

Martley A' Level Exercise

– palaeoenvironments and structure

This is a full day exercise during which you will visit 23 locations in a north-west to south-east traverse of the hills between the villages of Shelsley Beauchamp and Martley.

PURPOSE: You will be asked to make observations as you go. These will include examining and identifying the lithology (rock type), deducing the palaeoenvironment in which the rocks were laid down, and observing the structure of the rocks. You should record all of your observations in the app and/or your notebook. Your combined observations at the end of the traverse should enable you to select the correct of three cross-sections for the route that you walk.

The sites that you visit are varied in their exposure of the rock – from trackside cuttings near ground level to quarry faces. They are not all pristine ‘textbook’ sites and some can be overgrown and their features subtle. They are good examples of ‘real life’ geology – a little messy and requiring you to think. However, the app talks you through all that you need to examine and by following the instructions you will discover that a great

deal of information can be gleaned and a story will build as you go. This exercise, if completed, should give you confidence that you can extract data from the rocks and clues from the landscape in almost any location which will help you to make a geological interpretation of what you see.

START / FINISH: It is recommended that you are dropped off (or leave just one vehicle) near to the church in Shelsley Beauchamp and are picked up at the end of the day (or leave a second vehicle) in the centre of Martley.

EQUIPMENT: Tablet / phone, hand lens, notebook, pencil, rubber, compass-clinometer, grain size/sorting/shape card, ankle supporting boots having soles with good grip, weather-proof clothing. (Note: there is a compass-clinometer and a grain size card in the app, but it good to carry a traditional back up.

It is also a good plan to take an Ordnance Survey map of the area with you and to mark the route on there before you set out. This is because OS maps have more detail on them than we can show on the app map, so if you needed to be picked up in an emergency, you could describe your location to anyone you call. It may also

help with navigation, but the app map will show your location at all times, using GPS, so you can see if you have diverged from the route marked on the map.

GEOCONSERVATION: Do not excavate the rocks in any way, as they must be left intact for others to study afterwards, and the rock face must remain stable. You can observe the details of the rock close up with a magnifying glass or your hand lens. If you need to know the reaction of the rock with dilute HCl then this information is provided in the app. You do NOT need to use a geological hammer either, but if you have one it should ONLY be used on loose fragments of rock on the ground.

SAFETY: The route is mainly on countryside footpaths (in fields, woods, lanes, tracks and some rough ground in small quarries). Take care on slippery mud, wet leaves or uneven ground. Be aware of traffic on the lanes and on faster roads when you are in Martley village.

COUNTRYSIDE CODE: Do not be noisy. Do not chase or scare animals. Close gates behind you. Do not drop litter. Show consideration for local residents at all times. NOTE that small parts of the route are on permissive paths – these could be closed if anyone misuses them,

which would be a loss for everyone who lives in this area and enjoys walking in these hills.

ACCESS: There are a few sites marked on the route which are private property. If permission has been given for them to be visited (MT6) or if you need to view them from a distance WITHOUT entering (MT2, MT10, MT17) this is noted and instructions given in the app. A couple are on permissive paths (MT18, MT22), so please respect that. All the information you need about all of these sites is provided in the app.

There are a few sites which you should NOT VISIT UNLESS YOU HAVE PREVIOUSLY OBTAINED PERMISSION – these are MT12, MT20 and MT21. All the information you need and pictures of the sites are provided in the app to enable you to complete the exercise without visiting. However, if you are still interested in doing so (for example, site MT20 is good to see), please contact the Earth Heritage Trust well in advance of your visit on eht@worc.ac.uk to find out how to do so.

USING THE APP IN THE FIELD:

The app provides a **MAP** on which the locations you must visit are marked. Using inbuilt GPS, it also shows your current location, so you can check that you are on the right route.

Then there are two tabs – the one labelled **MENU** is where you have accessed this guided field trip from. On this tab you can also see a quick link list of all the ‘**sites on field trip**’ and later, you use this tab to ‘**send data**’ that you have gathered (i.e. export it).

The other tab is called **TOOLS**. It shows your current location, altitude, the time and your battery power. Then it has a drop down menu of a range of tools to help you record geology. It provides the means to take notes, voice recordings and photographs, all of which will be GPS located and can be downloaded later when you return to base / school. You can access any data that you have collected for a site by touching the site marker on the map – two flags appear called ‘**tasks**’ and ‘**data**’ - the former takes you to the instructions for the site and latter shows your recorded data. You can also access these items directly from the ‘**sites on field trip**’ option on the **MENU** tab.

The other tools include:

- **define a rock type** – allows you to describe a rock type and assign a colour to it – the marker on the map for a site of that rock type will become that colour once you ‘assign rock to site’.
- **assign rock to site** – as mentioned above, this is where you tell the app if the rock at the site you are at is one of the rock types you have previously defined.
- **create a new site** – allows you to add additional locations to the map and will give them a marker on the map.
- **measure dip and strike** – is a compass clinometer. When you take a reading at any site defined on the map, the marker for that site will have a strike bar and dip arrow added to it. The reading will be GPS located and you can check the full details in the ‘data’ flag.
- **grain size** – provides the information you would expect on a grain size chart.
- **rock types** – is a set of notes reminding you how to name rocks.
- **sedimentary log** – is a simple logging tool
- **glossary** – is a brief glossary covering the terms you may want to look up on this field trip, plus a few extra terms for good measure!

WRITING UP / BACK AT BASE

To complete the structural element of this exercise, either view your completed map with rock types and structural information recorded, OR you could download all of your data (MENU > send data) and manually plot your structural observations and rock types on a fresh OS base map.

Then, go to the Deep Time website at **www.deepTime.voyage** where, in the Resources section, you will find three sets of detailed cross section images for the traverse. These each show four cross sections through the hills, from the north end of the ridge to the south. Only one of the set of three is exactly correct. Use your map and data to decide which that is.