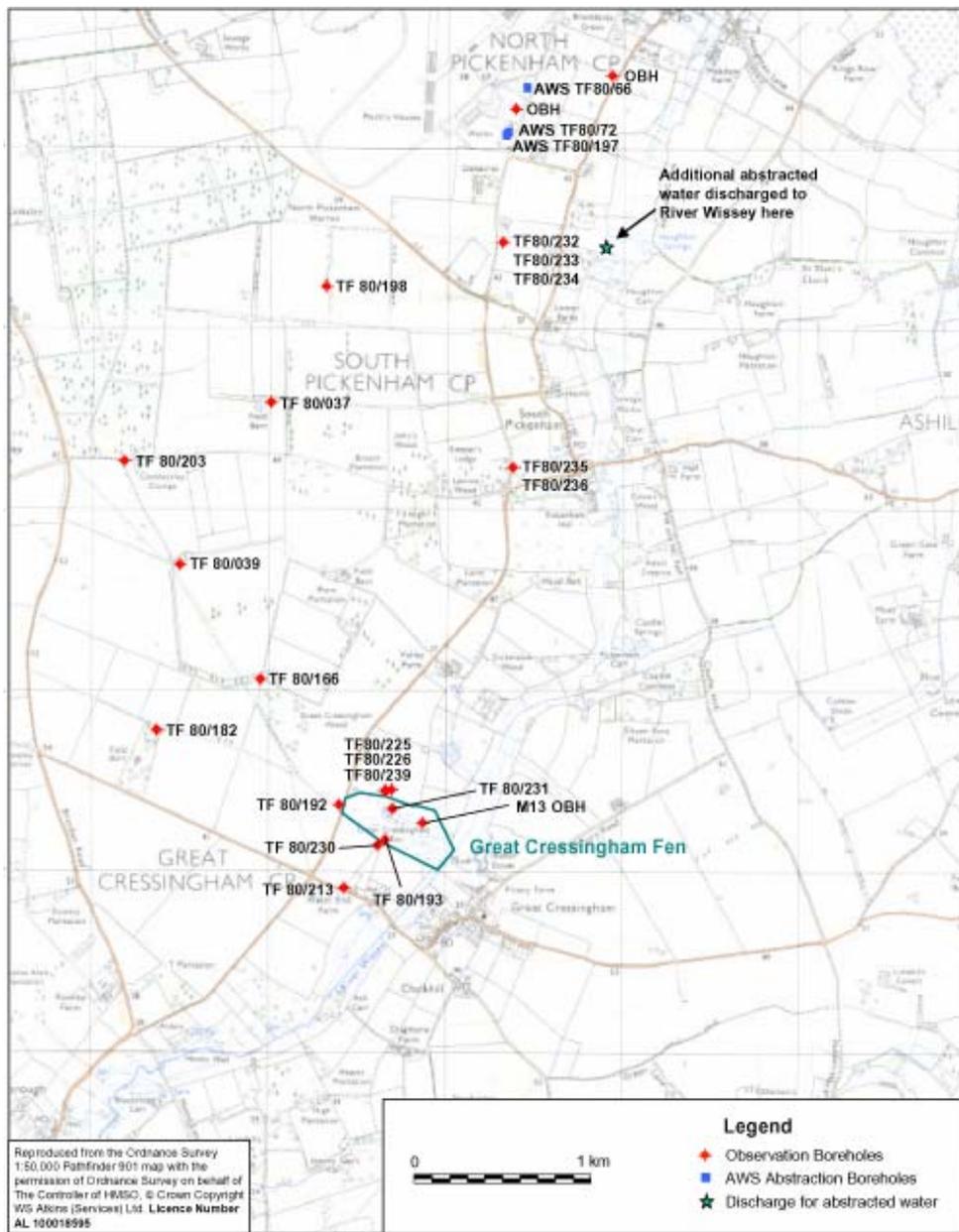
Stage 4 - options appraisal and implementation

- review 'site model', options and the case for sustainability reduction
- work is still in progress at the majority of sites to determine actions

A case study – Great Cressingham Fen

A brief summary:

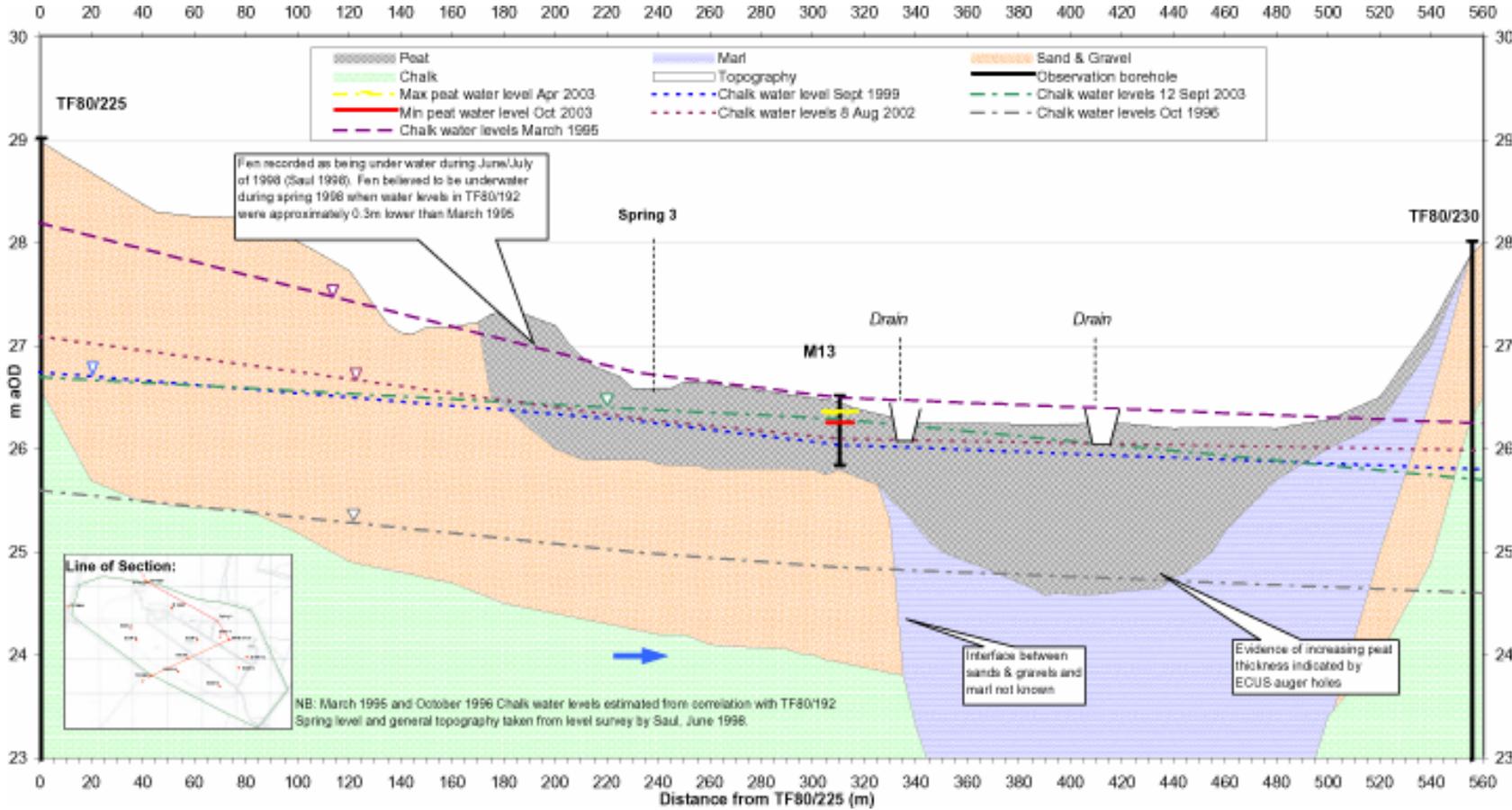
- North Pickenham chalk boreholes licensed pre 1989 for 1,227 MI/yr
- Works uprated in 1989 to 1,874 MI/yr, time limited for 10 years
- North Pickenham site 4 km from Gt Cressingham Fen SSSI
(part of the Norfolk Valley Fens SAC and considered as a high priority site)
- Licence renewed in 1999, 2001 and 2005 under the Habs Regs.
(In 2001 after an appeal hearing and a case for overriding public interest)
- Investigations for AW 2000-2005 concluded 'no measurable impact'
- Ecological surveys have found no evidence of decline in the fen habitats
- Stage 3 using extensive groundwater modelling concluded that it could not be shown that there was no risk of an affect on the integrity of the Fen



Great Cressingham Fen
 - Borehole Locations
 from Atkins report for
 Anglian Water, December 2004

Great Cressingham Fen – Conceptual Understanding

from Atkins report for Anglian Water, December 2004



The Challenge

- EA work on Stage 4 with further catchment modelling and consideration of the 'range of impact' for high priority sites due for delivery later in 2006
- Potential outcome for North Pickenham of 35% sustainability reduction in March 2007, unless original licence restored
- EA Anglian region 'Water resources for the future' report in 2001 refers to sustainability reductions of 40 MI/d by 2010 and 210 MI/d by 2025 – Anglian Water's share could be ~100MI/d or ~6% of output
- Outcome for high priority sites will determine the process to be used based on scientific or legal interpretation and argument

The Solution ?

- Sustainability Reductions were excluded from the Supply-Demand balance for PR04 / Water Resources Plan 2004
- 'Solutions' were excluded from the AMP4 Water Resources Environment Programme
- The Environment Agency's Restoring Sustainable Abstraction programme, to be funded through abstraction licence charges, is limited to a 'first phase' of 20% of the estimated total cost
- The next opportunity to include SR in the Supply-Demand balance is PR09 / Water Resources Plan 2009