

# Explore the Eden:

## Geography of the Eden Catchment

### A practical lesson using ArcGIS

#### Summary

Students can explore the geography of the Eden Catchment using a pre-prepared web map, created using ArcGIS Online. The associated questions and tasks are designed to help students become familiar with using simple online GIS mapping tools to query map-based data and investigate the geography of an area. The web map is accompanied by an introductory video to help you learn how to use it.

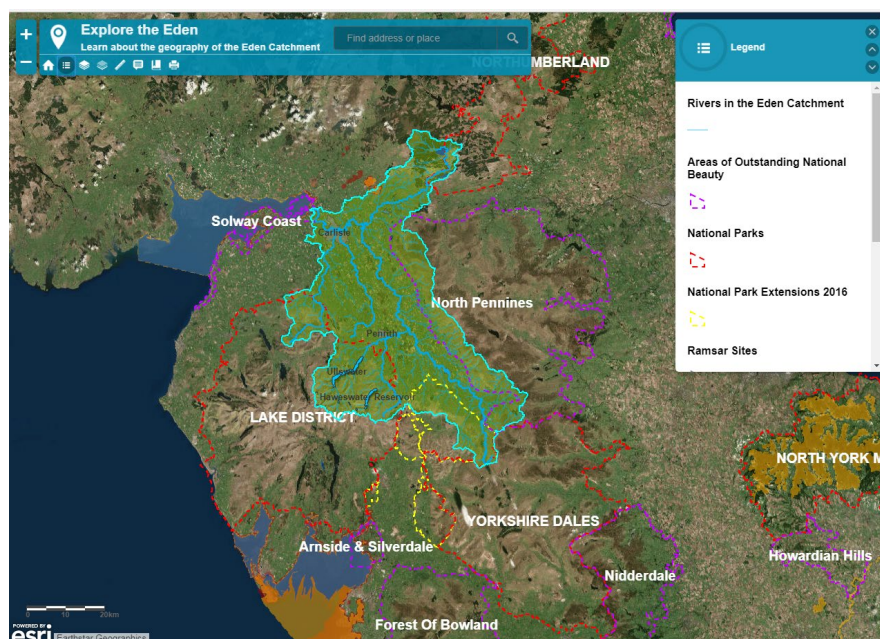
The exercises are also designed to help familiarise students with key river catchment terms such as: Tributary, Confluence, Source, Mouth, Estuary, Watershed, Long-Profile and Cross Section.

**NOTE:** This resource includes links to Eden Rivers Trust animations / videos which are located on Vimeo, <https://vimeo.com/edenriverstrustcumbria> Please ensure all computers being used have permission to access it.

#### Using Explore the Eden with your Students

The short introductory video at <https://vimeo.com/233630961> demonstrates the mapping tools available to explore the map.

The web-map can be found at <http://arcg.is/1X4WUW2>



## Suggested Questions

### Map-based GIS questions

Q1. What is the area of the River Eden Catchment? (Hint: click on the catchment and more information will pop up.)

A. 2,349.71 km<sup>2</sup>

Q2. What is the straight-line distance between Penrith and Carlisle in both miles and kilometres? (Hint: use the measure tool to measure the distance from the centre of one place to the centre of the other)

A. Approx. (from centre to centre) 17.7 miles/28.5 km

Q3. How long is the River Eden in kilometres? Describe two methods by which you could find this information out from the web map.

A. 128.43 km. Find out by clicking on the river and one of the pop-up tabs will tell you, or click on the blue star at the source of the river. You could also try and trace the length of the river using the line measurement, but this would not give an accurate measurement.

Q4. Using the pre-set bookmarks, zoom to Ullswater. What is the area of the lake? (Hint: work it out using the measure 'area' function.)

A. Approx. 9.25 Sq Kilometres

Q5. Find the village of Armathwaite (Hint: If you don't know where it is, use the search function to search for Armathwaite, Cumbria). Which is the nearest village to Armathwaite by straight-line distance, and how far away it is?

A. Ainstable, distance approx. 1.5 miles/2.6 km.

Q6. How many National Parks (including National Park Extensions 2016) and Areas of Outstanding Natural Beauty (AONB) are there within the Eden Catchment? Can you name them?

A. 4 x National Parks: Lake District National Park, Northumberland National Park, Yorkshire Dales National Park, Yorkshire Dales National Park Extension (2016),  
2 x AONBs: Solway Coast AONB & North Pennines AONB.

Q7. Of the National Parks found within the Eden Catchment which was the most recent to be designated and when was it designated?

A. Yorkshire Dales National Park Extension (2016).

Q8. Name three different conservation and/or landscape designations found within the Solway Estuary.

A. RAMSAR site, Special Area of Conservation, Site of Special Scientific Interest (SSSI), AONB.

Q9. What are the RAMSAR Designated Wetlands found in the North-West of the Eden Catchment called?

A. Upper Solway Flats & Marshes.

### Exercise:

a) Print out a map of the whole Eden Catchment which shows only the catchment boundary, rivers and lakes.

b) Change the base map to something other than the aerial imagery. You can choose which you think looks best.

C) Add 1) a title to your map (include your name in this) and 2) a legend to the map

### River feature-based questions

Click on the blue stars to explore all of the different 'river terms' which are featured on the map and then answer the following questions:

Q1. What is a tributary?

A. A tributary is a smaller stream or river that flows into a larger river or lake downstream.

Q2. Which is the longest tributary of the River Eden?

A. River Irthing, 54.44 km.

Q3. Name two major tributaries of the River Eden that have their confluence with the River Eden in the city of Carlisle.

A. River Caldew, River Petteril

Q4. The confluence of the River Eamont and River Lowther is found just downstream of which village?

A. Eamont Bridge, or Brougham (either is acceptable, as each village is on one of the two rivers).

Q5. Where is the source of the River Eden found?

A. Black Fell Moss, Mallerstang, in the Howgill Fells

Q6. The River Eden flows into which estuary?

A. The Solway Estuary, or Solway Firth.

Q7. Can you describe what an estuary is?

A. An estuary is a body of water formed where freshwater from rivers and streams flows into the sea or ocean, mixing with saltwater.

Q8. Can you name one other major estuary in the UK and the main river which flows into it?

(Self-guided learning)

A. Can include (but not only): Severn Estuary/River Severn, Humber Estuary/River Ouse, Thames Estuary/River Thames, Firth of Forth/River Forth,

You can download more free ArcGIS resources to use in the classroom  
from the Eden Rivers Trust website:

This series of ArcGIS resources for Secondary Schools have been developed by  
Eden Rivers Trust in conjunction with The Rivers Trust with support from  
The National Lottery Heritage Fund.

Thank you to all of the teachers who helped with the development of these resources.

