

Assessing the impact of damming and reservoirs

- Through discovering why there are ghosts in Manchester's water
 - Through critically evaluating Troutbeck as a potential site for damming and a reservoir

**Aim: To understand how water is managed in the
Lake District**

Objectives:

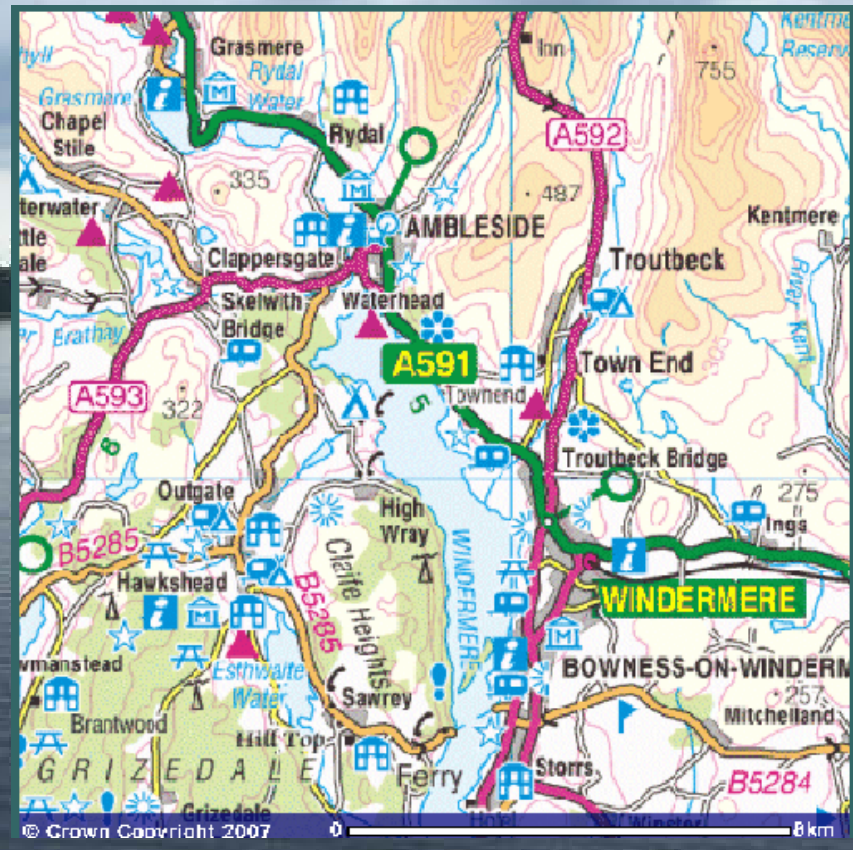
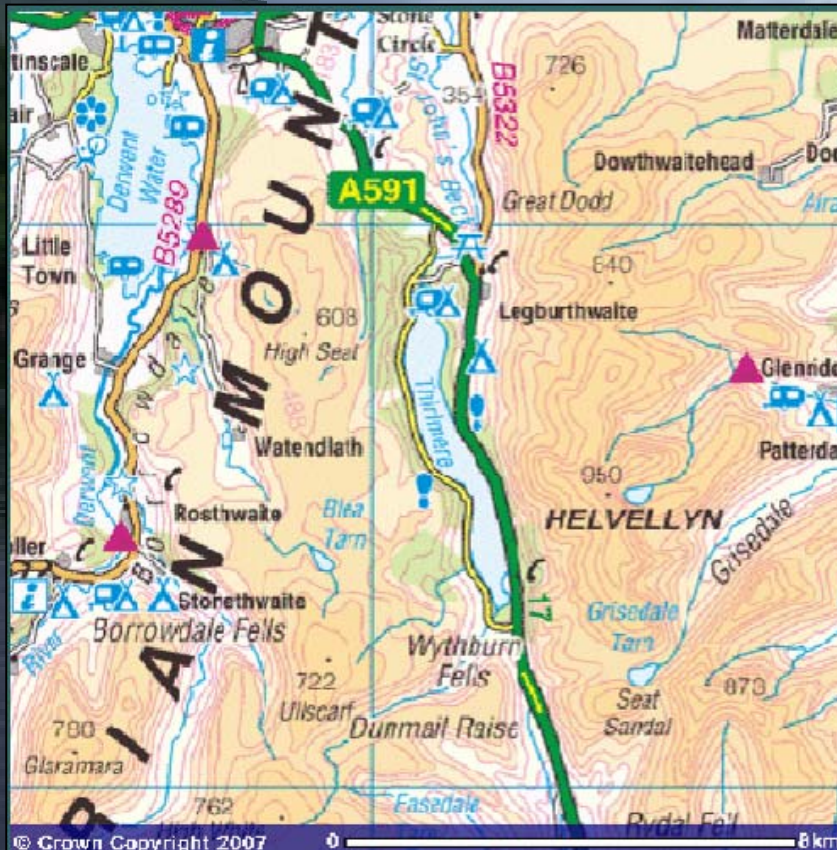
- To understand and describe physical and human impacts of reservoirs
- To understand the need for hard engineering
- To know what happened to Wythburn - using OS map and enquiry skills
- To investigate new locations for a reservoir – using OS map and different field techniques
- To link water management in the Lake District and UK with other countries

Edexcel A

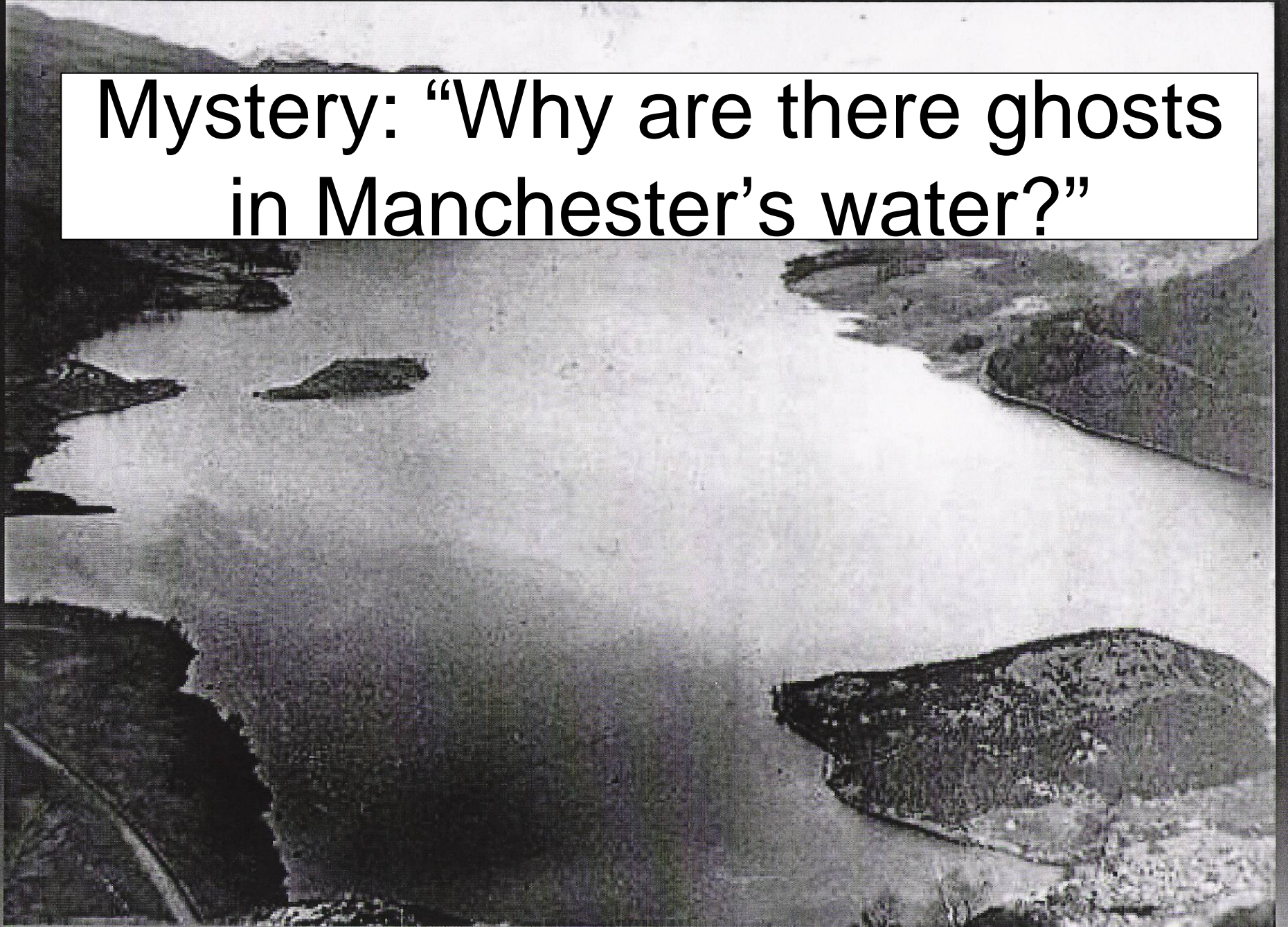
- Building on **1.2 Fluvial Environments –1.2.3** The need for, and methods of, managing river processes
- → **Synoptic Link: The hydrological is used and managed (regional/local scale)**
- = The reasons for and methods of groundwater and river management in countries in different states of development
- = Decision-making issues related to management of the hydrological cycle.

Fieldwork Day:

- Thirlmere Reservoir
- Troutbeck valley



Mystery: “Why are there ghosts
in Manchester’s water?”



Site 1: Steel End Carpark



Thirlmere



Thirlmere
Thirlmere Reservoir supplies water to Manchester and other parts of the north west of England. Together with the surrounding land the reservoir is owned by the regional water company, United Utilities. The estate of some 4,800 hectares includes farmland, extensive areas of open moorland, and open hills, which in the east extend to the hills of Helvellyn.

The Reservoir
Since 1883, following numerous epidemics of cholera, the public have been treated to the water from the reservoir. Today, following treatment plants, the public have been treated to the water from the reservoir. Today, following treatment plants, the public have been treated to the water from the reservoir.

The Woodlands
Much of the woodland is available to the public. There are trails at Swirk, Launchy Gill and the Falls.

Toilets
Public toilets are available at Legburthwaite, Ambthorpe, Dabgill and Swirk, with facilities for wheelchair access at Legburthwaite, Swirk and Ambthorpe.

Permitted Paths
Members of the public are permitted to use these paths, until such time as the landowner withdraws permission. Persons using the paths do so at their own risk.

PLEASE HELP
By not damaging trees, plants or flowers and not wilfully disturbing birds and animals.
By keeping to paths across farmland and not crossing walls or fences.
By taking home your litter and not lighting fires.
By not smoking and lighting of fires.
By not overgrazing or overgrazing vegetation.
By making use of approved camp sites.

KEY
Thirlmere
Reservoir

NO POLYURETHANES

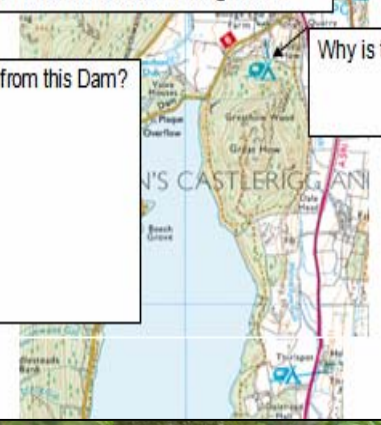


"Why does Manchester's water have ghosts?"

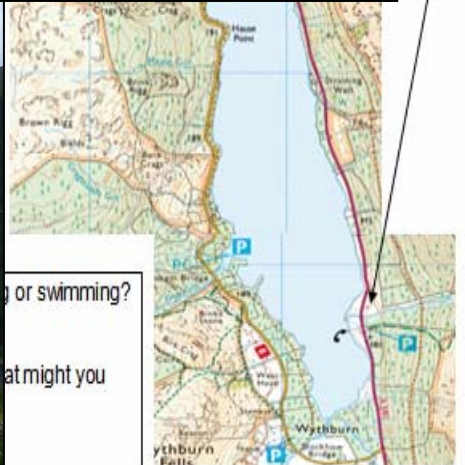
Name: _____

Who benefits from this Dam?

Why is this campsite located here?



At the church, looking at the graves and inside the church at the memorial and literature in the church, solve the mystery as to why there are ghosts in Manchester's Water



or swimming?

at might you



This land is owned by United Utilities. This water catchment and is a resource for the community.

Site 2: Dam Wall



"Why does Manchester's water have ghosts?" Name: _____

Who benefits from this Dam?

Why is this campsite located here?

Why are no motor boats allowed here?

Why is the water so blue?

At the church, looking at the graves and inside the church at the war memorial and other literature in the church, solve the mystery as to why there are ghosts in Manchester's Water



"Why does Manchester's water have ghosts?" Name: _____

Who benefits from this Dam?

Why is this campsite located here?

Why are no motor boats allowed here?

Why is the water so blue?

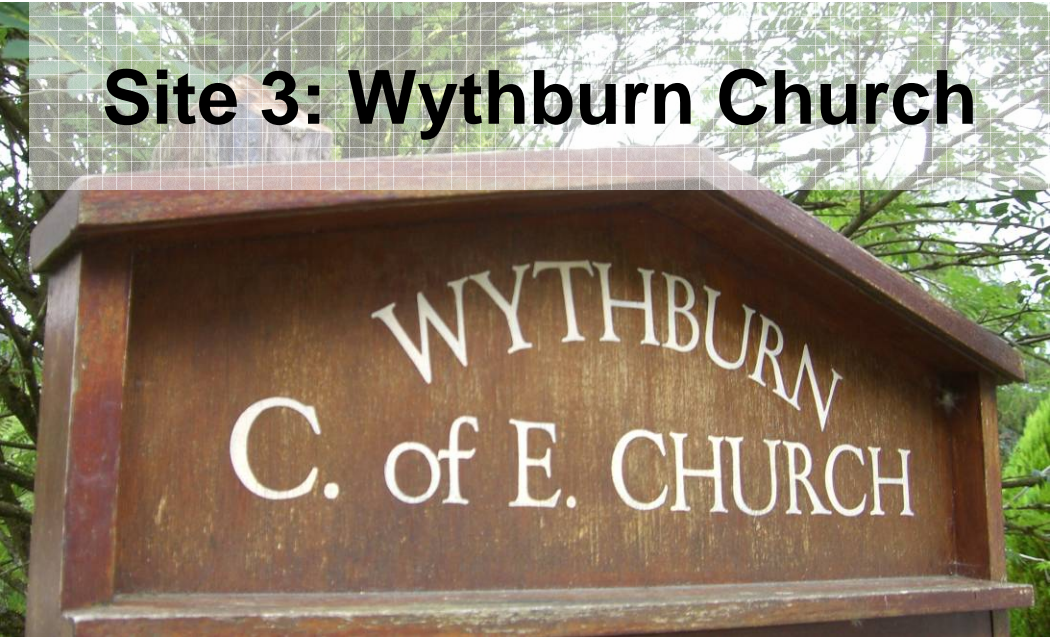
Why are there trees planted around this lake?

Why have some of them been felled?

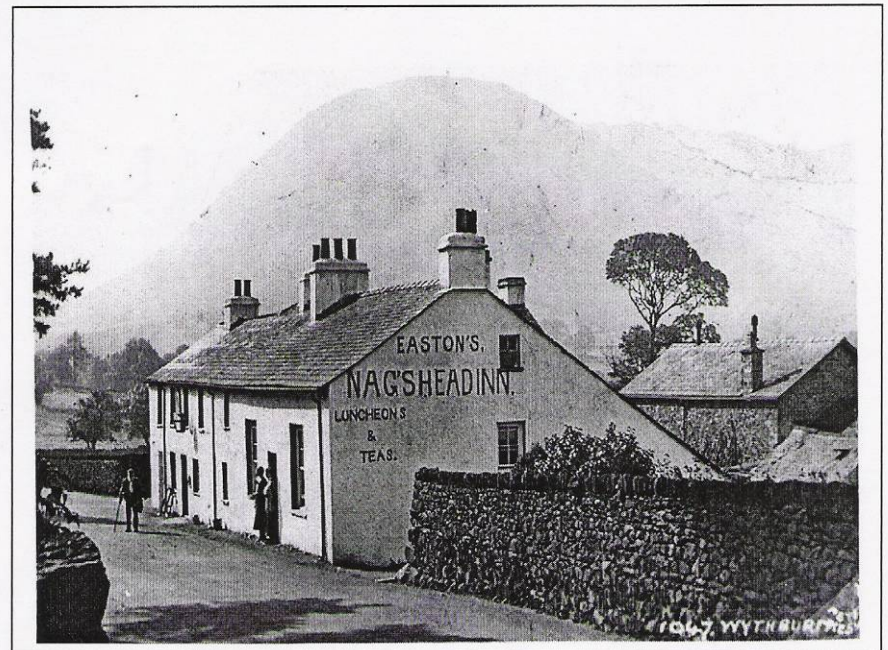
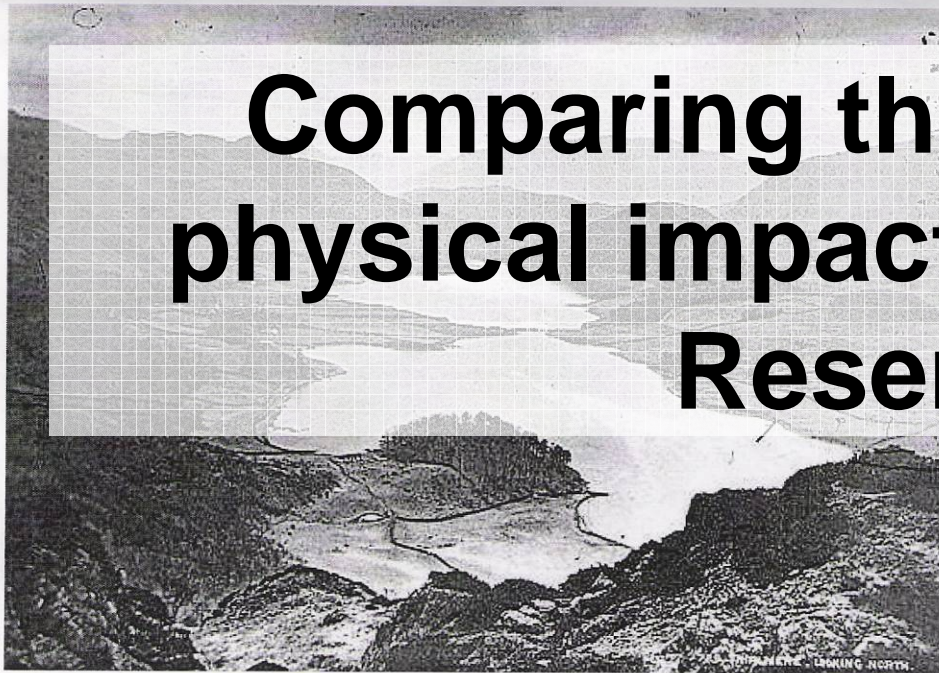
Why is there no camping or swimming?

Looking at the valley what might you normally find here?

At the church, looking at the graves and inside the church at the war memorial and other literature in the church, solve the mystery as to why there are ghosts in Manchester's Water



Comparing the human and physical impacts of Thirlmere Reservoir



Uses of reservoir/area:

Purpose of reservoir:

Physical consequence of damming:

Recreational possibilities:

**Concept Map
- Thirlmere Reservoir**

Demand for water:

Ecology of the reservoir area:

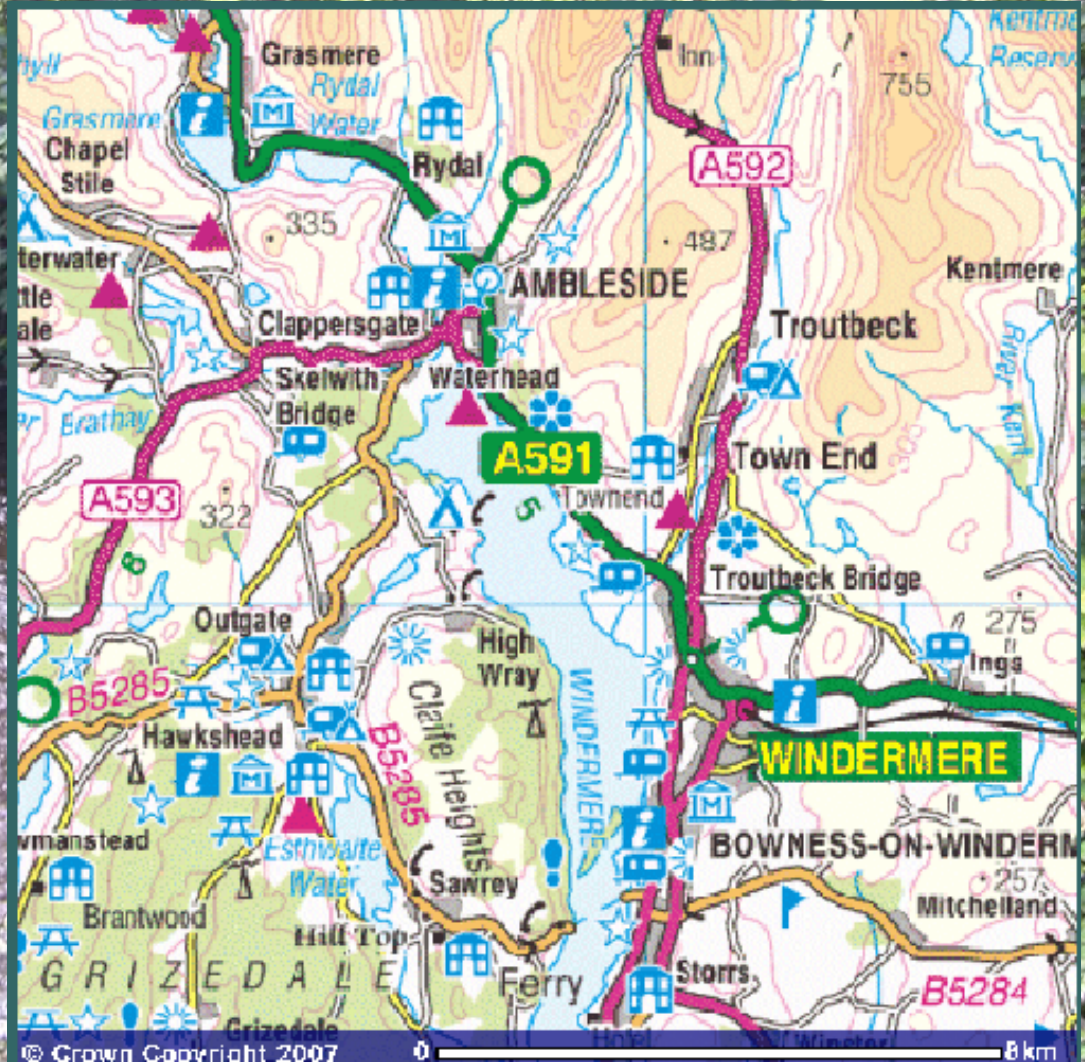
Human consequence of damming:

Times of drought:

Current issues:

Troutbeck

- Landscape evaluation
- Cost - benefit analysis
- To dam or not to dam
- Conflict matrix



Observation walk

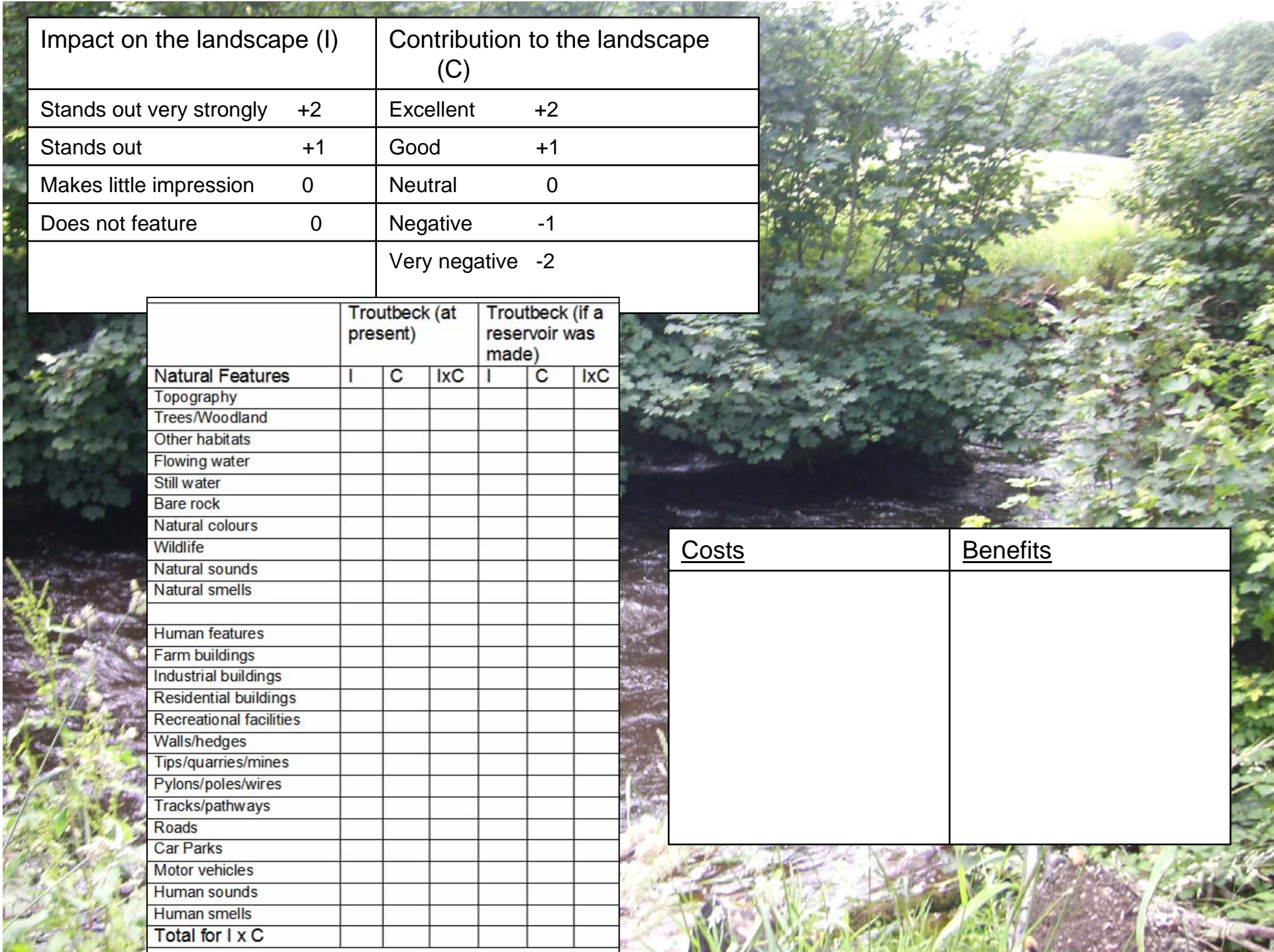
From National Trust car park, down through the town to the caravan park

- Land use observation
- Landscape evaluation
- Cost/benefit analysis
- Conflict matrix

Impact on the landscape (I)		Contribution to the landscape (C)	
Stands out very strongly	+2	Excellent	+2
Stands out	+1	Good	+1
Makes little impression	0	Neutral	0
Does not feature	0	Negative	-1
		Very negative	-2

	Troutbeck (at present)			Troutbeck (if a reservoir was made)		
	I	C	IxC	I	C	IxC
Natural Features						
Topography						
Trees/Woodland						
Other habitats						
Flowing water						
Still water						
Bare rock						
Natural colours						
Wildlife						
Natural sounds						
Natural smells						
Human features						
Farm buildings						
Industrial buildings						
Residential buildings						
Recreational facilities						
Walls/hedges						
Tips/quarries/mines						
Pylons/poles/wires						
Tracks/pathways						
Roads						
Car Parks						
Motor vehicles						
Human sounds						
Human smells						
Total for I x C						

<u>Costs</u>	<u>Benefits</u>



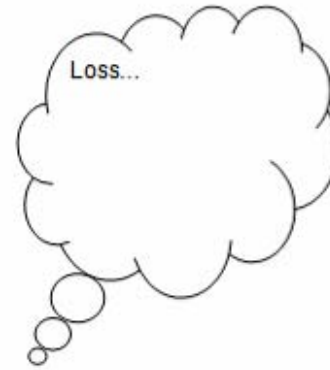
A reservoir in Troutbeck: Conflict Matrix

- 1 = Local residents
- 2 = Local retailers
- 3 = Limefit Caravan Park
- 4 = Tourists in the Lake District
- 5 = Historic buildings
- 6 = Local framers
- 7 = United Utilities
- 8 = UK cities needing water
- 9 = Lake District National Park Association

	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

√ = Compatible
 x = Conflict
 ? = Possible conflict

To dam or not to dam?



Evening activity

- Presentation and Debrief

- Secondary resources
- 2 presentations – case for and against
- Peer evaluation
- Discussion and write up of case study

Outcomes:

- Brings together physical and human understanding
- Provides an understanding of water management, and of supply and demand on a number of scales
- Links to other aspects of human and physical geography within the area (e.g. landscape, ecology, diversification)
- Enables students to use fieldwork knowledge and techniques as well as thinking skills and decision making