In order to follow this exercise you need to have completed exercises 1, 2 and 3.

As we move to the end of the practical exercise we look at preservation aspects of the data lifecycle and look in detail at two important parts of this - the long-term storage of the data and the creation of metadata records.

Contents of Exercise 4: Preserve datasets for future use and create metadata records.

Part 1 – Export dataset from Geodatabase as a Shapefile.

Part 2 – Create Geospatial Metadata record.

Part 3 – Create documented data archive.

Part 1 – Export dataset from Geodatabase as a Shapefile.

Use of a geodatabase is great for managing our and others geospatial data as part of our research project as it allows us to keep data in one place within the ArcGIS environment. However it is not always easy to interact with the contents of data stored in a Geodatabase outside ArcGIS. This is problematic if we want to share the data from our project, so that others can build on the results of our research or just explore the output datasets in systems other than ArcGIS. Where a user has ArcGIS they will be able to open our ArcMap project and view the contents from the Geodatabase. A de-facto standard for the exchange of vector GIS datasets is the Shapefile. If we create versions of our vector datasets in Shapefile format and versions of raster datasets in GeoTiff format we don't second-guess what applications other people may be using.

Shapefile format is also the format recommended by the UK Data Archive for management back-ups and data preservation of geospatial datasets.

Use ArcCatalog to create a project outputs folder within the Mantra project folder: right-click on the top level **Mantra/Data** folder and select **New** > **Folder**…

Give the new folder the name **Outputs.**
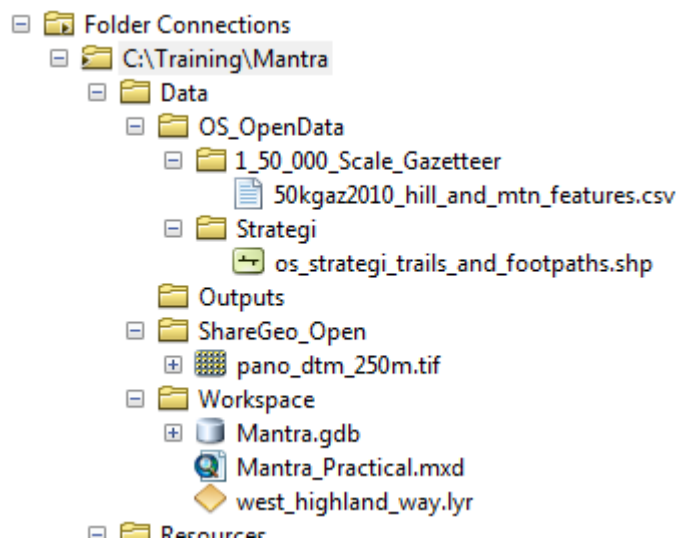
We want to create a version of the **fieldwork_sites** item within the Geodatabase as a Shapefile. Select the **fieldwork_sites** item so that it is selected in the Mantra.gdb geodatabase, right-click and select **Export** > **To Shapefile (single)…**

The **Feature Class To Feature Class** dialogue will be shown. Clicking the **Show Help >>** button will display ArcGIS contextual Help for this tool. Earlier in the practical we used this dialogue to load data into our geodatabase to create a workspace in which to process our data. Here we'll go the other way to export data from our geodatabase into a Shapefile.
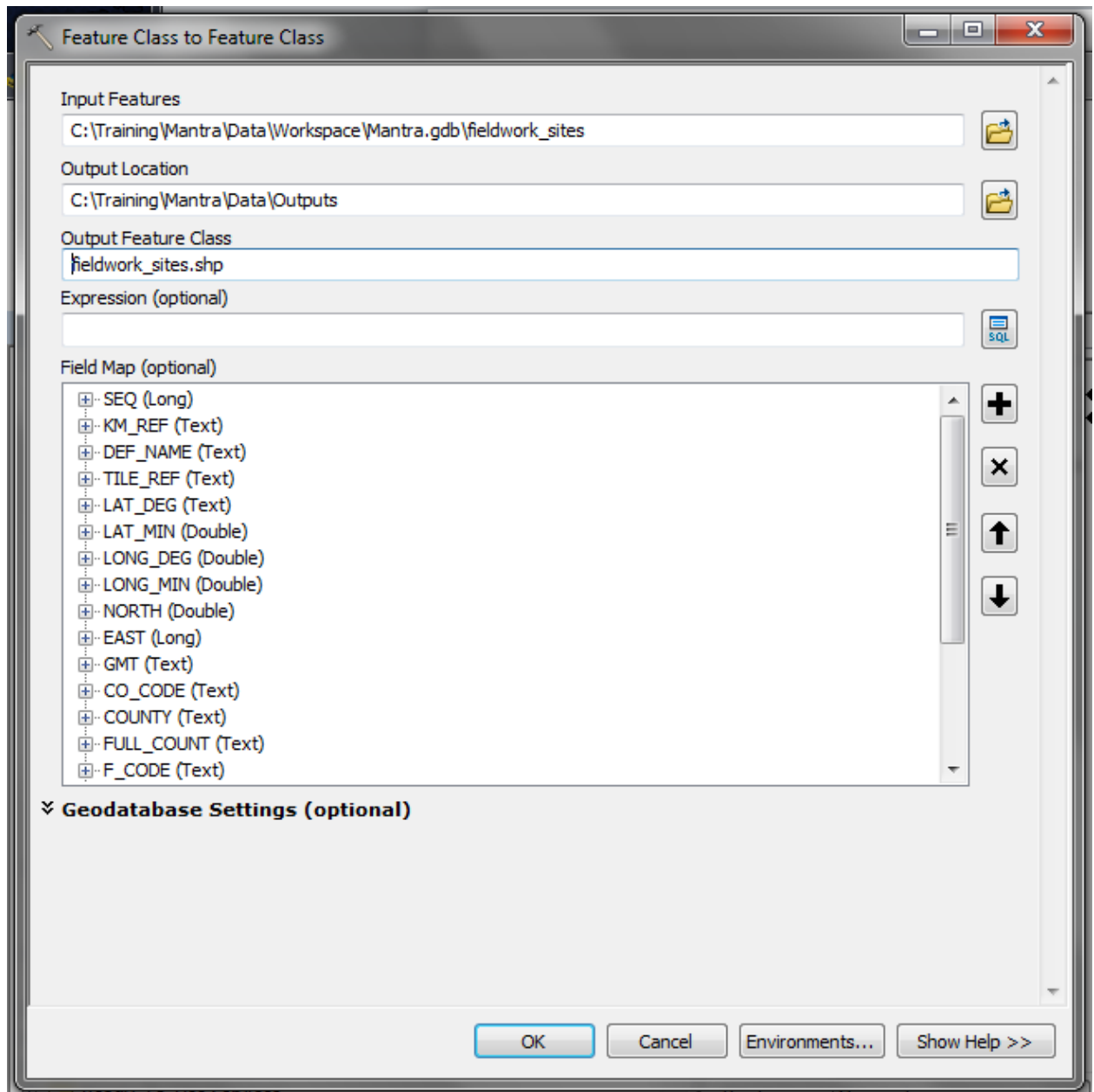
We need to fill in the details for Output Location and Output Feature Class. To provide Output Location use the button at the right of the Output Location textbox to navigate to and select the **Outputs** folder we created above. Now we need to provide the name of the Output Feature Class to be created. In the Output Feature Class textbox enter **fieldwork_sites.shp**. After doing this click **OK**.

Part 2 – Create Geospatial Metadata record.

If you now click on the **fieldwork_sites.shp** item in ArcCatalog within the Mantra\Data\Outputs folder and click on the Description tab much of the metadata information will be empty.

Not to worry. Since we are the creator of the fieldwork_sites.shp dataset we are now responsible for creating metadata associated with that data.

Now from the ArcCatalog menu bar click on the **Edit metadata** button.

Doing so will bring up the **UK Gemini v2.2 Metadata Editor** dialogue.
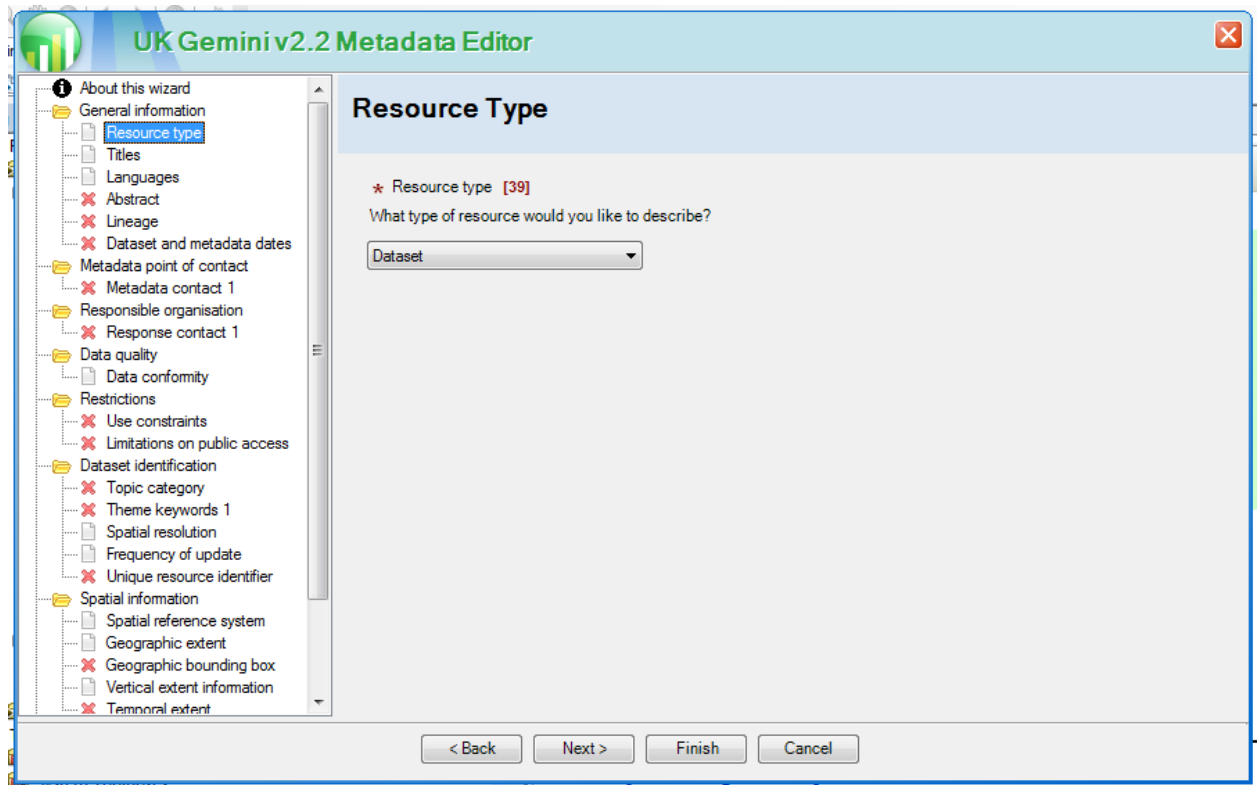
This window presents a series of pages each containing elements for different parts of the Gemini metadata standard. All of the different sections of the Metadata are shown in the expandable tree at left. Clicking on the sections of the tree you can skip to different sections of the metadata record. You can also use the **Back** and **Next** buttons to step back and forwards through the various parts of the metadata record.

As you can see, red crosses are shown against those mandatory elements which have not yet been completed. When we fill this in we'll provide information for all of the mandatory elements (*) and some of the optional elements.

Note the numbers in square brackets refer to the id of the Gemini element in the Gemini 2.2. metadata document http://www.agi.org.uk/storage/standards/uk-gemini/GEMINI2.2.pdf should you want to look at this in more detail later on.

General information Section

Resource Type page – if this is not already set, set the dropdown to **Dataset** and click the Next button.

Titles page – under Title [1] enter the text: **MANTRA Fieldwork Sites** and click the Next button.

Languages page – if this is not the case already set Metadata language and Dataset language both to **English** and click the Next button.

Abstract page – enter the following text:

Point dataset that shows the location of fieldwork sites identified during the Mantra ArcGIS practical to find sites accessible from the West Highland Way.
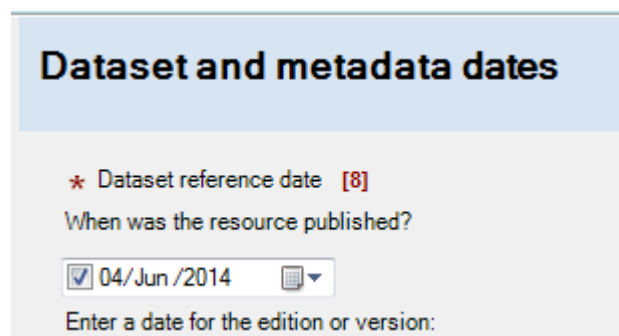
and then click the Next button.

Lineage page – enter the following text:

Candidate fieldwork sites were initially identified as being locations from the Ordnance Survey 1:50,000 placename gazetteer that corresponded to a hill or mountain name. Selections were made from these candidate sites on the basis that they were both visible from and within a specified distance of the West Highland Way long distance footpath. A viewshed was used to represent visibility. A buffer geometry was created to test proximity of candidate sites to the footpath.

And then click the Next button.

Dataset and metadata dates page - for each of the 3 items listed under Dataset reference date [8] and Metadata date [30], today's date will be automatically shown and you just need to click the tickbox next to it to confirm this, like so:

Metadata point of contact Section

Metadata contact page – make sure the following mandatory elements are filled in:

Organisation name: for example "**University of Edinburgh**"
Role: **point of contact**
Your email address: for example **<your_name>@ed.ac.uk**

Reponsible organisation Section

Response contact page – make sure the following mandatory elements are filled in:

Organisation name: for example "**University of Edinburgh**"
Role: **processor**
Your email address: for example **<your_name>@ed.ac.uk**

Providing contact information will assist potential users of your data who may have questions that are not answered by the metadata provided.

Click Next.

We can skip the Data quality section / Data conformity page so click Next again.

Restrictions Section

Use constraints page – type into the free text condition:

Ordnance Survey Open Data

And click the Add button before clicking Next.

Limitations on public access page - under Other restrictions pick **License** from the dropdown and click the Add button before clicking Next.

Dataset identification Section

On the *Topic category* page, under Topic click on the checkbox for **Environment and conservation** so that it is ticked and click **Next >.**

On the Theme keywords page, under Title of originating controlled vocabulary enter **GEMET** for title, set today's date and set Date Type to Creation.

For Keyword enter **Geographical names** and click Add**.**

Skip through *Spatial resolution* and *Frequency of update* by clicking the Next button until you get to *Unique resource identifier*.

Unique resource identifier page – for this we should really enter a namespaced URI but for our purposes enter **mantra001** as Code and click the Add button before clicking the Next button.

Spatial information Section

Skip through *Spatial reference system* and *Geographic extent* by clicking the Next button until you get to *Geographic bounding box*.

Geographic Bounding box page – enter the following:

East: -4.517593
West: -5.115792
North: 56.814682
South: 56.099567

Note that the metadata requires that the Bounding Box is provided in decimal degree coordinates rather than Eastings and Northings!

And click the Add button, before clicking Next.

Skip *Vertical extent information* until you get to *Temporal extent*.

Temporal extent page

Click the checkbox next to Date and Time to accept today's timestamp and click the Add button before clicking the Next button.

Distribution information Section

Data format page

For Format name: enter **ESRI Shapefile**
ForVersion: enter **1.0**

And click the Add button.

We should now have filled out all of the mandatory elements for our metadata record and there should be no red crosses shown. We can check this by going to the Summary page where you should see a message like:

"All the mandatory questions needed to meet the GEMINI standard for this resource have been answered."

Clicking the **Finish** button will save the details we provided, close the **ProductivitySuite UK Gemini Metadata Editor** dialogue and return you to ArcCatalog.

Using the Description tab you should now be able to view the details you just provided.
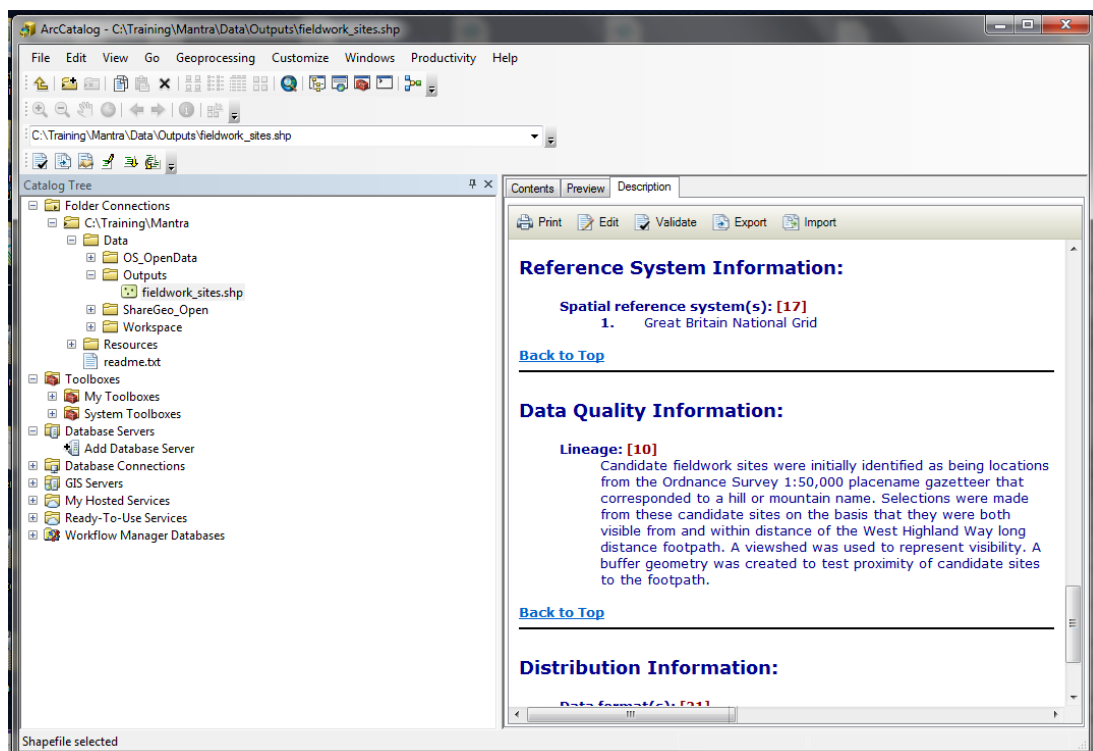
Part 3 – Create documented data archive.

Great! We have now exported the output from our research as a Shapefile and ensured that we have a valid geospatial metadata record for this dataset. The only thing that we have left to do is to package our data up.

First we'll create a document describing what all of the data within the Mantra folder is. There is a placeholder **Readme.txt file under the top level Mantra folder** ready for you to fill out.

Open the **Readme.txt** document in Notepad (or some other text editor), and at a minimum add the following text:

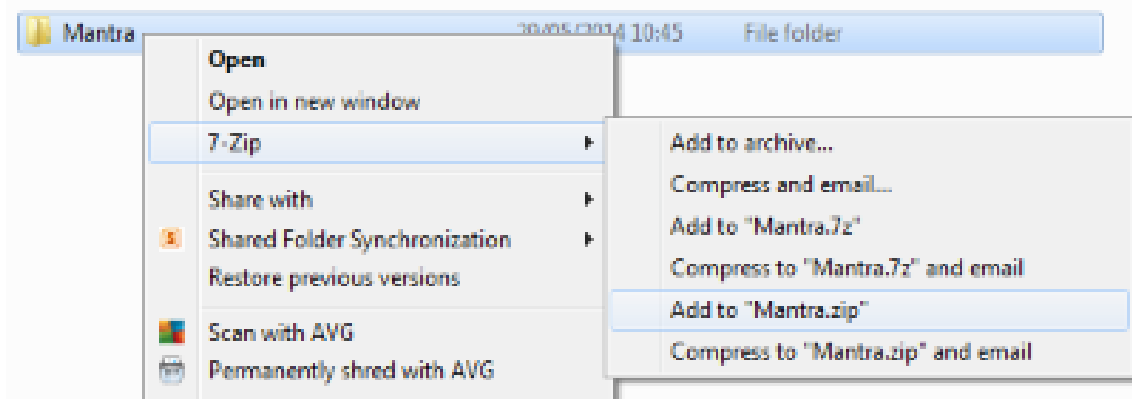"**This archive contains geospatial datasets that were created as part of the Mantra ArcGIS practical.**

The Data\OS_OpenData and Data\ShareGeo_open folders contain input datasets which the practical was based on.

The Data\Workspace\Mantra.gdb is an ArcGIS file geodatabase.

The Outputs folder contains a single Shapefile fieldwork_sites.shp which has been created through analysis of the dataset. **A geospatial metadata record provides information on how this dataset was created.**"

Then save the file and close Notepad. The idea is that by reading this file anyone will be able to understand what the various files are and how they were created.

Having done this we can then collect all of our project files together to create a (zip) archive to store all of the project data. Here I've used an application called 7-Zip. Alternatives may be WinZip or the native Windows compression utility.

This concludes the practical.