


Portsmouth Water Limited

Havant Thicket Reservoir & our water supply

15th January 2024

Delivering excellence for our customers, our people and our environment

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Contents

- Steve Cox, Water Resources Manager:
 - Introduction to Portsmouth Water
 - What is a Water Resources Management Plan (WRMP)?
 - Building the WRMP24 supply and demand components
 - Identifying future solutions
 - Portsmouth Water's WRMP24
- Jim Barker, Head of Water Resources:
 - The role of Havant Thicket reservoir

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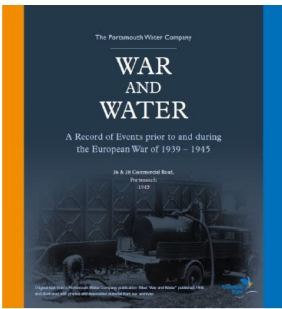
Portsmouth Water Limited
Introduction to Portsmouth Water

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160 Years of History



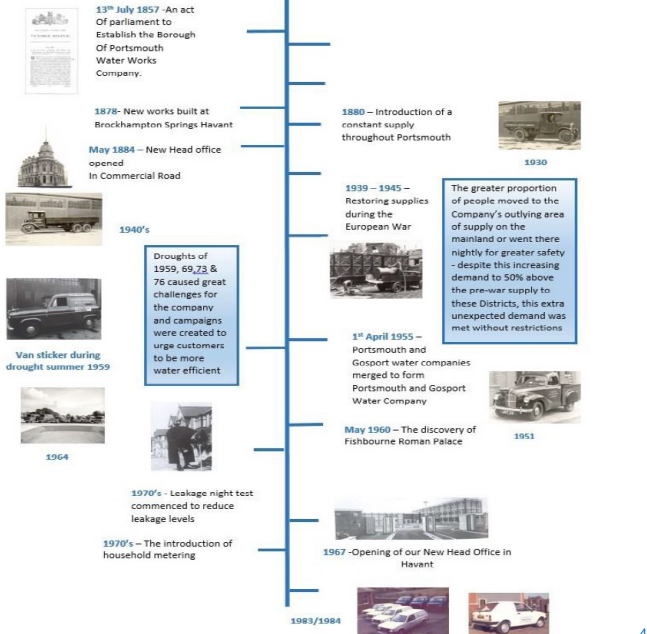


Roll of Honour.

KILLED IN ACTION.
 JACKS, W. PARZEN, W. G. A.
"Greater love hath no man than this, that a man lay down his life for his friends."

Bulley, A. Daley, G. H. Bennett, T. H. Bunting, W. J. Bridger, B. L. Bridger, E. C. Clapcott, H. F. Cole, P. Coursho, F. Cummings, D. Davis, A. P. Davis, G. Eason, H.	Ford, C. Garland, W. A. Goodall, G. Hildbrand, G. L. Jeffrey, J. King, H. E. Lamborn, G. A. A. Light, C. W. Longman, H. J. Lowe, W. Martin, G. R. Meringham, J. H. Naylor, G. H.	Ogburn, S. J. Payne, G. E. Roberts, P. Sayer, E. J. Scrupell, F. Sinclair, H. L. Spangston, W. H. Tanner, T. J. Thompson, R. Ware, A. Wausby, G. G. Whitting, R.
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(1) Accredited Assistant Engineer, R.N.R.B.; (2) Independently promoted Fireman.
 (3) Obtained Classification Certificate, 1936; Independently promoted Constable.
 (4) Obtained Classification, May, 1937; Independently promoted Lieutenant.
 (5) "Invaluable Service in War"; (6) "Awarded Military Medal."
 (7) Awarded Military Medal.




- 13th July 1857 - An act of parliament to Establish the Borough Of Portsmouth Water Works Company.
- 1878- New works built at Brockhampton Springs Havant
- May 1884 - New Head office opened in Commercial Road
- 1880 - Introduction of a constant supply throughout Portsmouth
- 1930
- 1939 - 1945 - Restoring supplies during the European War
- 1st April 1955 - Portsmouth and Gosport water companies merged to form Portsmouth and Gosport Water Company
- May 1960 - The discovery of Fishbourne Roman Palace
- 1951
- 1940's - Droughts of 1959, 69, 73 & 76 caused great challenges for the company and campaigns were created to urge customers to be more water efficient
- 1964
- 1970's - Leakage night test commenced to reduce leakage levels
- 1970's - The introduction of household metering
- 1967 - Opening of our New Head Office in Havant
- 1983/1984


The greater proportion of people moved to the Company's outlying area of supply on the mainland or went there nightly for greater safety - despite this increasing demand to 50% above the pre-war supply to these Districts, this extra unexpected demand was met without restrictions

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Portsmouth Water is a water supply company





- Southern Water is the wastewater services provider in our area of supply, see below:



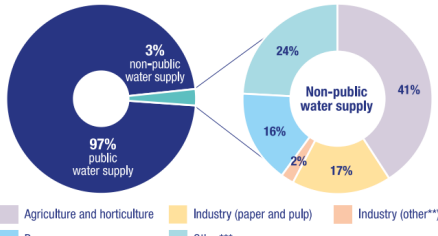
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WRSE Region & Portsmouth Water supply area





- Our abstractions are from Chalk-based sources
- We distribute around 175 million litres of water each day
- Over 740,000 customers
- Around 320,000 properties
- We are part of the 'WRSE' (Water Resources South East) regional supply area.



97% public water supply
3% non-public water supply


Non-public water supply breakdown:
 Agriculture and horticulture: 41%
 Industry (paper and pulp): 17%
 Industry (other^{**}): 2%
 Power: 16%
 Other^{***}: 24%



**Includes the mineral and aggregate, chemicals, food and drink, leisure and other industrial sectors
 *** Includes navigation (primarily the Grand Union Canal), environmental sites and other private users
<https://www.wrsr.org.uk/media/62525/WRSE-regional-plan-draft-2023-v1-3.pdf>

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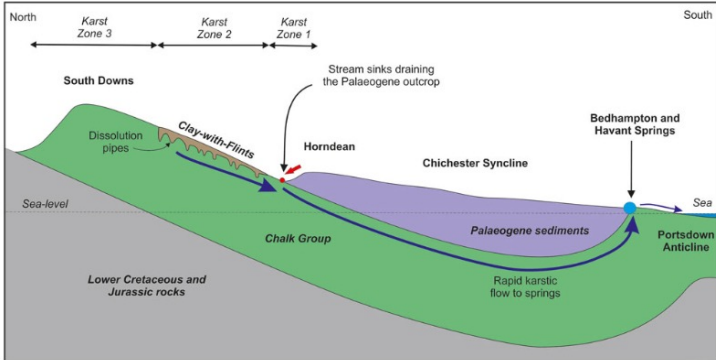


excellence | respect | integrity

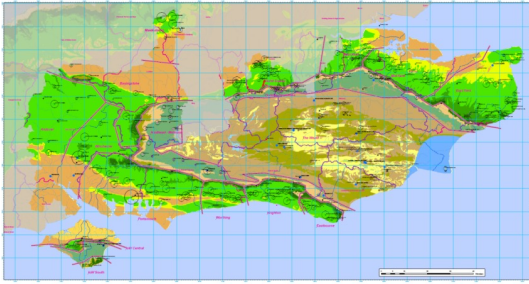
Chalk geology & hydrogeology

Our asset base

- 1 Surface water source
- 20 Ground water sources
- 1 Raw water reservoir
- 18 Treated water Service reservoirs
- 3,500km of mains
- 7 network booster pumping stations



- The Chalk is a soft, white, porous limestone, deposited between about **100 and 65 million years ago**.
- Havant and Bedhampton springs:** The largest group of artesian wells for public water supply in Europe – 100 MI/d plus yield, provide 30-40% of our raw water.
- Other raw water is from boreholes and the River Itchen.



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What is a Water Resources Management Plan (WRMP)?

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What is a Water Resource Management Plan?

- Ensures that the long-term **balance between supply and demand** is maintained.
- Every five years **statutory** water resources management plans (WRMPs) set out a company's intended approach for **at least the next 25 years**.
- For the 2024 round of plans (WRMP24), the company-level plans are supplemented by five **regional water resource plans** that cover England and part of Wales.
- The plans address **multiple pressures** including population growth, climate change and the desire to reduce water abstraction.
- The solutions within the plans are not only trying to lower costs. Across the regional they aim to make the best use of resources, improving resilience, driving innovation and delivering wider public value benefits i.e. deliver a **'Best Value Plan'**

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WRMP components

Key


- Delivered by Portsmouth Water
- Assured by Portsmouth Water
- Delivered in Regional Partnership (WRSE)
- Assured in Regional Partnership (WRSE)
- Focus of this presentation

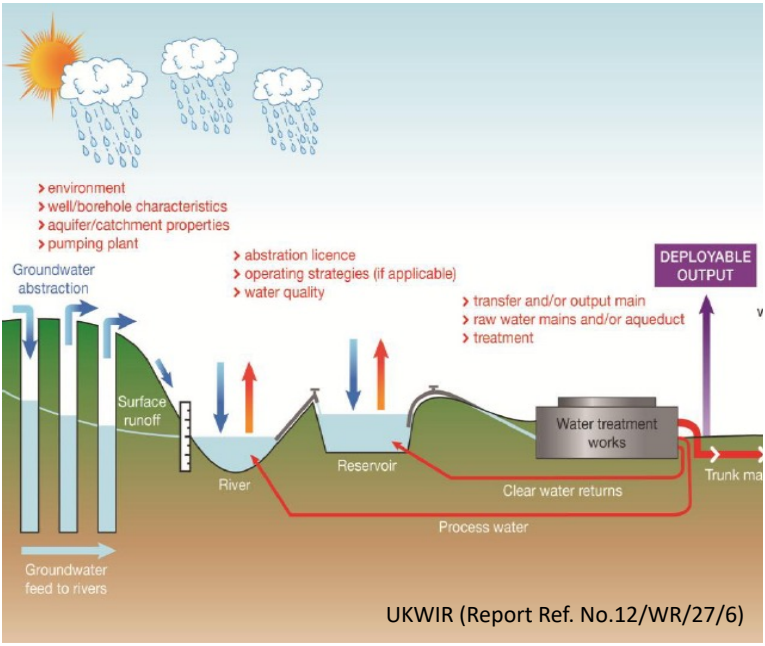
https://www.portsmouthwater.co.uk/webcontent/infocentre/2022/05/Portsmouth_Water_WRMP24_00WRMP24_8August2022.pdf

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What is 'deployable output' ('DO')?






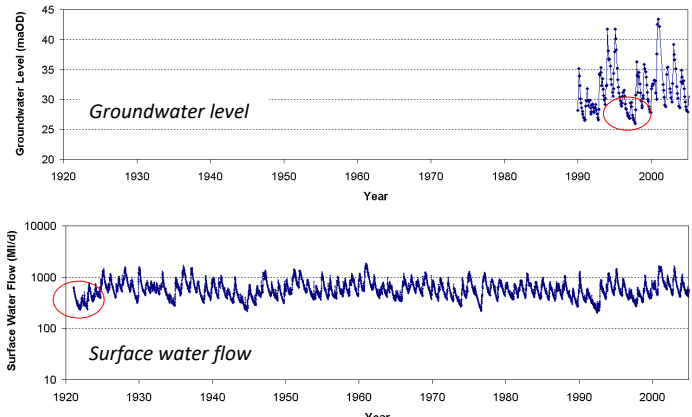
UKWIR (Report Ref. No.12/WR/27/6)

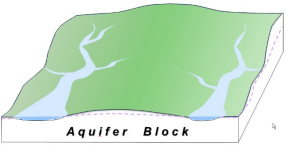
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Original Methodologies for DO (UKWIR, 1995)

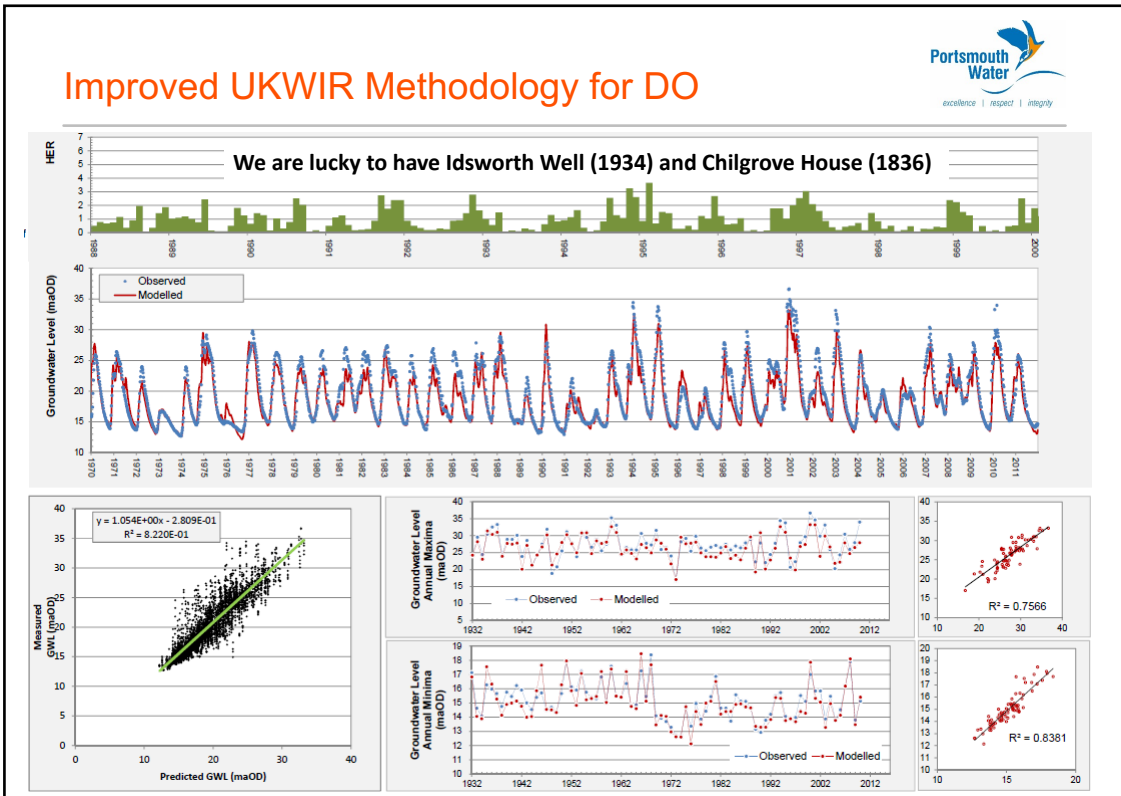


- Focused on the groundwater source, not the wider resource zone / catchment / aquifer block
- Observation borehole / well records differ in length and quality across the UK. Generally less data than for rivers excluding key historic droughts.

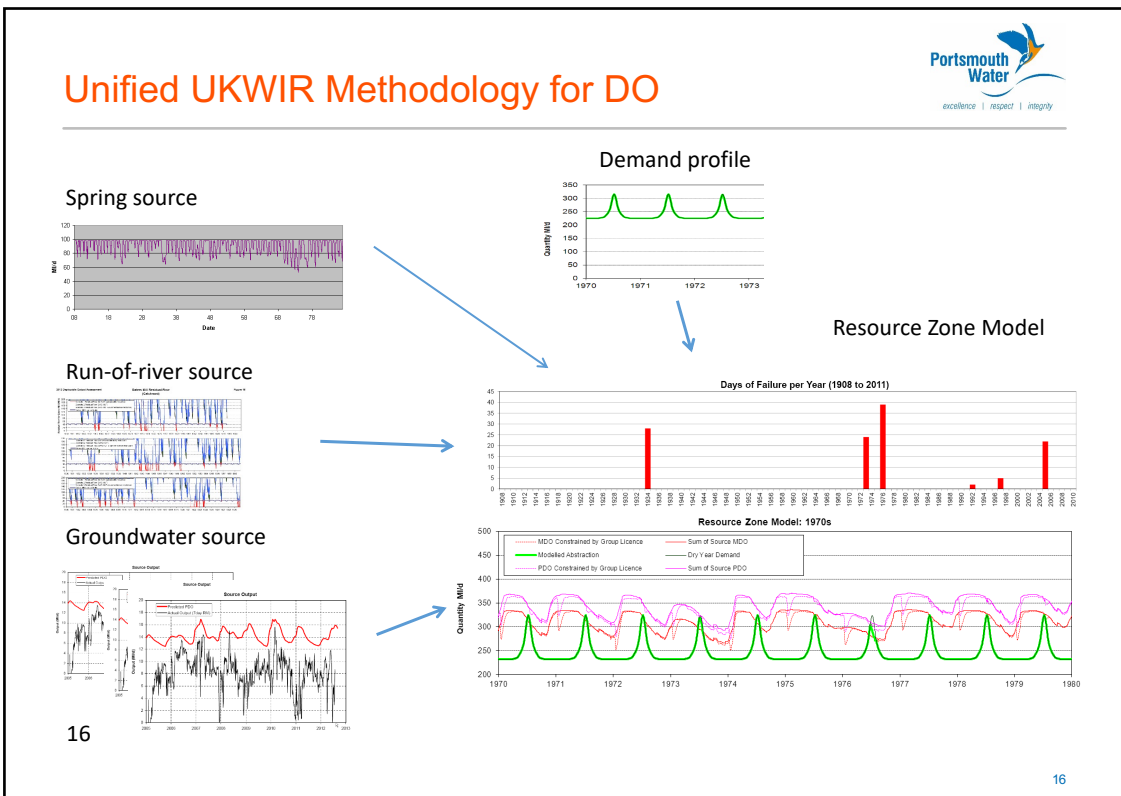




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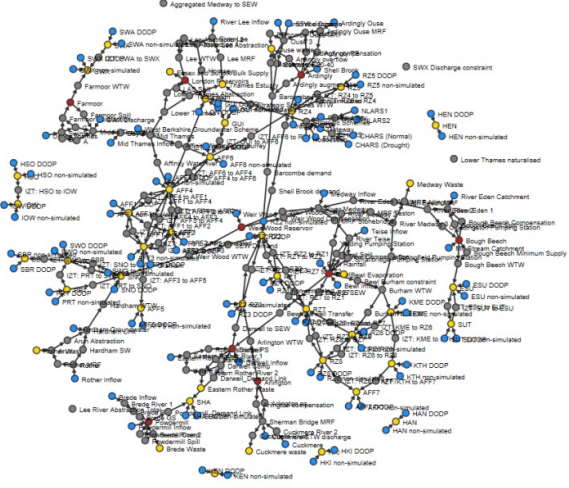
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WRSE and Pywr modelling

- Water companies and the Water Resources South East Group have developed Pywr models
- Water resources ('wr') modelling via the Python ('Py') programming language.
- Used to calculate Deployable Outputs and Climate Change Impacts.
- Portsmouth Water has assessed it can currently supply around **212 MI/d of water** in a severe drought (with drought plan measures).
- We expect to **export up to 30 MI/d** of this to Southern Water if a severe drought occurred in the next five years.

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Any questions?

Up next:


Environmental Destination,
demand forecast, supply
demand balance

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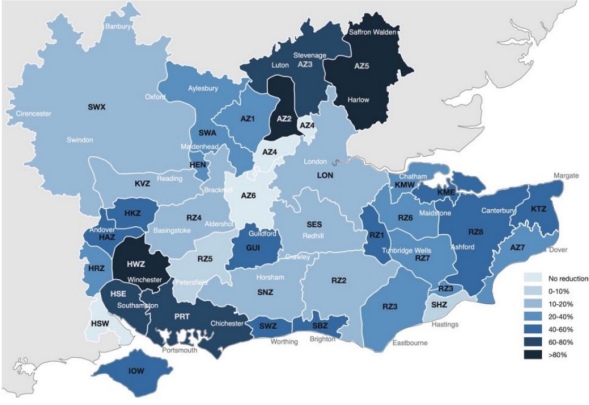


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Environmental destination and licence capping





- Key driver: **National Framework for Water Resources.**
- **Licence capping** in the 2030s to protect river flows.
- **Environmental destination** by 2050 that seeks further abstraction reductions to improve flows in our rivers.



<https://www.wrs.gov.uk/mediacentre/wrs-publications/water-resources-2023-2028>

**Meeting our Future Water Needs:
a National Framework for
Water Resources**







<https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources>

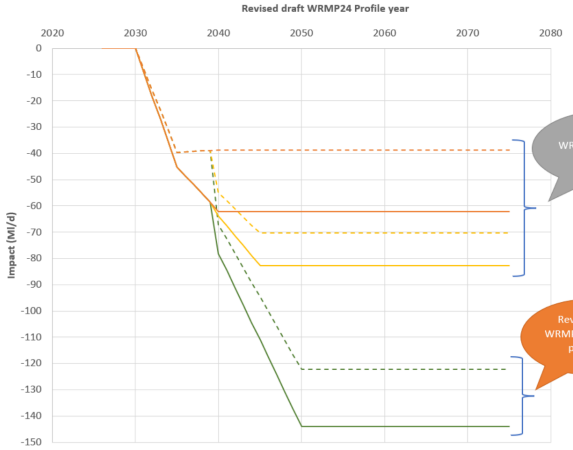
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Environmental destination and licence capping








<https://www.portsmouthwater.co.uk/wp-content/uploads/2023/09/25-2023-WRMP24-Appendix-5B-Investigation-and-Action-Options-for-Itchen-Itchen-Flow.pdf>

- **The future is uncertain!**
- Our WRMP24 is based on a **plausible 'worst case' scenario.**
- We could lose c. **120 MI/d of Deployable Output by 2050** through reduced abstractions from the Chalk aquifer and the River Itchen.
- This includes reduced abstraction from the Chalk aquifer in the River Ems catchment.

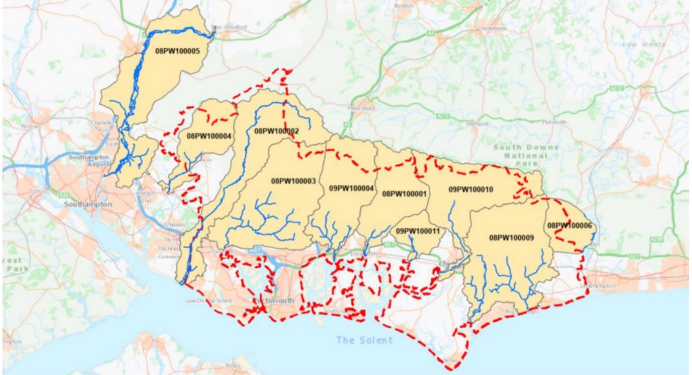
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Environmental destination and licence capping


- Over the next several years we will be **investigating all water catchments** within our supply area.
- Much of the work will take place by **March 2027**.
- This will improve our understanding of how much we need to reduce our water abstractions by. This will **inform the next WRMPs**.



Water Industry National Environment Programme ('WINEP') investigations and option appraisals

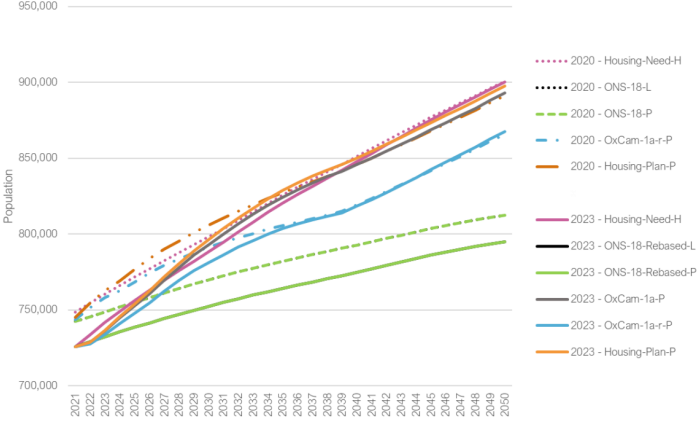
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Demand forecast

- We use **Census data** and up-to-date **Local Plan Housing Growth** information to help forecast population and property growth.
- Using the growth forecasts, we then forecast how much water we will need to deliver to homes and businesses in the future




- We currently supply around **175 MI/d**
- This could increase to **200 MI/d by the 2050s**

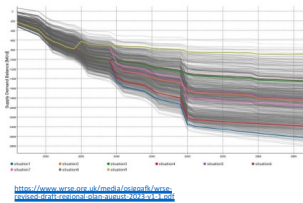
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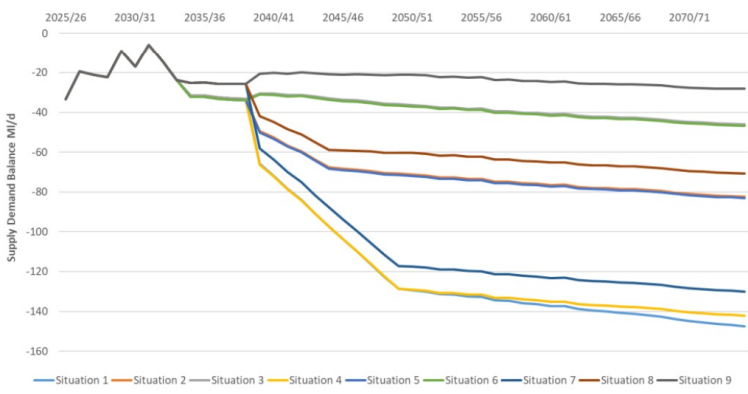
Supply and demand balance



- The future is uncertain! We explored **nine alternative futures** with different population forecast, environmental destination and climate change pressures.
- The next step was to identify options that can meet the forecast 'deficit'.




Supply Demand Balance- Dry Year Annual Average



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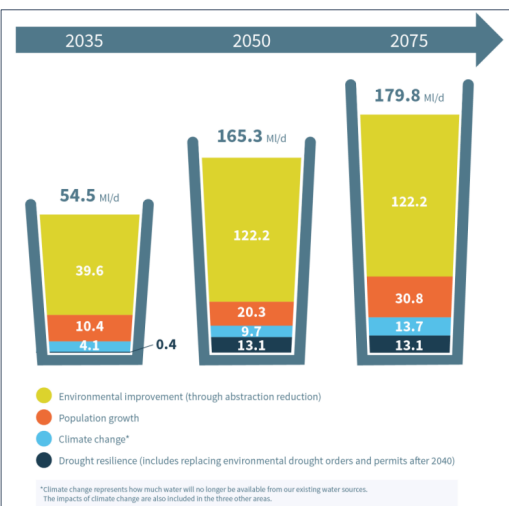
Summary of the challenges ahead



We may have over **50% less water available** by 2075. We need to **increase daily supplies** from around 175 million litres to 209 million litres – to cater for around **125,000 extra homes and business**.

Key challenges:

- Environment
- Population and housing growth
- Climate change
- Drought resilience



Year	Total Supply (MI/d)	Environmental improvement (MI/d)	Population growth (MI/d)	Climate change* (MI/d)	Drought resilience (MI/d)
2035	54.5	39.6	10.4	4.1	0.4
2050	165.3	122.2	20.3	9.7	13.1
2075	179.8	122.2	30.8	13.7	13.1

*Climate change represents how much water will no longer be available from our existing water sources. The impacts of climate change are also included in the three other areas.

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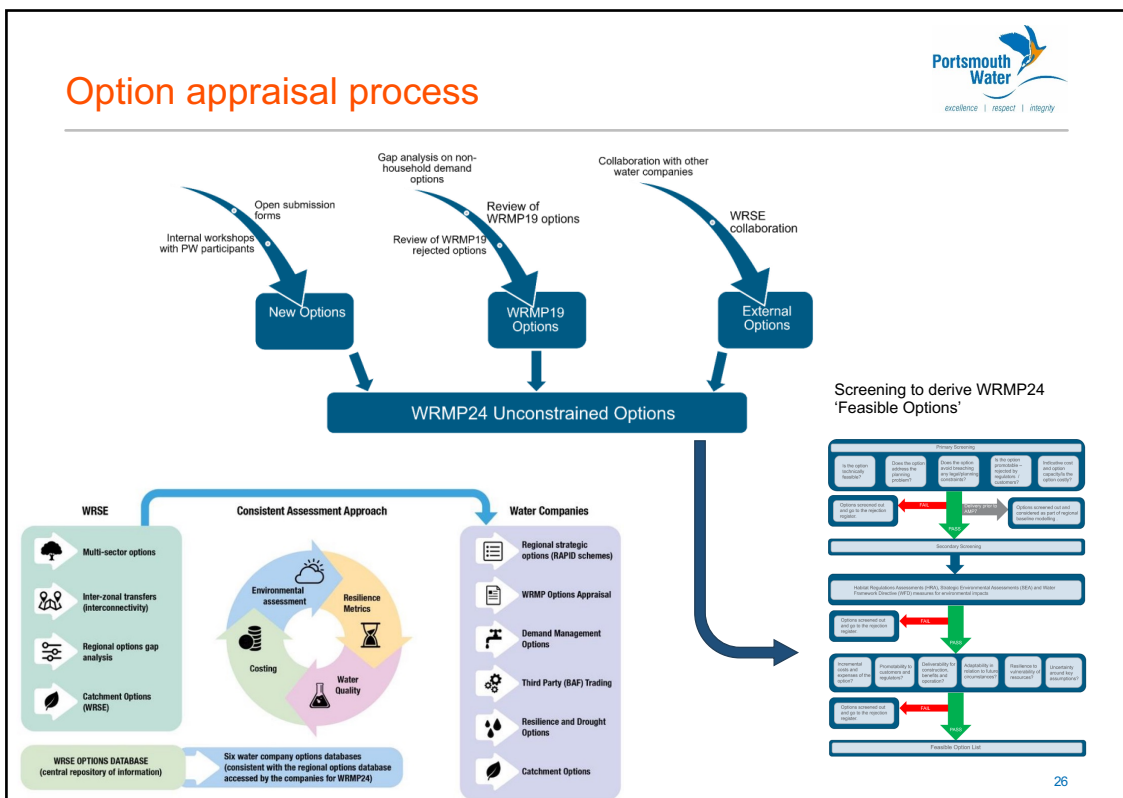
Any questions?

Up next:
Identifying future solutions

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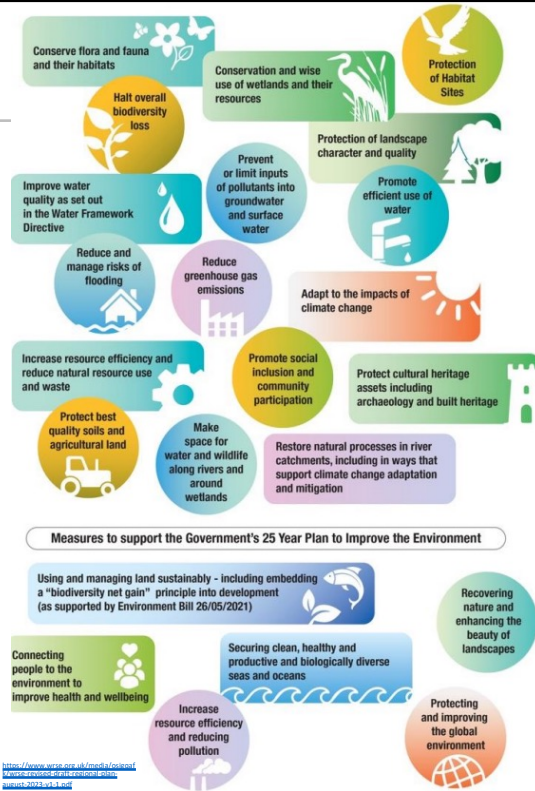
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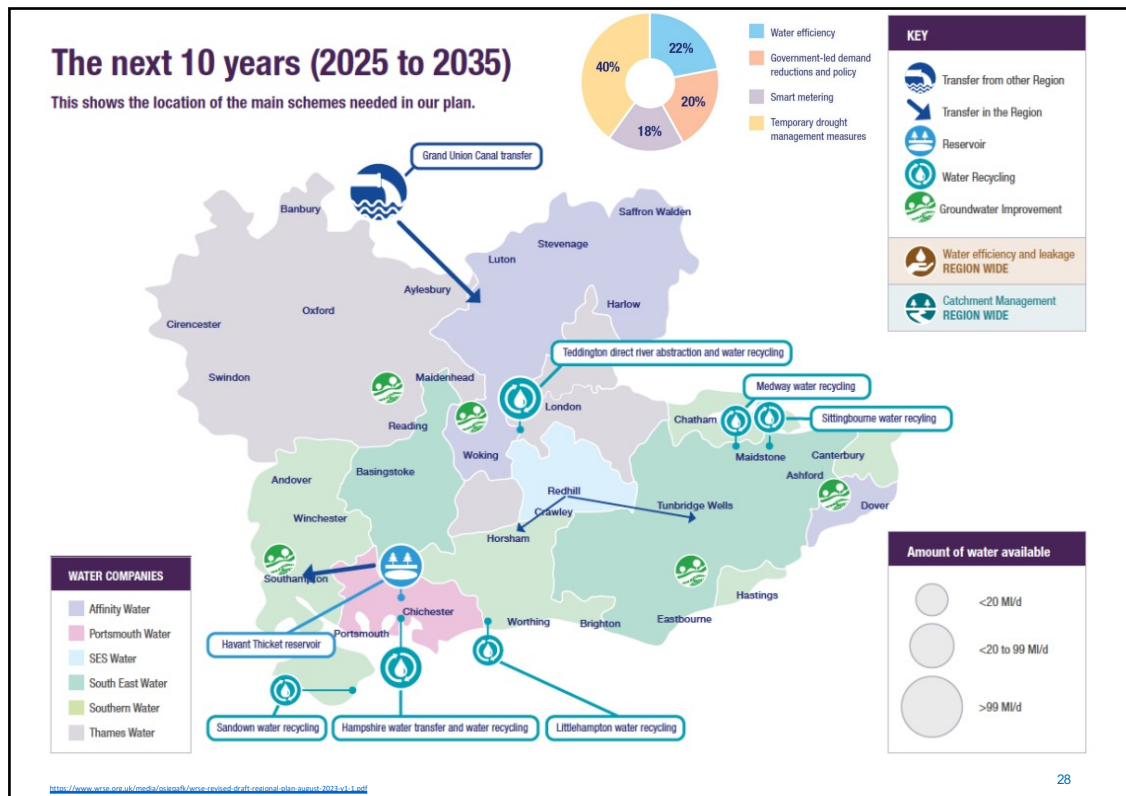
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Decision making

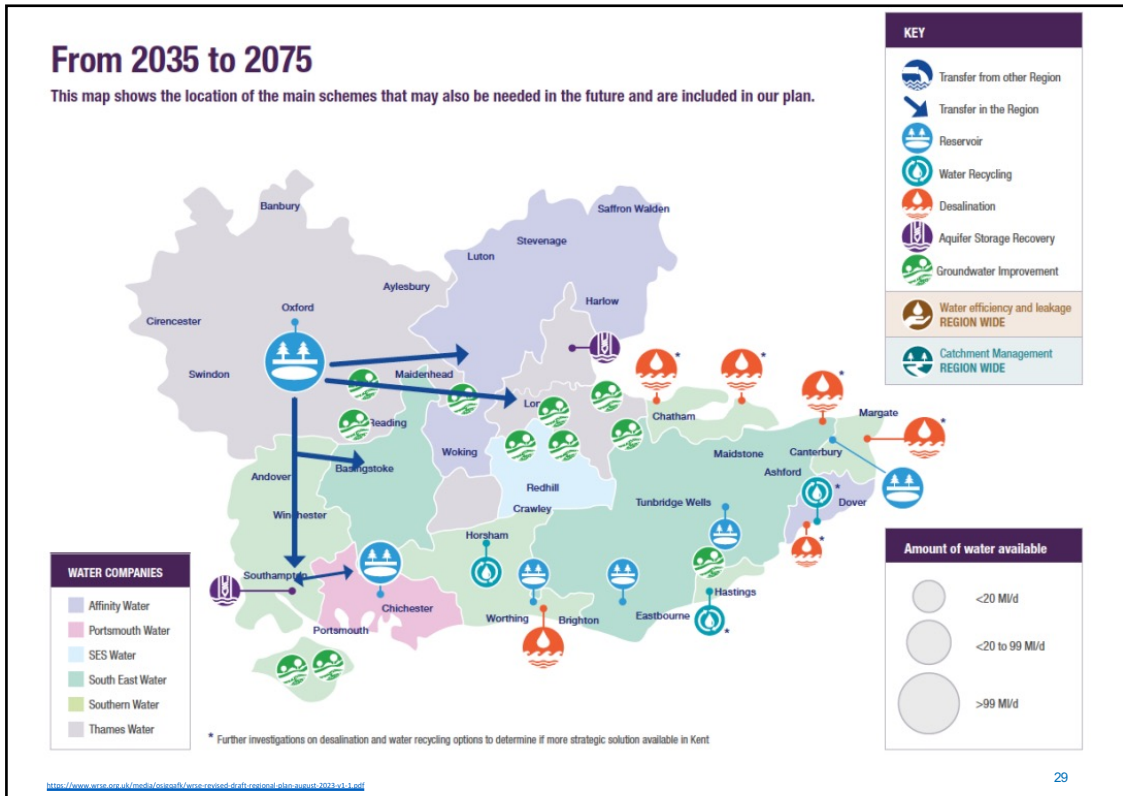
- All water company options submitted to **WRSE Regional Investment model**.
- Modelling helped to identify the preferred draft **best value plan** for the WRSE region.
- We explored **different future scenarios**, completed sensitivity testing and assessed environmental performance.
- We published the regional plan and our WRMP24 documents and **consulted our customers, stakeholders and regulators**.
- We then **updated our regional plan and WRMP24** documents in response to the consultation.



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Portsmouth Water's WRMP24


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Our water resource plan

- Securing **safe, reliable drinking water** for the next 50 years
- Our most **ambitious and collaborative plan**
- Our area is now classed as **'seriously stressed for metering'** by the Government
- We are part of the Water Resources South East **wider regional plan**
- Supplies are **much more likely to be shared** across region in a wider network
- Our plan helps to deliver **most benefit** to people, business, environment and society in the WRSE area
- The Statement of Response and rdWRMP24 has been submitted to Government and we will now **wait for indications as to whether we can finalise our plans.**




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Overview of our revised plan – saving water




Halve **leaks on our network by 2040** and reduce them by a further 2% every five years after.



Install **smart meters in most of the homes and businesses we supply** and replace **existing meters with smart ones by 2035** to encourage water saving, find leaks and introduce fairer bills. **Innovative tariffs from 2035.**




Support everyone to **reduce their water use to an average of 121 litres per person per day by 2050** (160 litres on average today) through community rewards, water-saving devices and home audits.




Benefit from **Government action including the introduction of water efficiency labelling** on devices and appliances which use water to **further reduce average use below 110 litres per day.**

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Securing water and drought resilience




After 2039 our plans for emergency droughts orders will move to a likelihood of once every 500 years on average. We'll also no longer plan to use a drought permit beyond 2041 to take more water from a West Sussex source.




Upgrade a booster pumping station to make it easier to move supplies to where they're needed by 2040.



From 2040, our transfer of supplies to Southern Water in Hampshire and Sussex will reduce significantly. This is possible because Southern Water will have new sources of water coming into operation.



From 2040, we are planning to receive water supplies from Southern Water, into the west of our region in Hampshire. This import is reliant upon the development of the South East Strategic Reservoir Option (SESRO) and increased use of recycled water (highly-cleaned wastewater) into Havant Thicket Reservoir to boost supplies (HWTWRP).



From 2047, we are planning to develop further interconnectivity and treatment capacity to utilise the blended water most effectively from Havant Thicket Reservoir.

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Any questions?

Up next: The role of Havant Thicket Reservoir

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WHY DO WE NEED A NEW RESERVOIR?

- It's an environmentally-led project that will protect rare chalk streams: The River Test and River Itchen.
- A **new, sustainable source of water**, enabling Southern Water to reduce abstraction from these rivers.
- Will be **delivered by Portsmouth Water** and **funded via Southern Water's** drinking water customer bills.



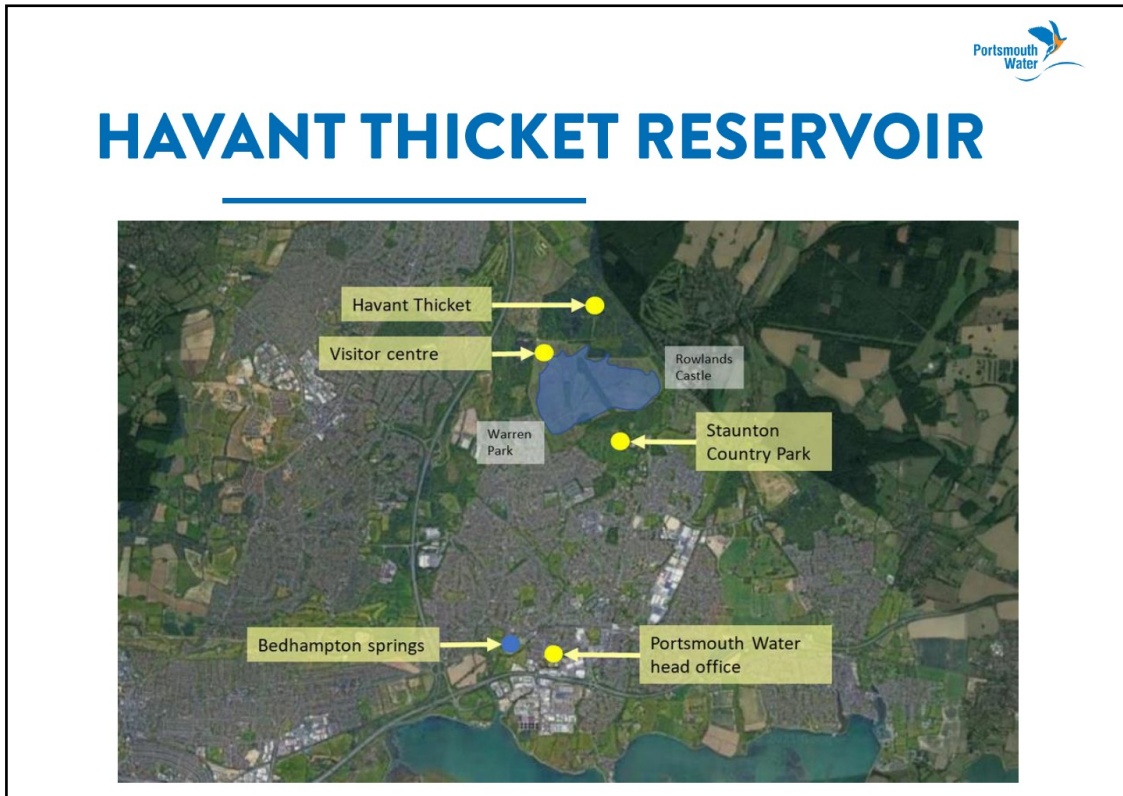
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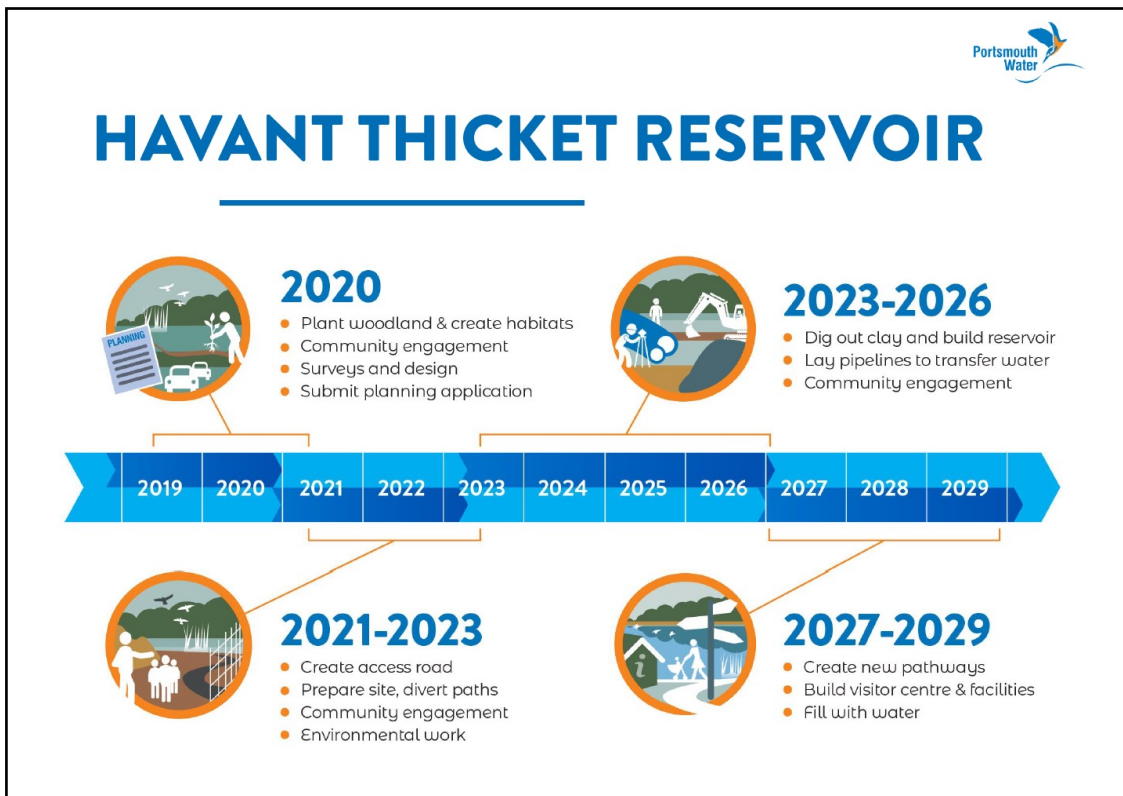
HAVANT THICKET RESERVOIR

- Will hold up to 8.7 billion litres of water.
- Be capable of supplying 21 million litres per day.
- Current plans involve filling Havant Thicket Reservoir with surplus water from the **Bedhampton Springs**.

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ENABLING WORKS

- Built the "**trial embankment**" in 2022 to **inform detailed engineering design** and construction
- Creating a new Northern Access Route onto site which will keep construction and visitor **traffic away from residential areas**
- Carrying out archaeology, ground investigations, installing site drainage and site haul roads.



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INTERESTING FINDS

- **150-year-old** drinks bottle
- **2000-year-old** Roman coin
- **50-million-year-old** shark tooth!



 Havant Thicket Reservoir | January 2024


Excellence | Integrity | Future Focus

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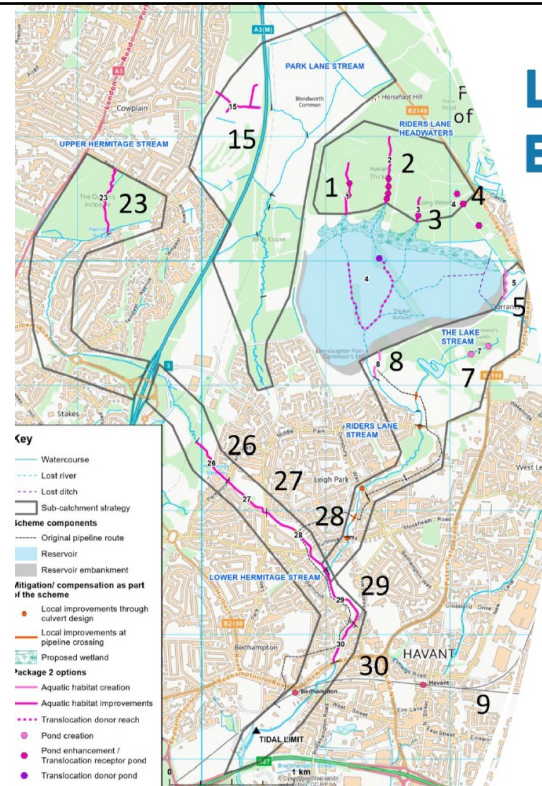
ENVIRONMENTAL WORKS OVERVIEW

- Committed to delivering the best possible outcome for the environment.
- We're planting and improving **more than 200 hectares** both on and offsite:
 - Restoring woodland, watercourses and ponds.
 - Creating new woodland, woodland pasture, grassland, open water and wetland habitat.
 - 80-hectare rewilding project.
 - Translocating trees and plants, roost features for bats as well as wildlife species.



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LOCAL AQUATIC ENVIRONMENT



- Reservoir site is within the Hermitage Stream catchment
- Flows in the upper streams are 'naturally intermittent'
- This is reflected in the aquatic ecology (plants, invertebrates)
- Reservoir will result in the loss of **3.7km** of headwater habitat.

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AQUATIC MITIGATION AND COMPENSATION




- Extensive mitigation and compensation measures in place
- **Water Framework Directive Mitigation and Compensation (Regulation 19)** agreed with EA for the for the Hermitage Stream:
 - 5.5km of watercourse restoration and pond enhancement on and off site
 - Aquatic Ecology management
 - INNS treatment and eradication
- Riders Lane Stream, Park Lane Stream, the headwaters of Hermitage Stream and Lower Hermitage Stream all form part of the plan.


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WILDLIFE TRANSLOCATION

This season, we have translocated at least:

- **67** common lizards.
- **5** adders.
- **1** grass snake.
- **25** slow worms.
- **650** common frogs.
- **192** common toads.
- **1** smooth newt.
- **1** hedgehog.
- **20** field voles.
- **20** bullhead fish.
- **23** European eels.
- **200** sticklebacks.


 Havant Thicket Reservoir | January 2024

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WORKING WITH THE ENVIRONMENT AGENCY

- Sustainable reuse of inert building waste
- Applications for discharge licences (FW)
- Applications for impoundment and abstraction licences (Portsmouth Water).
- INNS Project Plan
- Mitigation Steering Group.

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STAKEHOLDERS

- Our Strategic Advisory Group has over **70 members** including local councillors, community representatives and environmental groups.
- Meets formally every three months.
- Six subgroups which focus on specific areas of the project in more detail (**Environment, Education and Economy, Access, Recreation, Pipeline, Water Recycling**).



 Havant Thicket Reservoir | January 2024

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COMMUNITY

- Our community is **very important** to us.
- We regularly carry out talks and site visits with local schools, colleges, universities, community groups, environmental organisations and other water companies.

 Havant Thicket Reservoir | January 2024



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FUTURE-PROOFING

- **Consultation in late 2023 on updated proposal** for reservoir pipeline – new planning application to follow.
- New micro-tunnelled design would **reduce disruption to communities and environmental impact.**
- Would **also ‘future proof’ reservoir,** should water recycling proposals go ahead.




A Micro-Tunnel Boring Machine being lowered into a shaft



Illustration of pipe jacking technique


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WATER RECYCLING


Water recycling is a **well-established and widely-used water treatment process** that speeds up the natural water cycle to provide a **sustainable source of clean, safe drinking water**.



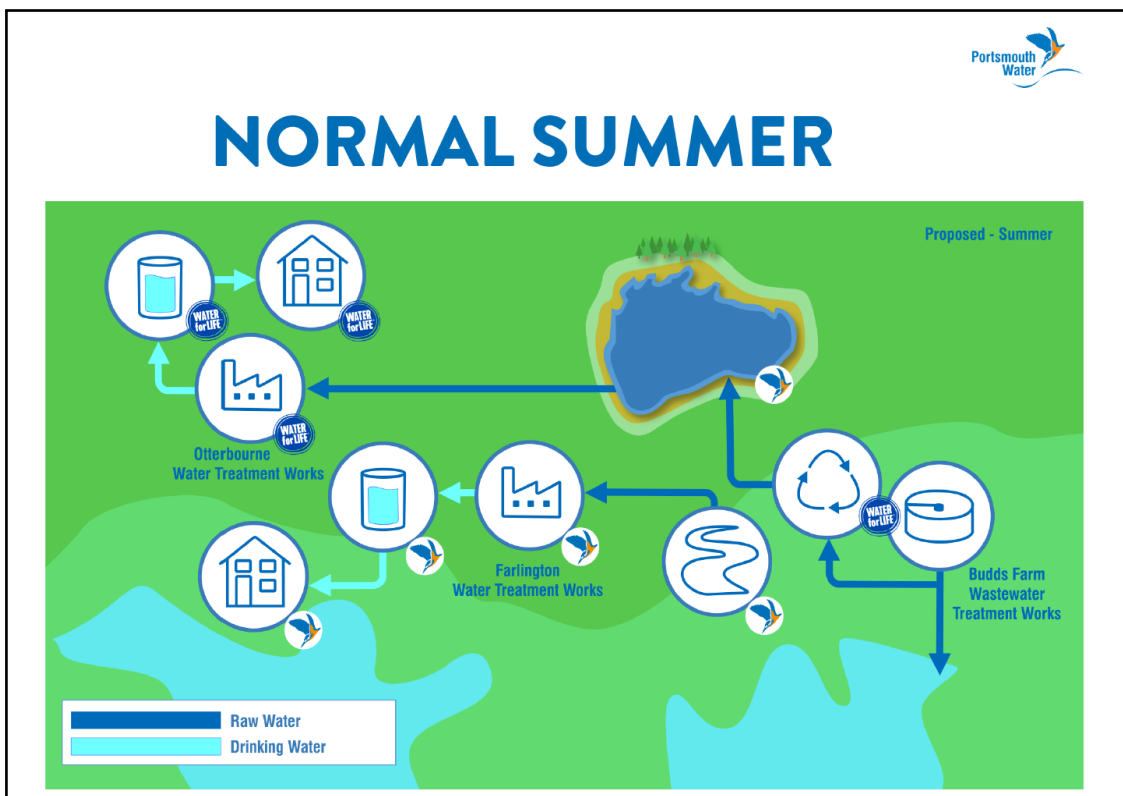
Would enable Havant Thicket Reservoir to supply an **extra 90 million litres per day**, during droughts, further **protecting precious chalk streams** in Hampshire.



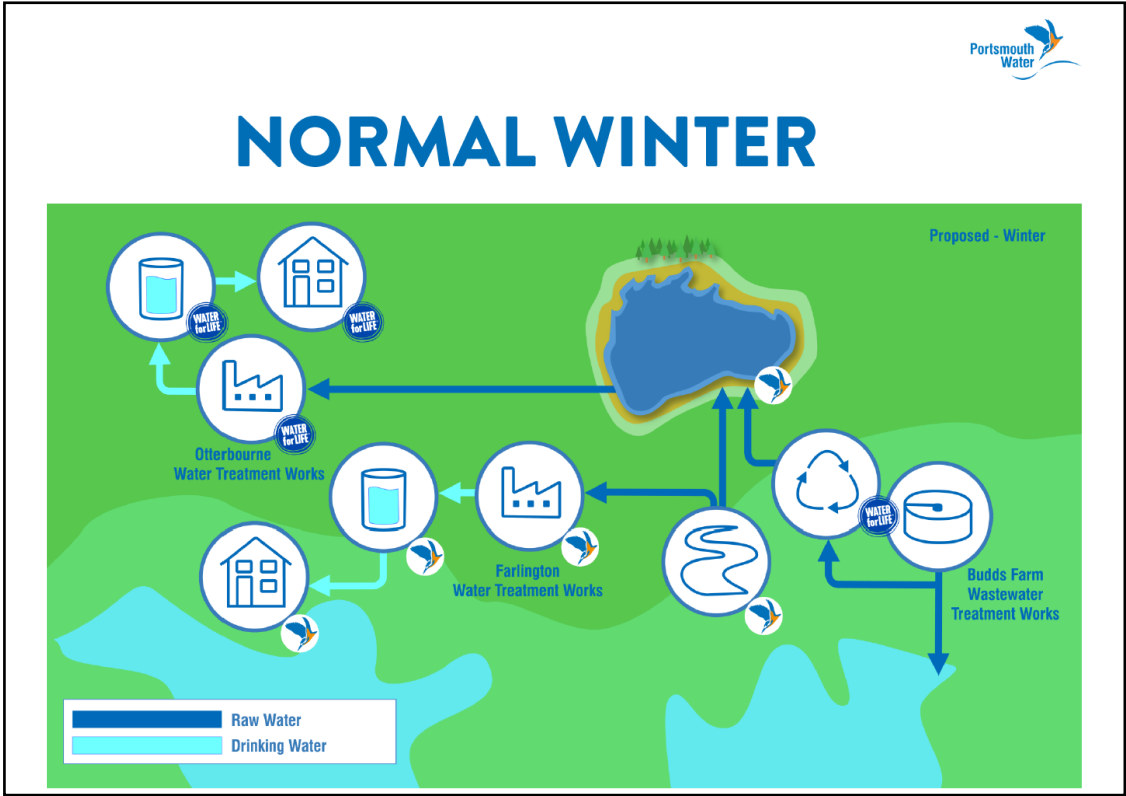
Portsmouth Water would remain in **full control of quality and flow of water** into and out of the reservoir.



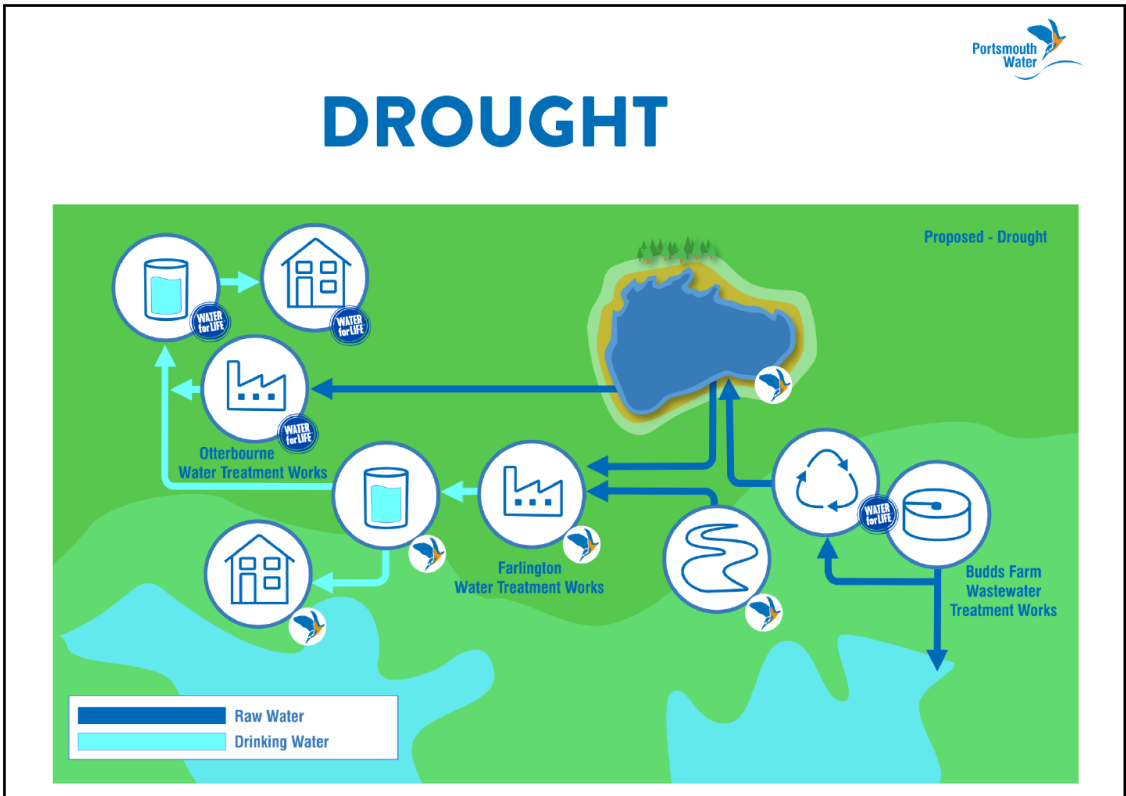
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HAVANT THICKET RESERVOIR

Find out more: <https://havant-thicket-reservoir.uk.engagementhq.com/>



portsmouthwater.co.uk |   

The illustration depicts a serene landscape with a body of water in shades of blue and green. On the left, there are tall reeds and a small bee. On the right, a duck is swimming. The background shows rolling green hills under a white sky.

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QUESTION AND ANSWER

<https://www.portsmouthwater.co.uk/contact-us/>



The graphic features a large, stylized blue and orange shape on the right side, resembling a wing or a bird in flight. Below the main text, there are three horizontal bars in shades of blue and black.

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