Water Resources in Essex

- Overview of Essex Supply System
- Long term plans
- Water resource planning
- Demand management
- Resource Development
- Abberton Scheme
Essex & Suffolk Supply Areas
Context

- Essex is the driest county in the UK
- Only 50% sourced within area in dry year
- Water transferred long distances
- Stored in two large reservoirs
- Only 3% is groundwater derived
- Flat terrain - high pumping costs
Rainfall

Rainfall at Hanningfield, 1960 - 2006

Annual Mean, 1960 - 2006
Yearly Rainfall Totals
Where Our Water Comes From

Unsupported Essex Rivers 47%

Groundwater 3%

Bulk Supply Import from TWU to Chigwell 20%

Ely Ouse to Essex Transfer Scheme 30% (in dry years)
The Ely Ouse to Essex Transfer Scheme
# Historic Utilisation of EOETS

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Required by ESW</th>
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<tbody>
<tr>
<td>Wet Year</td>
<td>none required by ESW</td>
</tr>
<tr>
<td>Normal Year</td>
<td>up to 7%</td>
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<tr>
<td>Dry Year</td>
<td>15% to 35%</td>
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</table>

Percentages of water transferred dependent on water availability at Denver.
Challenges for Water Resource Planning

- Long Term Forecasts
- Uncertainty over climate change
- Future housing levels
- Changing demographics (lower occupancy, increasing per capita consumption)
- Long promotion timescales
- Safeguarding the environment
- Cost (partnerships vs competition)
- Balancing the objectives of different stakeholders
- New legislation
Challenges Faced in Essex

- Operates in one of the driest regions of the UK
- Essex currently in resource deficit for a dry year.
- Increased demand for water in Essex in medium/long term.
- No potential for new resource development within Essex, as no intrinsic water availability.
- Uncertainties posed by climate change, time limited licences, environmental drivers and sustainable abstraction.
History of Water Resource Planning in Essex

1991 to 1999

Various Options Pursued
• Aquifer Storage and Recovery (ASR)
• Wastewater Recycling
• Temporary Denver Licence Variations

Assessment of potential reservoir sites
• 235 initially identified
• 16 shortlisted
Water Resources in Essex

Drought in 1995 ⇒ 1997
  • Hosepipe ban in place

Temporary Denver Licence Variation 1997-2002

Temporary Langford Recycling Scheme 1997/98

‘Permanent’ Langford Recycling Scheme 2003 onwards
Supply Demand Balance

Essex Resource Zone - Supply Demand Balance
Constrained Demand + WAFU Profile With New Schemes

ABBERTON SCHEME
Pipeline from Kirtling Green to Wixoe and Pipeline from Wormingford to Abberton Available for Use

ABBERTON SCHEME
'Rpermanent' Denver Variation

ABBERTON SCHEME
Raising of Abberton Reservoir + Uprating of Kennett PS

Langford Recycling Scheme

Ball Lane Borehole

Roding Well Recommissioning

Langford Nitrate Reduction

Reverse Osmosis Desalination

New WAFU Profile with New Schemes Added

Dry Year Constrained Demand Forecast

Year

Ml/d

The ‘Abberton Scheme’
2000 onwards

Recognised in 2000 that the three schemes that had been investigated since 1992 were effectively inter-related elements of the same scheme:

1. Variation of the Denver/Blackdyke Licences
2. Upgrade of the Transfer Route (EOETS)
3. Raising of Abberton Reservoir and increased storage
THE DENVER COMPLEX

- Ouse Washes
- Denver Sluice
- Cut Off Channel
- Great Ouse Tidal Relief Channel
- Ten Mile River - Ely Ouse
- 100 foot River
- To Essex
- Diversion Sluice
ABBERTON SCHEME EIA
Interconnectivity & key parameters

Climate Change
CAMS

The Wash
SAC/SPA
Ramsar

HOF

12/18 month licence
Daily Licence

Denver

CoC

Water Quality

Ouse Washes
SPA/SAC
Ramsar

Ely Ouse

Water Quality

The Wash
SAC/SPA
Ramsar

Wormingford HOF

Langham

Stratford St Mary

Cattawade

Stour Estuary
SPA
Ramsar

Stour 5 yr licence
River Stour

Washingford HOF

Drawdown
Birds
Macrophytes
Water Quality

Fresh water Flows (Quantity)
Water Quality
Effects on interest features

Fresh water flow Flood Relief channel
Dredging King's Lynn Port
Fresh water flow to Wash
Ouse Washes drainage
Wash Ecology

Siltation
Salinity and water quality

Abberton
SPA
Ramsar

Abberton
Control
Curves

Stour
Estuary

 SPA
Ramsar

Langham

Stratford St Mary

Cattawade

Stour

Estuary

SPA
Ramsar

Wormingford HOF

Langham

Stratford St Mary

Cattawade

Stour
Estuary

SPA
Ramsar

Flooding
Water Quality
Hydroecology
Effects on biota
Effects on users

Fresh water Flows (Quantity)
Water Quality
Effects on interest features

V3 June 2006 - Northumbrian Water Limited
Programme milestones

• Evidence being collated for submission in 2007 – projected Public Inquiry in 2008
• Expected decision in 2009
• Pipeline construction 2009-2011
• Reservoir raising 2010-2013
• Reservoir filling 2013-2014
• Raised reservoir in use 2014
Key Stakeholders

- Political - MPs, Councillors, Defra, ODPM
- Regional - EEDA, EERA, GoEast
- Regulators – EA, Ofwat, CCW
- Local communities and landowners (customers)
- Environment - EN, RSPB, Wildlife Trusts
- Media
- Formal Consultation groups
Formal Recognition


……recommends to: “include the raising of Abberton reservoir, supported by Ely Ouse transfers”
DEMAND MANAGEMENT

CORPORATE RESPONSIBILITY
Demand Management

Leakage
• Significant reduction over last 11 years; keeping at or below the ‘Economic Level’ (ELL)

Water Efficiency
• specific initiatives for homes
• Industry leaders on the promotion of water efficiency initiatives

Metering
• Meter penetration in Essex currently 37%
Leakage Management

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<tr>
<th>Year</th>
<th>Actual Leakage</th>
<th>Leakage Targets</th>
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<td>92/93</td>
<td>95</td>
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<td>93/94</td>
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<td>09/10</td>
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Economic level
Water Efficiency History

- Feb 1996 New Duty to promote
- June 1996 Ofwat MD118 letter requiring plan
- 1997 Watersmart, leading to 10,000 audits pa
- 1997 Hippo trial, waterbutt sales
- 1999 Water Forum
- Schools projects, waterbutt savings, hospitals etc
Water Efficiency

- Water in Sustainable Communities conference
  April 2005

- Research project on maximum savings achievable in new homes (technology + behaviour)

- Continued programme of audits and projects

- Conference on Behavioural Change
  - May 2007
Water Efficiency

National Water Efficiency Awards
6 March 2007

“over the years of judging many excellent entries, there was one company that has always been a consistent and reliable participant in these Awards. A company that has taken time and effort to present high-quality entries and really show that water efficiency is not just a one-off project, but a constantly evolving organisational challenge.”

“This is a unique record and really sets a standard for all other companies”
Water Efficiency

National Water Efficiency Awards
6 March 2007

“The track record of this company prompted us as judges to question whether a special award – something on a par with a BAFTA Lifetime Achievement Award – could be created and presented to this organisation in recognition of their sustained effort and hard work. To our delight the Environment Agency gave us their full support and agreed to sponsor this special award for 2007”.

“.this award is made in recognition of the team effort in entering these awards, and for the enthusiasm and tenacity they show in making water efficiency a core part of their company philosophy”
Impact on Total Water Use

- Population (000's)
- Distribution Input (Ml/d)

Graph showing the impact on total water use with Population and Distribution Input over the years from 1994/95 to 2004/05.
CORPORATE RESPONSIBILITY

- Model & reporting
- Key Aspects
Corporate responsibility model

[Diagram of corporate responsibility model with various sections such as Environment, People, Competitiveness, Customer, Policy, Action Plan, Key Study Reported KPIs, and Reputation.]
Health & wellbeing policy

We aim to protect our people from work related risks and encourage them to strive for high standards of health and wellbeing.
Health & wellbeing action plan

- Management of stress & pressure
- Back management review
- Occupational health & wellbeing awareness.
Health & wellbeing KPIs

• Employees attend medical appointments within 4 weeks of referral
• Introduce online absence reporting
• Back management review – action plan in place
Essex & Suffolk Water