

Pre-release booklet

Water management

1. Annotate your booklet as I go through it.
2. Homework tasks to help you understand this booklet over Easter.
3. Our lessons after Easter will be based around this booklet.
4. The walk through mock will help you understand how to use this booklet in the exam and answer the Qs about your fieldwork.

IF YOU MISS THE WALK THROUGH MOCK MAKE SURE TO
ARRANGE A CATCH UP OF IT. IF YOU DON'T DO IT YOU WILL
BE AT A DISADVANTAGE.

There are three figures in the booklet:

Figure One: Water in the United Kingdom

This is an overview of where water is found and in demand in the UK.

Figure Two: Managing water demand in Oxfordshire

Information about water changes in Oxfordshire and what is causing these changes

Figure Three: A new reservoir for Oxfordshire?

Information about a proposal to build a new reservoir at Abingdon

Figure 1

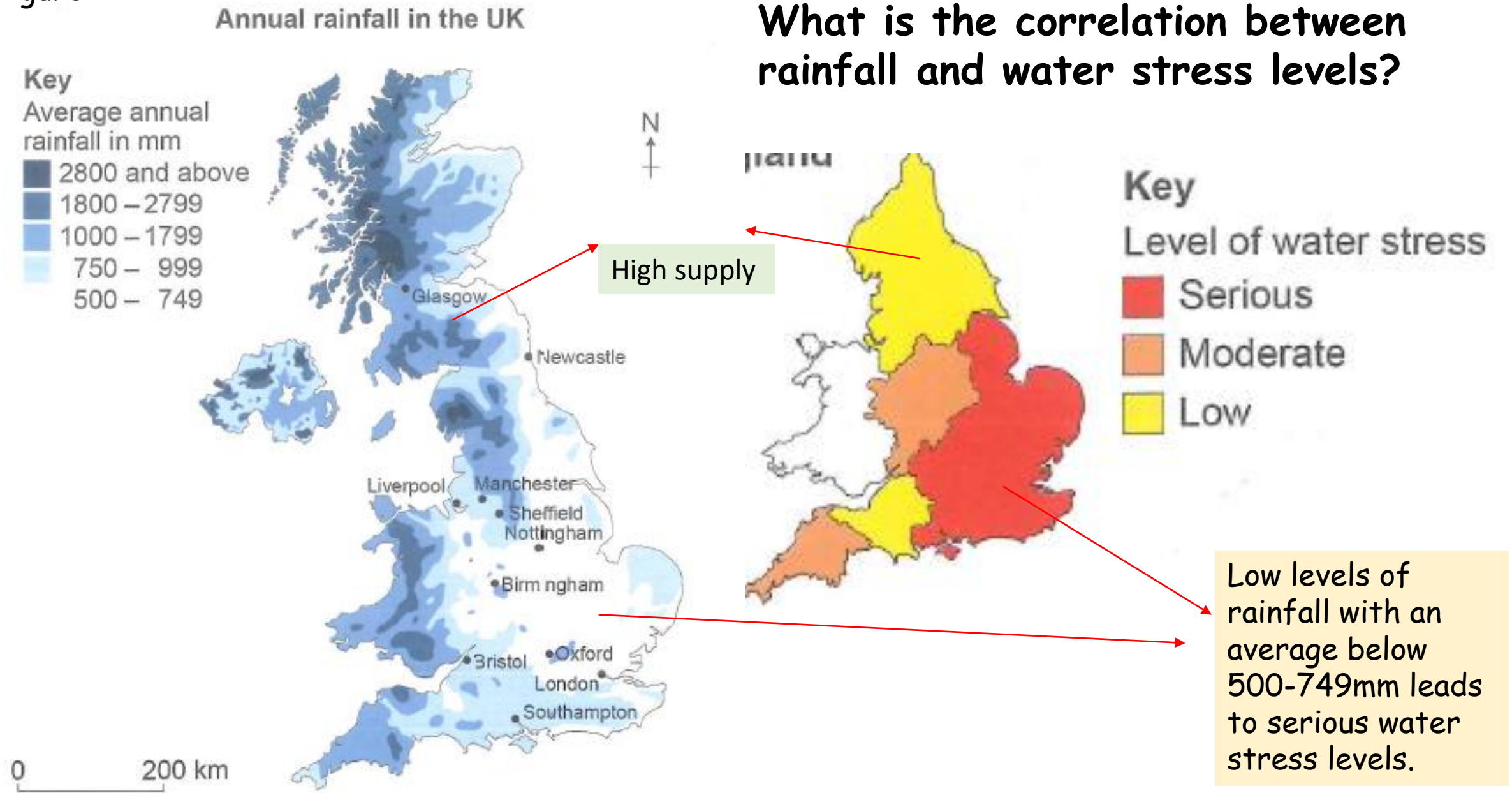


Figure 1

What physical and human factors cause this pattern of water stress in the UK?

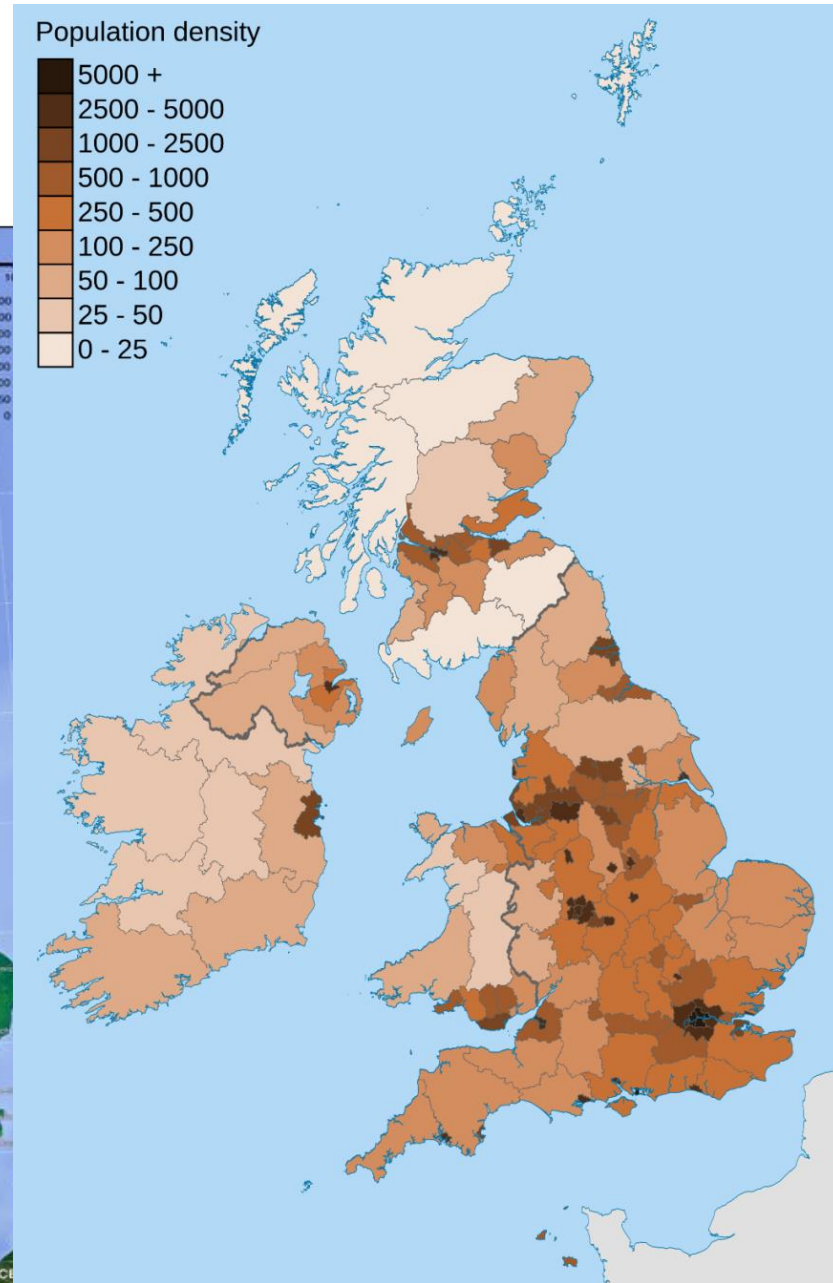
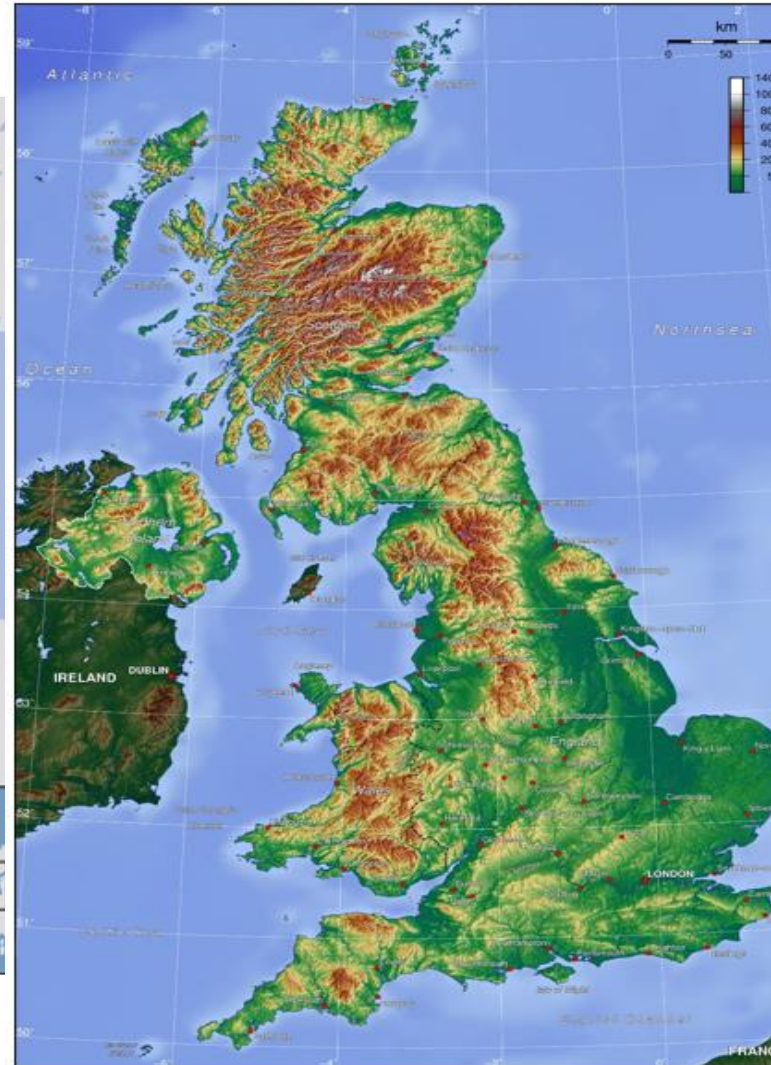


Figure 1



United Kingdom government's Department for Environment, Food and Rural Affairs, with responsibilities relating to the protection and enhancement of the environment in England.

Future demand for water in south-east England

All water companies have 25-year water resource plans. These show how companies plan to meet demand in the future. Water companies plan their water supply using methods agreed by the Environment Agency. Plans are designed to maintain water supply through the worst drought in the last hundred years, with at least a month's water supply left at the end of any potential period of drought.

It is expected that total water demand in south-east England will rise from about 4900 million litres/day in 2005 to 5600 million litres/day in 2030.

Water demand management is broken down into three components:

- **leakage** is expected to fall by 25% by 2030
- **non-household demand** is expected to increase by 200 million litres/day between 2005 and 2030
- **household demand** is expected to increase from 164 litres per person/day to 180 litres per person/day between 2005 and 2030.

Importance of fixing leakages:

Reduction of water leakages is an important goal for many countries in the world, as it will mean a reduction in the amount of money and energy required on producing and pumping water.

Why do you think it will fall in the future?

Ofwat has put leakage management standards and annual leakage targets that each **water** company must not exceed.

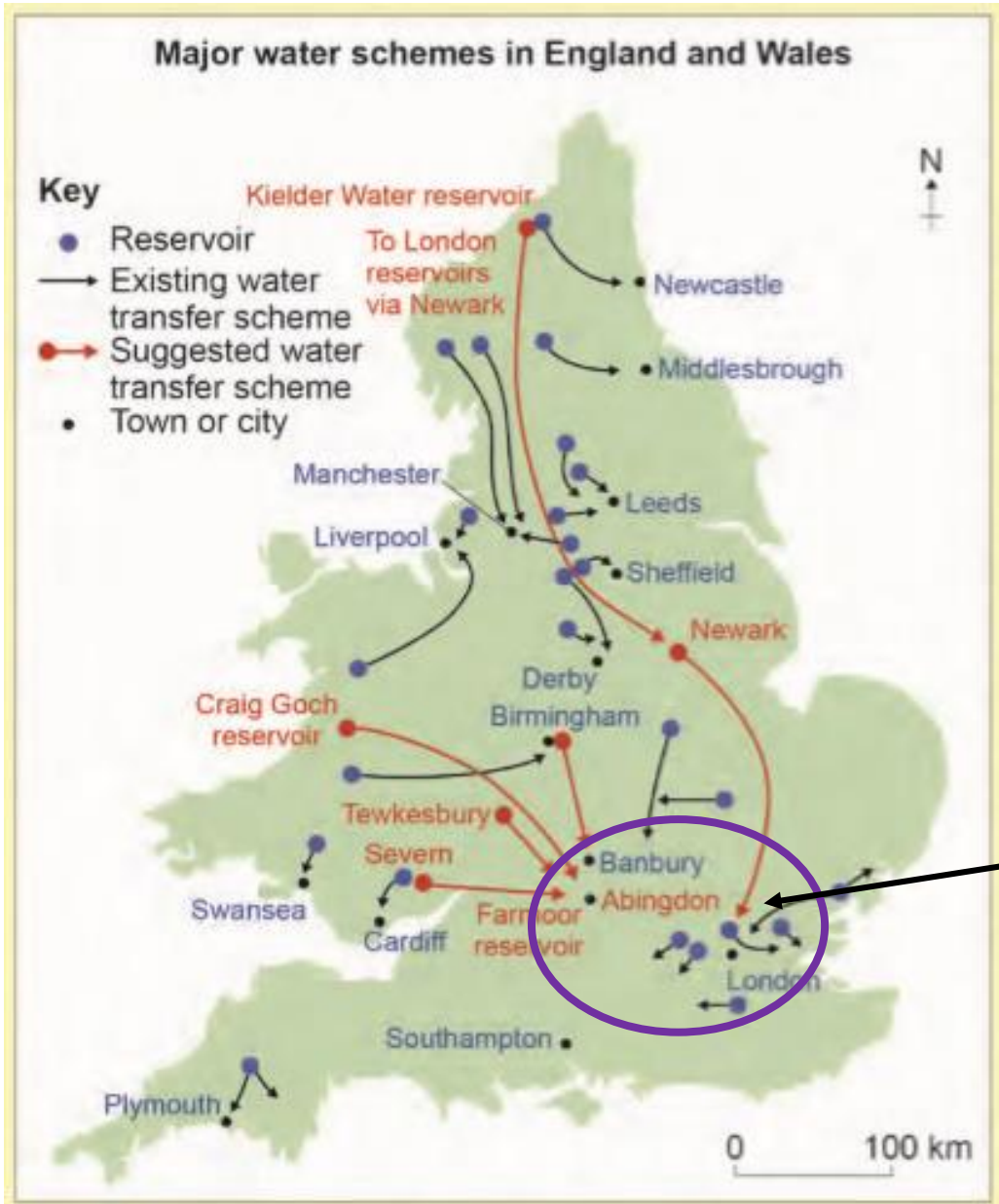
Importance of managing household and non-household demand:

Reducing demand by improving the efficiency of appliances and changing attitudes towards the use of water.

Even with technological advances improving water efficiency why is demand predicted to increase?

Population increase and climate change

Figure 1



Why is there a need for the suggested scheme?

After the driest spring for a century left crops dying in parts of England, and the threat of bans on hose pipes and car washes becomes an annual summer event, experts say around four major transfer projects could be approved in the coming years as water companies struggle with growing demand and falling supplies.



Reservoir that supplies Birmingham

What are the differences between the existing and suggested water transfer schemes?

1. All transfer majority of the water to the South-East of England.
2. Longer than existing transfers

THINK - Majority of existing transfers are short up in the North. However, we looked at the North-South divide which suggested most people live in the South.

Figure 1

What are the benefits and problems of the proposed schemes?

River Severn transfer to the River Thames



Gloucester and surrounding towns views?



River Thames' surrounding towns views?

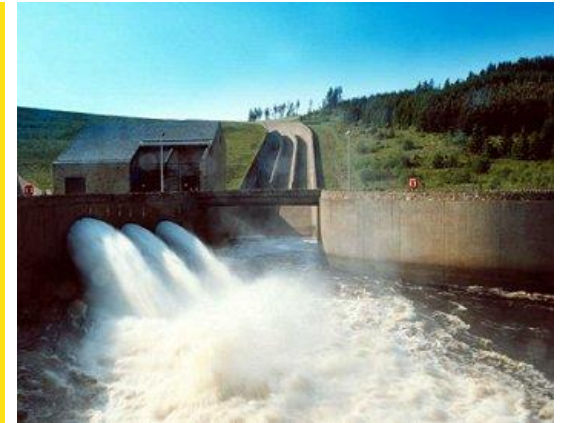
Against as reduces the amount of water available to them.

For as will increase the supply at times of shortages.

Is it realistic to bring water from Kielder Reservoir (in Northumberland) down to London?

Areas that already benefit:

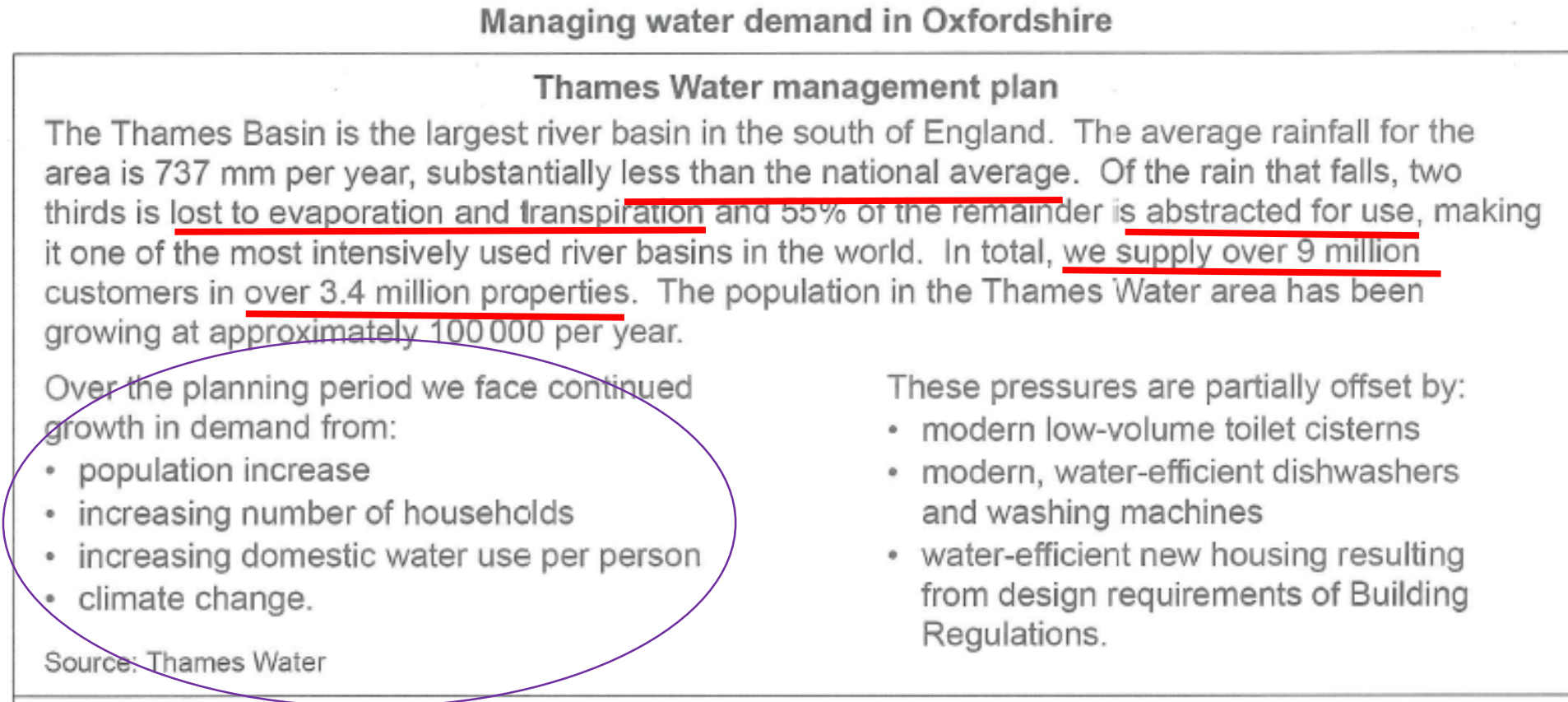
Major cities:
Newcastle,
Sunderland, Durham,
Darlington and
Middlesbrough.



YES
The North East now has the most reliable water supply in England.

NO
People had to be relocated when the reservoir was built building the transfer channel would do the same.

Figure 2



Which ONE do you think the main reason and why?

There is no right answer it's how you justify it.

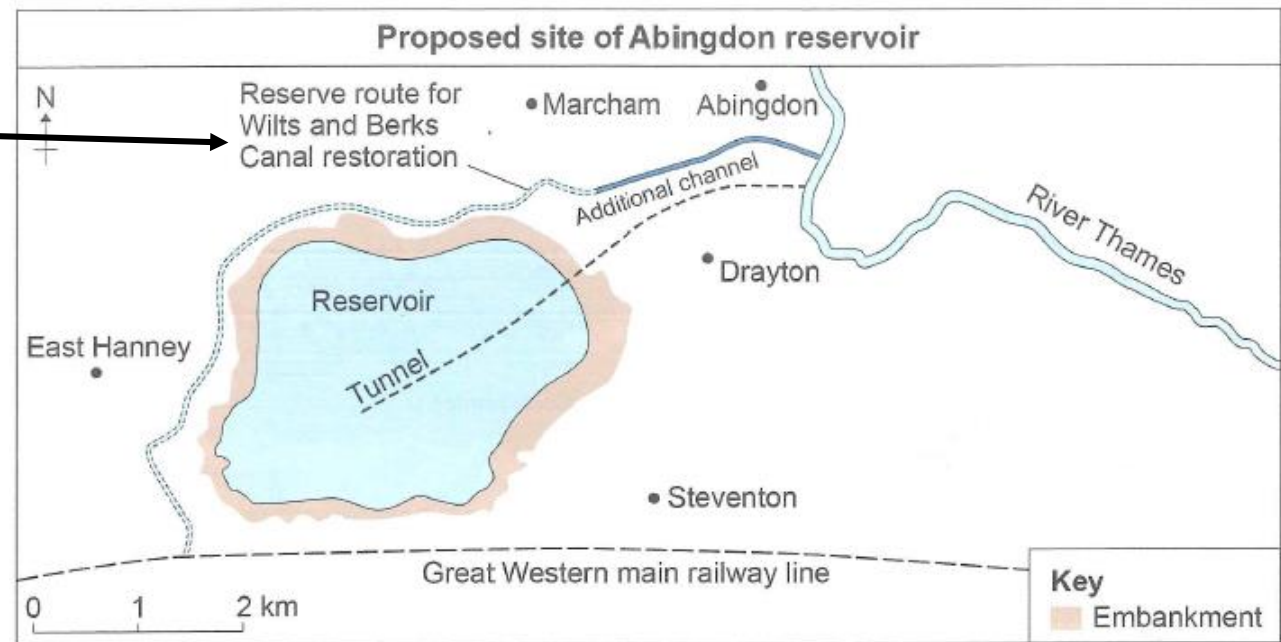
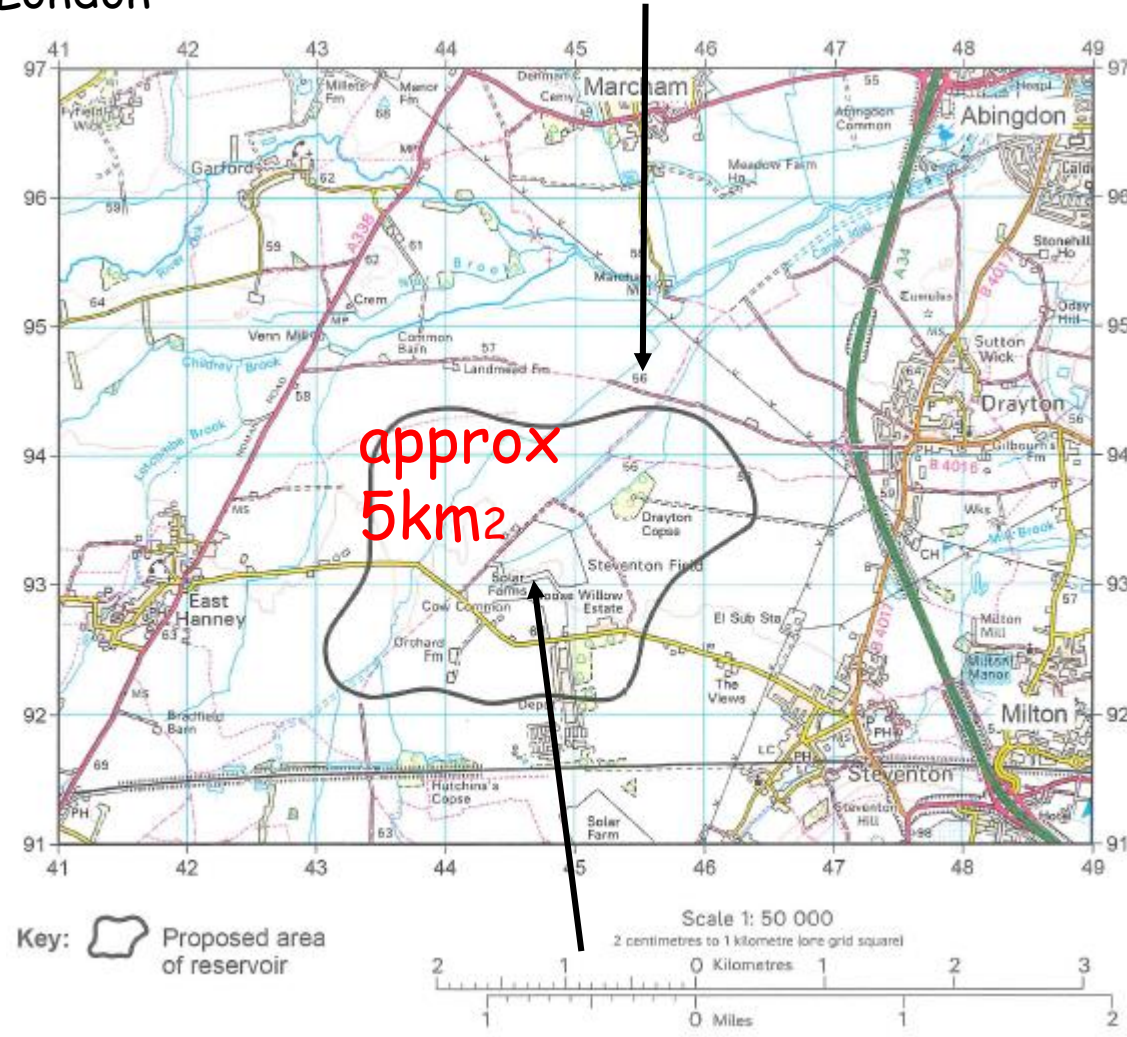
Figure 2 Managing water demand in Oxfordshire - What map evidence is there that the location is suitable?

Large open space
Close to London

OS map shows flat land

Near to rivers, attached to tributary.

Can be used to feed into canals when needed.



What map evidence is there that the location is not suitable?

Property would be flooded such as farms. Would they be compensated? If so who will pay?

Loss of a solar farm

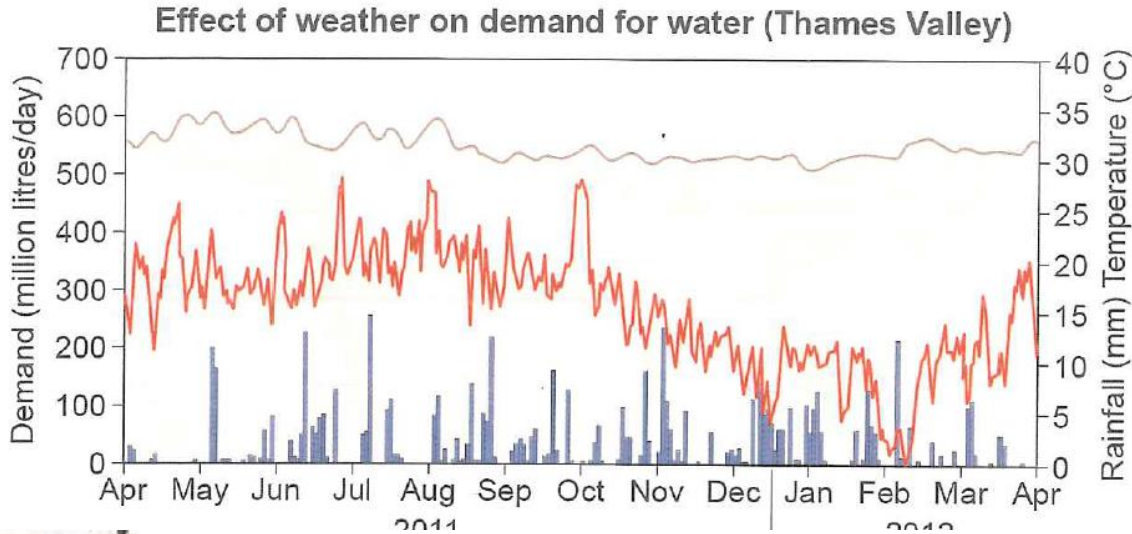
Disrupts the road connecting East Hanney to Steventon. This will lead to a new road diversion which will damage the natural environment?

Disruption to the rail line?

Figure 3 A new reservoir for Oxfordshire?

Total household water use Predicted to increase by approx. 20%							
Year	2011–12	2014–15	2019–20	2024–25	2029–30	2034–35	2039–40
Million litres/day	1377	1390	1431	1476	1525	1577	1634

If they don't build the reservoir they will struggle from this point.



During higher temperatures (20+) rainfall is lower and demand fluctuates reaching it's highest points.

Lower rainfall leads to increased frequency of rainfall events resulting in a more stable demand for water.

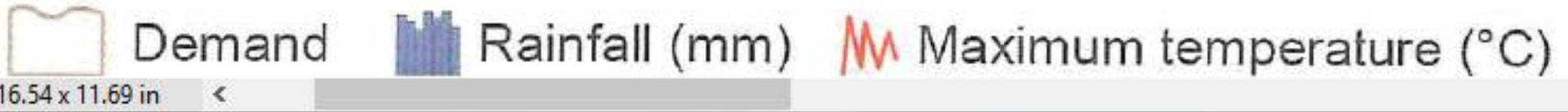


Figure 3

Farmoor - an existing reservoir in Oxfordshire

Farmoor reservoir, built in 1967, lies in an old river channel 7 km west of Oxford. It is owned by Thames Water, who have a longstanding relationship with the Environment Agency and Pond Conservation, who have created wetland wildlife habitats which have been designated as nature reserves. The area is one of the most important birdwatching sites in Oxfordshire; the combination of open water, wetlands and meadows, attracting migrating and wintering birds. Thames Water have installed car parks and toilets as well as a bird-feeding station. In addition to birdwatching, the area provides a range of recreational opportunities, including:

- a 6 km walkway around the reservoir
- a wetland trail for nature lovers and photographers
- fishing, including a trout fishery
- sailing and windsurfing.



Figure 3 Some stakeholders would be against this... but who?

Stakeholder: Person with an interest or concern in something.

RSPA
Environmental
Not be happy
with the
disruption to
habitats as could
put some species
in decline.

Group Against Reservoir Development (GARD)

The proposed reservoir at Abingdon would:

- destroy natural habitats. It is estimated that a number of protected species would be displaced, including water voles, bats, hedgehogs, and many bird species
- be visually intrusive, especially where 20-metre embankments are constructed
- cause massive disruption during the building phase as millions of tonnes of rock and building materials are brought to the area
- increase the risk of flooding in an area which is already prone to flooding
- have a significant impact on local towns and villages, which is unacceptable to Oxfordshire communities when most of the water will be used to supply London.

Local residents
nearby. May
decrease house
prices.

Residents
especially who may
experience water
supply issues.

Marcham Commuters -
Congestion on the roads.
Local residents as
materials would have to
pass through villages.

Abington residents would
suffer from flooding - affect
their house prices.
Councillor as they have to
manage their budget and have
to increase existing flood
protection.

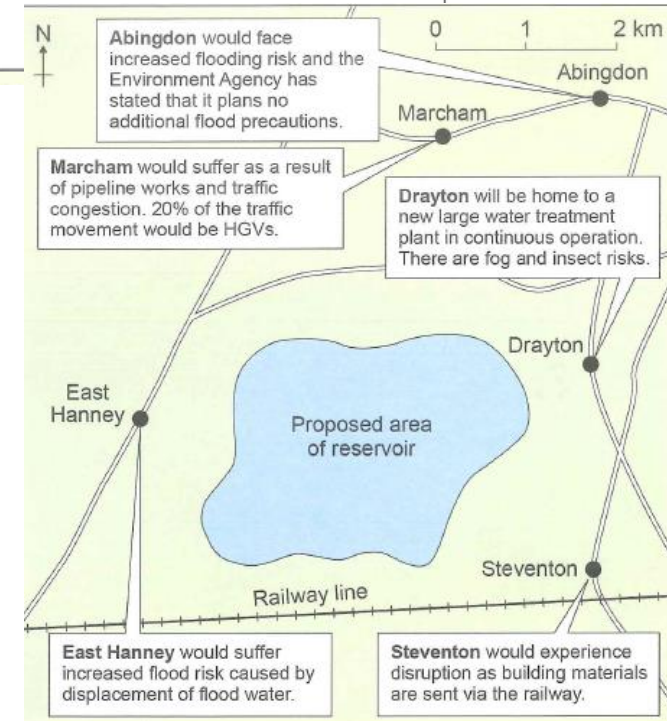


Figure 3

Water Conservation

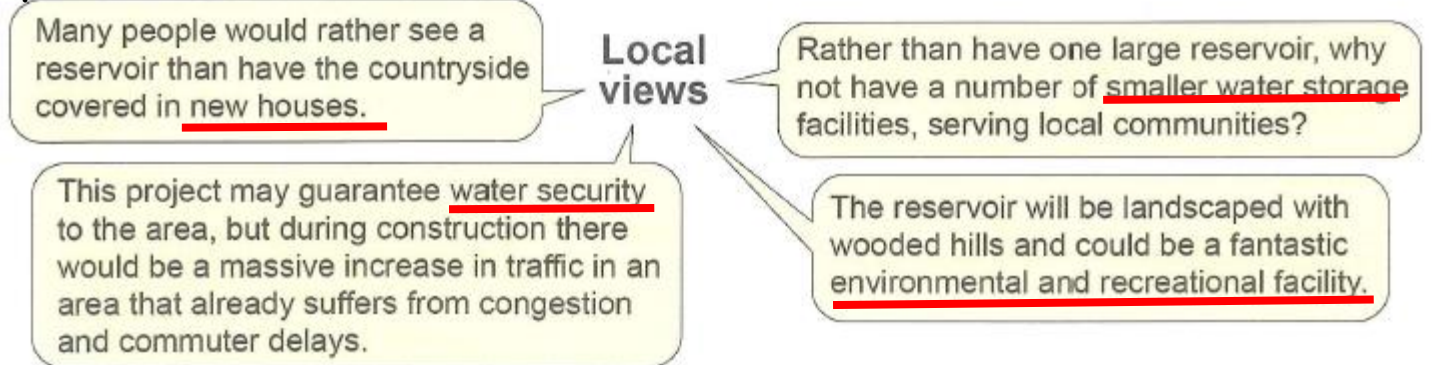
There is no doubt that the south east faces a growing risk of water shortages, but much of this could be alleviated by managing existing water supplies more effectively or building a number of smaller reservoirs.

Some of the measures that could be taken include:

- reducing leakage
- encouraging lower water use
- building more desalination plants.

Alternatives but these too have their own advantages and disadvantages.

However... what are the positives?



HOMework OVER EASTER

Do you think that the proposed Abingdon reservoir should go ahead?

Use evidence from the resource booklet and your own understanding to explain your choice.

This is an example of the decision-making question you could receive in Paper 3. In order to prepare for it complete the table using the resource booklet.

In the exam be sure to make a decision - do not sit on the bench.

YES ☐

NO ☐

Remember
to refer
to figures
1, 2 & 3

	Initial thoughts about whether the proposal should go ahead.	How does the local and nation areas benefit?	Who are the winners and losers?
Sustainable (FOR) Positive factors	Social -	Local	Winners
	Economic -	National	Losers
	Environmental -		
Unsustainable (AGAINST) Negative factors	Social -	Local	Winners
	Economic -	National	Losers
	Environmental -		

STANDARD

In your answer you should:

- State your chosen option
- Give the advantages and any disadvantages of your chosen option
- Explain why the option you have chosen is more sustainable than the others
- For one of your rejected options give **two** reasons why you rejected it and **one** possible advantage of this rejected option

Possible other structures

COMPARISON

Choose **one** of the methods.

- Explain why your chosen scheme is more sustainable than the other two schemes
- Explain why it could be more effective to use all three schemes together

ALL TOGETHER

- Choose **one** of the methods.
- Explain why your chosen scheme is more sustainable than the other two schemes
- Explain why it could be more effective to use all three schemes together