

Norwich Institute
Sustainable Development

Farmer Collaboration for Water Management in Norfolk

RNAA-NISD Norfolk International Scholarship 01

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Introduction

What?

- Farmer collaboration on water management during drought
- Analysis of barriers to collaboration
- Seek successful international comparators

Why?

- Water availability is one of most critical issues for farmers
- Norfolk needs water for public use, agriculture, and nature
- But Norfolk has increasingly erratic rainfall, water shortages and droughts
- Nationwide regulatory changes will limit water access
- Collaboration can help farmers to address shared problems

Water in Norfolk is essential for agriculture and environment

- Highly agricultural region - 28,000ha (80%) of Norfolk's land used for agriculture
- Norfolk farms mainly cereals, vegetables, livestock and dairy production. Some highly water intensive.
- Farmers rely on irrigation when rainfall is low or irregular.
- Water is essential for preserving valuable environment, animal and plant habitats.
- Protecting the environment is becoming more important and water laws are evolving
- Newer laws include the **Water Framework Directive** (EU) and **Sustainable Groundwater Management Act** (USA).

"By 2050, more severe droughts...will create a deficit of 80 million litres per day in our surface water sources. Groundwater sources will also be affected...If we do not invest now in new sources of water, households and businesses will face shortages in future droughts".

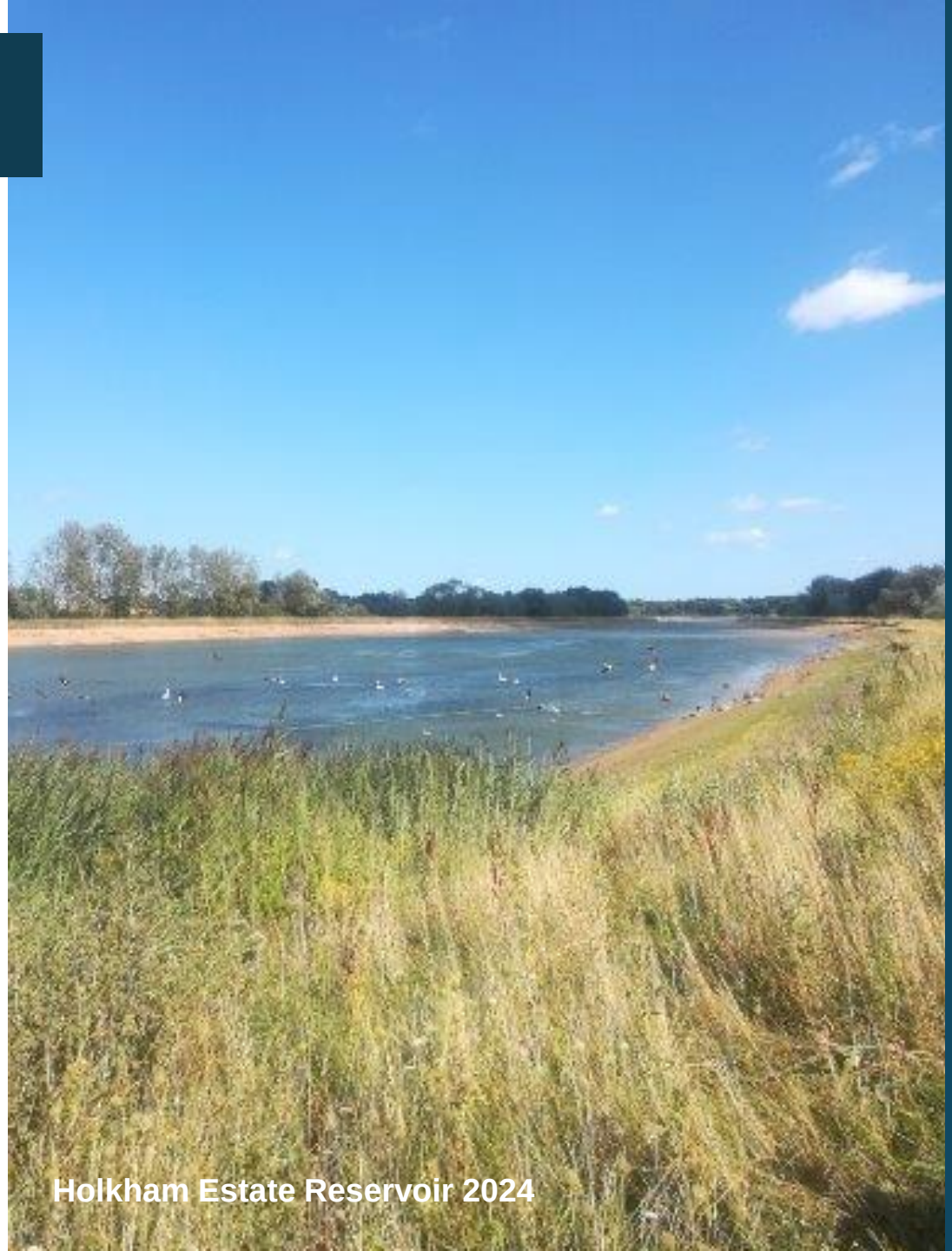
(Anglian Water 2023)

Regulations are changing water management and use in the UK

UK Water Resources Acts of 1999 and 2003 legislate water use.

Recent Environment Agency reforms for water management in the UK include:

1. Converting abstraction licenses into permits that reflect local water conditions
2. Removing seasonality conditions in favor of water availability
3. Limiting water abstraction when water levels are too low (“hands off flow”)
4. Allowing storing of bonus water: certain catchments at certain times
5. Establishing pre-approved water trading rules



Holkham Estate Reservoir 2024

Collaboration offers many benefits, but some challenges too

On- & off-farm collaboration



trading water



sharing water storage



Irrigating communally



influencing water policy

By collaborating farmers can:

- Negotiate to allocate water efficiently
- Sell unused water
- Maintain water abstraction levels

Collaboration challenges:

1. Updating policies and regulations to be timely and flexible
2. Building adequate water storage and conveyance infrastructure
3. Establishing and strengthening water users' institutions
4. Improving information systems to communicate with farmers

Some water trading but little other water collaboration happens in Norfolk

Water trades require individual approval; real-time information on water availability is lacking.

In 2009, Ofwat and Env Agency recommended 4 actions to improve water trading:

1. Provide access to better information about licenses
2. Establish an independent body to facilitate trading
3. Establish a value of water rights and increase license costs
4. Standardize the trading process

Addressing regulatory challenges

Possible solutions:

- more localized water management and planning
- Inclusive, catchment-based approach

Case study: Holkham Emerald facilitating policy discussions

HE is a 450ha farm growing potatoes, cereals, sugar beets, beans, and cover crops.

HE irrigates with surface water, groundwater, and on-site reservoirs.

HE's size and influence gives farmers a voice in policy discussions.

As a board member for Norfolk Environment Food and Farming (NEFF), HE's Director can speak to Env Agency on behalf of farmers to prioritize water for food production.

Addressing infrastructural barriers

The UK lacks large water storage and conveyance infrastructure that would facilitate collaboration.

- Water storage infrastructure helps farmers capture and share water when it is scarce
- Bigger reservoirs can help to manage prolonged multi-year dry spells.
- Large scale infrastructure for irrigation is possible – e.g. Western US (400,000 gigalitres) and Australia (84,000 gigalitres)

Possible solutions:

- Large farms can build their own reservoirs; small farms can be supported to access shared reservoirs
- Clear agreements and trust are needed
- Water conveyance infrastructure is needed

Case study: Constructing a shared reservoir at Place UK

Place UK grows soft fruits on 500ha of land (100ha irrigated).

With five other farms, Place UK built a shared reservoir of 150,000m^3 (= 0.15 gigalitres)

Also abstracting from rivers and boreholes, Place UK has sufficient backup water for a dry year.

More farmers would build reservoirs if they could afford to and the logistics were feasible



Place UK Reservoir, Tunstead © Tim Place

Addressing institutional challenges

Farmers need more and stronger institutions to facilitate collaboration on water management.

- **Farmers' good personal relationships are essential for collaboration**: too often conflict-prone with low trust.
- Regulations restricting farmers' access to water are leading to a **mindset shift toward more cooperation between farmers**.



BAWAG

Broadland Agricultural Water Abstractors Group (BAWAG) represents 170 agricultural water abstractors in Norfolk.

BAWAG is now more proactive in representing abstractors' interests

BAWAG works with water companies to develop sustainable agricultural resource management and drought plans

Possible solutions:

- Strengthen Water Abstractor Groups (WAGs) to help farmers respond to, and influence water policy
- Involve farmer organizations in water resources planning and getting support to adjust to abstraction changes

Addressing informational challenges

Lack of information around water availability, access and opportunities hinders collaboration.

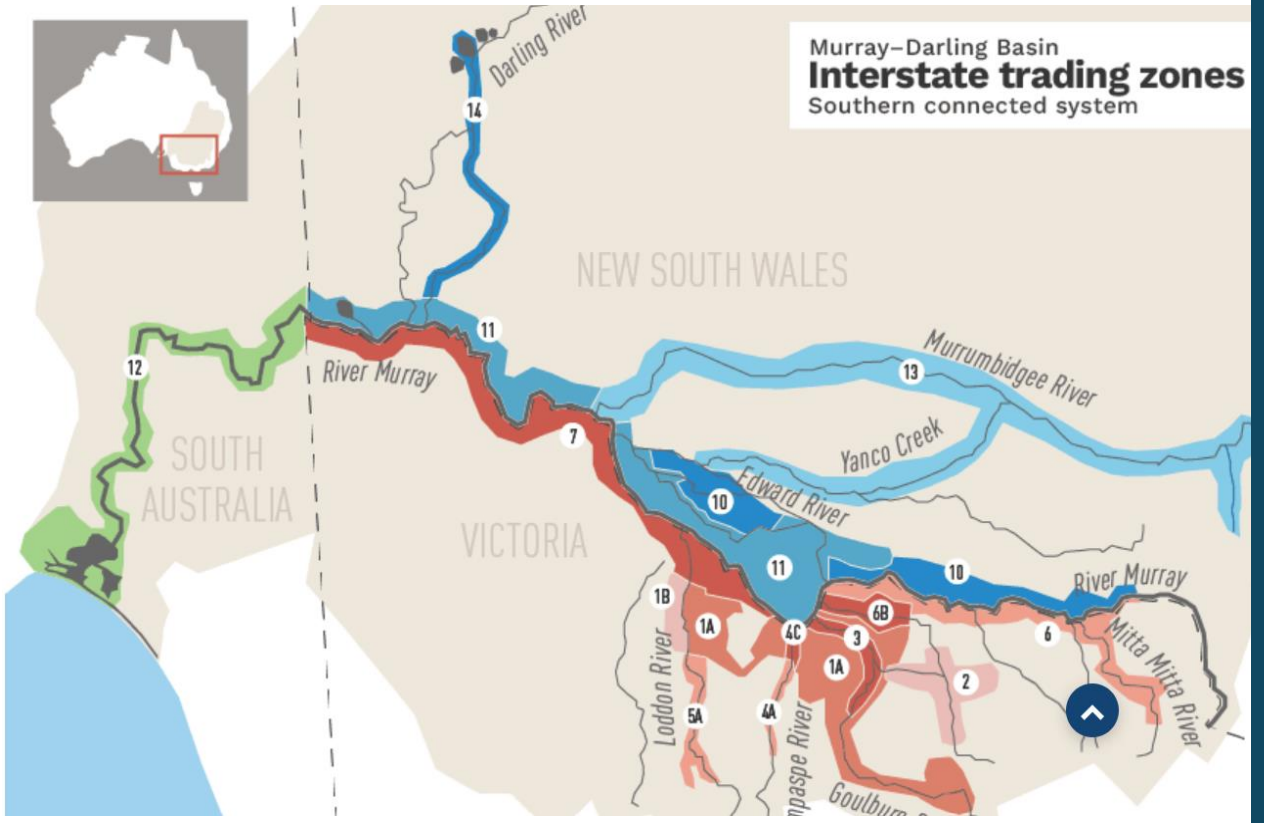
- The EA's regulatory changes have caused worry among farmers about licenses being revoked
- The new licensing system would include pre-approved water trading rules

Possible solution: Online water trading information and catchment maps would allow abstractors to buy or sell water, and to negotiate pricing easily.

Australia's online water exchange information systems - FAIR-CONVENIENT-TRANSPARENT TRADE

Murray-Darling basin irrigators use telephone and internet for water trading

Transfers now take place quickly as irrigators use online facilitie to conduct instant water exchanges before conditions of water need and availability change



California case study (1/2)

California is a major agricultural state

68,400 farms, 24 million acres, $55.9 bn (£46.4 bn) annual revenue

Primary commodities: Dairy | grapes | other fruits and vegetables | nuts

Water use

40% agriculture / 10% communities / 50% environment

Low, infrequent rainfall, few surface water sources

Farmers use groundwater in dry years. Now, overreliance on groundwater causes overdrafting



Protecting water resources

The 2014 Sustainable Groundwater Management Act (SGMA) aims to protect groundwater resources:

- Restricts locations and depth of wells
- Requires the Groundwater Sustainability Agencies (GSAs) to develop sustainable plans
- Mandates all basins to achieve sustainability by 2042

California case study (2/2)

Farmers' responses to SGMA restrictions:

1. advocating for their interests
2. adapting the crops they grow
3. abandoning farming

Some farmers are better able to adapt:
Large farms
Farms growing high value crops
Younger, more agile farmers
Farmers adopting water saving technologies

A similar effect may be seen in Norfolk after the implementation of the Environment Agency's water abstraction changes.



- On-farm collaboration is rare - water is seen as a precious resource.
- Farmers sell water to more profitable farmers, water districts, or sectors.
- Farmers and other actors are collaborating off-farm (e.g. in policy discussions).
- Collaboration is also happening to find other solutions to water scarcity: enhancing sustainable water use, improving water recharge, and exploring desalination.

Next steps?



Understand more about:

1. How are farmers' attitudes changing towards collaboration in Norfolk?
2. What works best to overcome barriers to farmer collaboration?
3. What other water management methods could complement or enhance collaboration?

Supporting Norfolk's farmer groups for water management:

1. Encourage RNAA member farmers to participate
2. Co-organize thematic events with water groups or invite them to participate in existing RNAA ones
3. Support the production and dissemination of informative materials (pamphlets, YouTube videos, briefs, etc.)
4. Ensure that groups are inclusive and representative of varying farmers' needs across Norfolk



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Photo/Figure credits

Slides 1, 2, 4 - Natasha Grist. East Anglia Farmland/ Holkham Estate reservoir (2024). Personal NISD collection.

Slide 7 - Tim Place. Place UK Reservoir Place (2022) Farmers Weekly article. Available at: https://www.fwi.co.uk/business/payments-schemes/grants/how-protected-landscapes-scheme-is-funding-farm-improvements

Slide 8 – Australian Government. Murray-Darling Basin Interstate Trading Zones Figure, southeastern Australia. Australian Government – Murray-Darling Basin Authority (n.d.) Available at: https://www.mdba.gov.au/water-use/water-markets/interstate-water-trade

Slide 10 – B. Stirton. Farmworker by irrigation ditch in California's Imperial Valley, USA. (2018) Available at: https://deeply.thenewhumanitarian.org/water/articles/2018/07/23/california-farms-water-use-still-unclear-despite-new-reporting-rules

Slide 11 – K. Siegler. Field Sign in the Westlands Water District, California, USA. (2015) Available at: https://www.npr.org/sections/thesalt/2015/06/04/411475620/californias-war-over-water-has-farmer-fighting-farmer