

TUTORIAL 10: Introduction to the Geoarchaeology Resource Model

The purpose of the Geoarchaeological Resource Model is to document geological and geomorphological evidence of past environments and landscapes. This Resource Model has been developed for the EAMENA database in collaboration with the [Maritime Endangered Archaeology \(MarEA\) Project](#).

Geoarchaeological evidence is important for archaeologists because it can provide information about past environmental changes that may have affected past human activities and settlement patterns, and thus help in our interpretation of the archaeological record. For example, on many coastlines, sediment deposited by waves and tides can cause harbours to silt up and stop working. Understanding these processes allows us to interpret the human response. In some cases, harbours and settlements were simply abandoned, in other cases people responded by dredging the harbour or altering its construction.

This can also be very useful for heritage management because geological and geomorphological evidence can identify where remnants of the past landscape are located. This is particularly useful in places where these landscape remnants are not obvious because they are buried below the ground surface or submerged underwater. In addition, the location of particular types of palaeo-landscapes can determine where particular archaeological site types are located, and in some cases the likely nature of preservation. For example, all coastal areas have experienced sea-level change over the past 2 million years. Sometimes sea-level was lower than present, sometimes it was higher than present. Consequently, in some places, evidence of past shorelines can be found preserved inland and elevated by a few metres or even tens of meters above the modern shoreline. In other cases, this evidence is located on the seabed some metres or tens of metres below the sea surface. For archaeologists and heritage managers, this means that evidence of maritime and coastal archaeological sites can be found far inland and also submerged on the seabed.

The type of evidence preserved can also give us clues about taphonomic processes and thus the state of archaeological preservation. For example, gravel and boulder beds indicate high energy conditions (e.g. strong waves, fast water flow) and thus a low likelihood of in situ preservation. On the other hand, fine grained silts and clays with organic material could suggest that there is a strong possibility that archaeological material, including organic artefacts, could be preserved in situ. Together, this allows heritage managers and archaeological researchers to make an assessment of the archaeological potential of a given area even when little to no archaeological survey has taken place.

We recognize that many users of the EAMENA database are not Earth scientists, geologists or geoarchaeologists. Therefore, we have tried to keep the model structure as similar as possible to the existing EAMENA database to make it familiar and straightforward to use. As shown below, many of the individual elements (cards and fields) within the Geoarchaeology Resource Model are identical, or only slightly different to the standard Heritage Place Resource Model. Some of the terminology though, particularly pertaining to geology, geomorphology and environmental change, may also be unfamiliar to many users. If so, definitions for these terms can be found in the Glossary.

1 Getting Started

After logging into the database, go to 'Create New Heritage Resources' (Figure 1).



Figure 1: Adding a new resource.

Access the Geoarchaeology Resource Model by EITHER:

- Going to the left-hand sidebar and choosing **Add New Resource>Geoarchaeology** (Figure 2) OR
- Clicking on the blue **Geoarchaeology** icon in the main window (Figure 3)

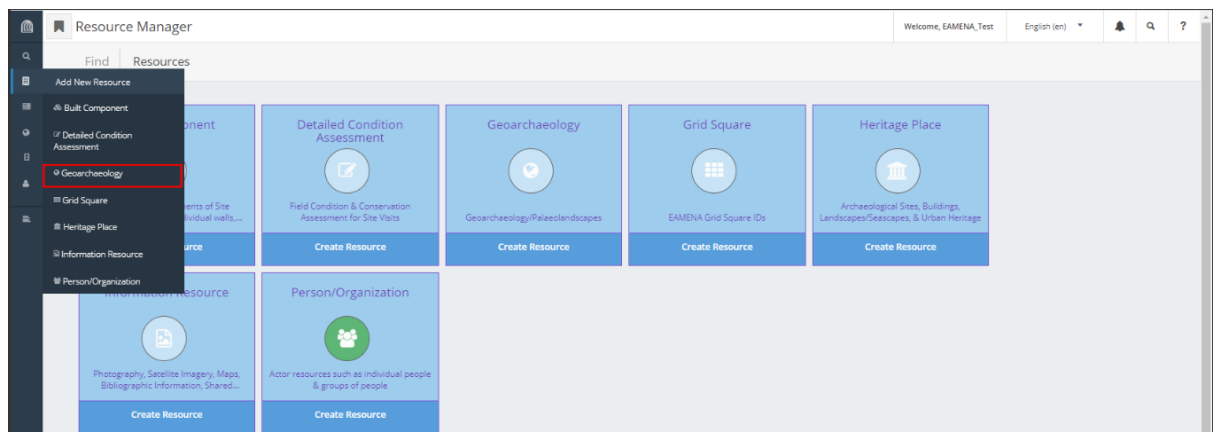


Figure 2: Adding a new Geoarchaeology resource from the left-hand sidebar.

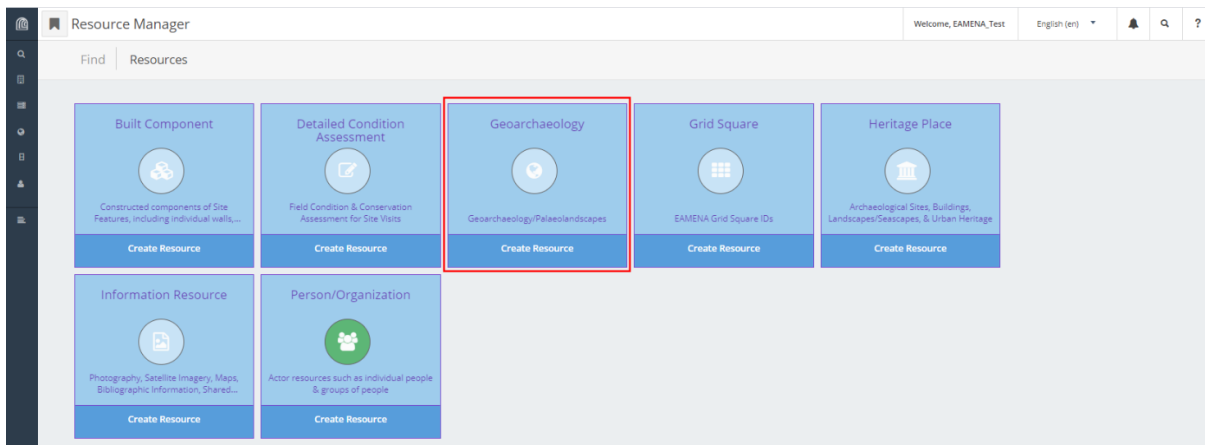


Figure 3: Adding a new Geoarchaeology resource from the main window.

You will see the same setup as the standard Heritage Place Resource Model with a Card Tree on the left side showing 7 cards which can be filled in (Figure 4).

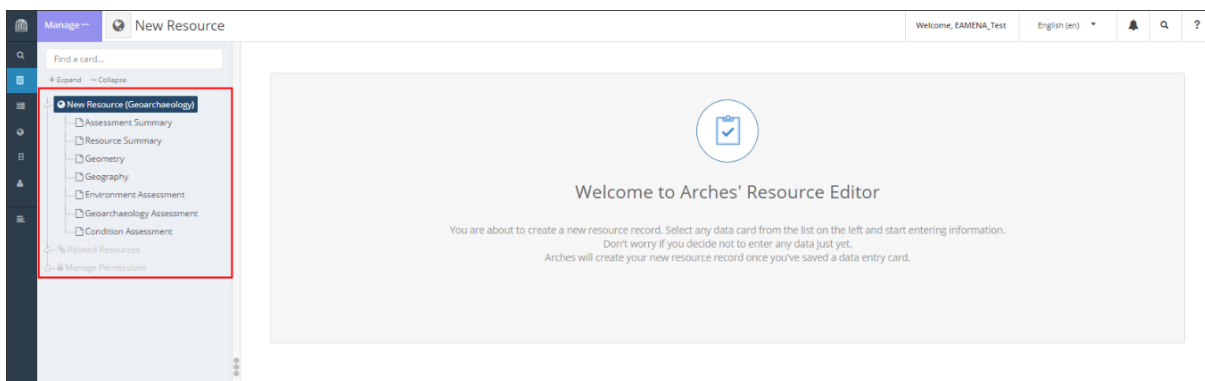


Figure 4: Navigating through a Geoarchaeology record using the Card Tree.

A full Geoarchaeological record will have information entered into all of these Cards. Some of these Cards are identical to those used in the Heritage Place Resource Model, whereas other have slight differences required for documenting a Geoarchaeological feature. Please refer to the relevant tutorials for instructions on how to fill in these sections. The key area of difference is the Geoarchaeology Assessment Card where the bulk of the relevant geological or geomorphological data is entered, and has its own separate tutorial.

Card	Notes	Refer to Heritage Place tutorial:
Assessment Summary	Identical to Heritage Place	Tutorial 3: Assessment Summary
Resource Summary	Minor difference from Heritage Place. See Section 2.1 below.	Tutorial 4: Resource Summary
Geometry	Identical to Heritage Place	Tutorial 5: Geometries
Geography	Minor difference from Heritage Place. See Section 2.2 below.	Tutorial 6: Geography
Environment Assessment	Identical to Heritage Place	Tutorial 8: Environment Assessment
Geoarchaeological Assessment	Does not exist in Heritage Place	Tutorial 11: Geoarchaeology Assessment
Condition Assessment	Identical to Heritage Place	Tutorial 12: Condition Assessment

2 Geoarchaeology Resource: Cards with minor differences to Heritage Place

2.1 (Geoarchaeological) Resource Summary

Differences to Heritage Place:

- Does not have 'Heritage Place Type' field.
- Does not have 'Heritage Place Function' field.
- Has extra mandatory field '**Process Indicator/Evidence of**' (Figure 5)
 - This field is used to provide a quick overall explanation of the significance of the documented geoarchaeological evidence. This is aimed at an archaeological audience and/or heritage managers who are not specialists, or have limited knowledge of geoarchaeology, geology or environmental change.
 - Click on the 'Process Indicator of/Evidence of Type' field and choose the most appropriate term from the dropdown (Figure 6).
 - Refer to the Glossary for definitions of these terms.
 - Click on the 'Process Indicator Certainty' field and choose the most appropriate certainty (Figure 7).
 - Refer to the Glossary for definitions of these terms.
 - Click '**Add**'

New Resource Summary

General Description Type

General Description

Process Indicator/Evidence of

Process Indicator/Evidence of Type *

Select an option

Process Indicator Certainty *

Select an option

+ Add

Figure 5: Extra mandatory field 'Process Indicator/Evidence of'

Process Indicator/Evidence of

Process Indicator/Evidence of Type *

Select an option

Channel Migration/Abandonment

Coastal Advance/Accretion

Coastal Retreat/Erosion

High Potential for Archaeological Preservation

Lake Level Change

Low Potential for Archaeological Preservation

Natural Hazard

Figure 6: Select the appropriate Process Indicator of/Evidence of Type'

Process Indicator/Evidence of

Process Indicator/Evidence of Type *

Low Potential for Archaeological Preservation

Process Indicator Certainty *

Select an option

Possible

Probable

Definite

Not Applicable

Figure 7: Select the appropriate certainty.

- Repeat the steps above to add multiple terms where necessary.

2.2 (Geoarchaeological) Geography

Differences to Heritage Place:

- Does not have 'Overall Site Shape' field.
- Does not have 'Resource Orientation' field.
- Does not have 'Address' fields.
- Does not have 'Administrative Division' fields.
- Does not have 'Cadastral Reference' field.
- Has extra mandatory field 'Maritime Region Type' (Figure 8)
 - This field is used to document the general location of the documented feature according to the maritime zones defined by the United Nations Conference on the Law of the Sea (UNCLOS). It is only required for features located offshore or seaward of low water.
 - Click on the 'Maritime Region Type' field and choose the most appropriate term from the dropdown (Figure 9).
 - Refer to the Glossary for definitions of the terms.
- Has extra mandatory field 'Overall Location Type' (Figure 8)
 - This field is used to indicate how the mapped extent of the feature being recorded has been defined. For example, whether the extent is based directly on the observed boundary of the geoarchaeological feature, has been interpolated from scattered evidence or reflects only the extent of the available data rather than the true limits of the feature under consideration.
 - Click on the 'Overall Location Type' field and choose the most appropriate term from the dropdown (Figure 10).
 - Refer to the Glossary for definitions of these terms.

Figure 8: The Geoarchaeology Geography Card, highlighting extra, mandatory fields

Geography

Country Type *

Select an option

Maritime Region Type

Select an option

Exclusive Economic Zone (EEZ)

International Waters

Not Applicable

Territorial Waters (12 Nautical Miles)

Select an option

Figure 9: The 'Maritime Region Type' field

Overall Location Type

Select an option

Data Extent

Interpolated boundary

Observed geoarchaeological boundary

Figure 10: The 'Overall Location Type' field