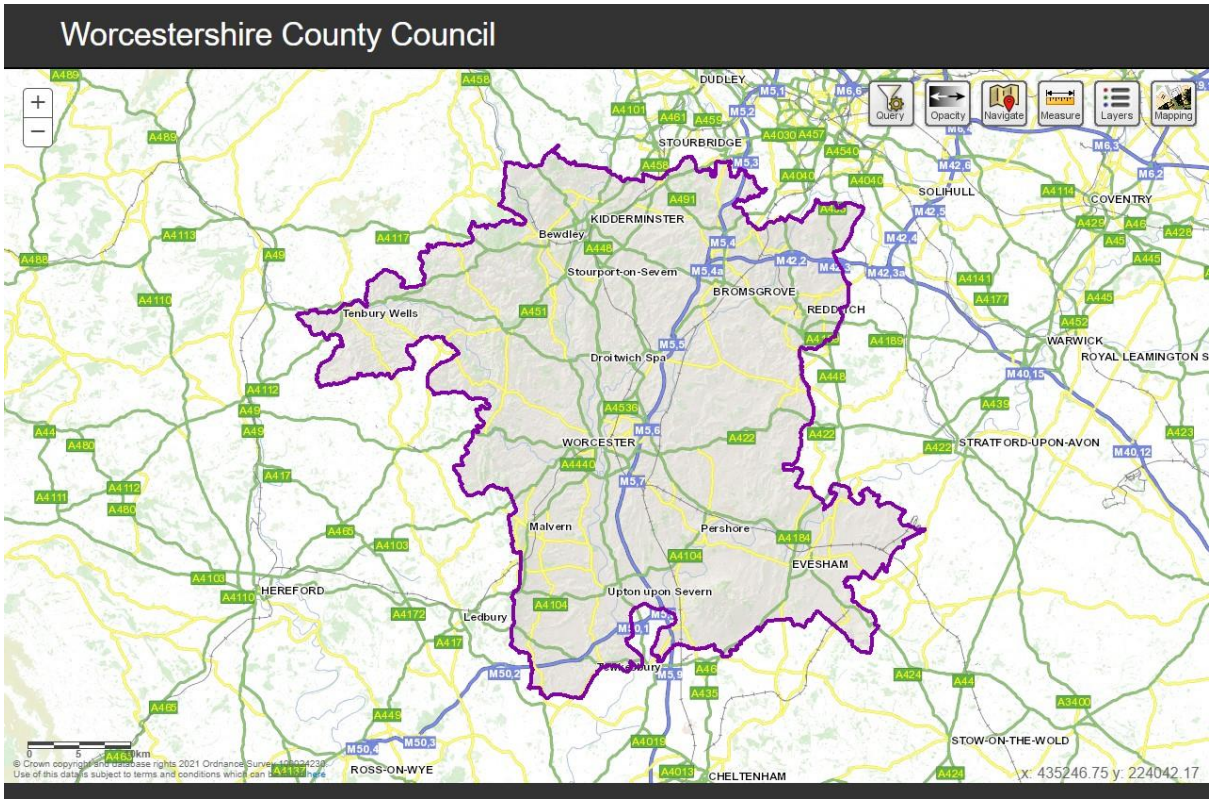
Worcestershire Habitat Inventory Online Web Tool User Guide

October 2021

The following link - http://gis.worcestershire.gov.uk/website/WorcestershireHabitatInventory/ - will take you to the home screen of the WHI Web Tool.



Section 1: Basic Functionality

Zooming in and out:

- At the top left of the map screen you have zoom-in and zoom-out buttons
- You can zoom in by double clicking on the map in the location you want to zoom to
- You can use the scroll function (wheel) on your mouse

As you zoom in further the map will automatically show you more detail of roads, buildings and features in the landscape such as field boundaries.

Navigating around the map

At its simplest you can navigate around by clicking on and dragging the map. There is also a more advanced navigation function button at the top right of the map (see section 2).

Scaling

There is a scale bar at the bottom left corner of the map. This will change automatically as you zoom in and out. The units are kilometres and metres.

Section 2: Mapping Tools

There are six map tool buttons at the top right of the screen.

Query tool

Clicking on this button opens the query builder tool. Here you can select from the various layers available to interrogate using the drop-down box by 'Layer'. Once you have selected a layer to query, the tool will automatically populate the available 'Fields' to investigate. By double-clicking on the selected field these will be populated in the query building box beneath.

In order to display query results, please note that the appropriate layer (eg Habitats) must be turned on in the 'Layers' button.

Please note that UK Habitat codes are available to cross reference on the UK Habitat website at https://ukhab.org/ and Integrated Habitat System (IHS) habitat codes are available at the Somerset Environmental Records Centre (SERC) website: www.somerc.com/wp-content/uploads/2019/01/IHS-Definitions.pdf

For example, to query WHI2 for Improved Grassland, select the 'Habitats' layer from the 'Layer' to query, then select 'UKHab Code' as field to query, select '=' from the tools available on the right hand side, and then in the query builder window, replace the 'value' text with the respective UKHab code, in this case 'g4'. The search term would then read UKHab = 'g4'. Click apply Query to Layer and all fields containing recorded improved grassland will be displayed. Alternatively, by selecting the 'Habitats' layer and then selecting 'IHS' as a query field, and by entering the appropriate IHS code (in this case, GI0) all fields containing recorded improved grassland will be displayed.

WHI1 contained considerable field-by-field data in the form of 'comments' and 'keywords' and WHI2 retains this and allows you to search for this text within its attributes. For example, by selecting 'WHI1 Keywords', 'WHI1 Comments' or 'WHI1 Label' and using the 'like' tool you can create search terms such as 'comment like '%ridge and furrow%' which will return all fields with the words 'ridge and furrow' held within the WHI2. Use the 'clear query' button to empty the query builder tool and start afresh.

The query tool will also allow combinations of search terms. For example, to search for improved grassland which also contains the observation 'ridge and furrow' in the 'comments' field, the following search term can be used

'UKHab = 'g4' AND comment like '%ridge and furrow%'

You can also query WHI2 data by confidence value of the dataset, for example, selecting 'Habitats' as the query layer and entering the search term

[Confidence] > 65

this will return all polygons identified with over 65% confidence rating. Please note that the confidence score must be expressed without single quotation marks in this query term.

Opacity tool

This function has a slider bar that allows you to increase or decrease the transparency of both your underlying base map/aerial photographs and also the layer(s) of data you have displayed on the map.

Navigate tool

If you would like the map to zoom to a particular location, you can use the towns and villages listed under the drop-down options by 'Zoom Place'.

If you know the postcode or the OS grid reference of the place you wish to zoom to on the map, you can use this tool to do so.

The 'Zoom to OS map sheet' box will accept grid references from 2-figures to 10-figures in length and will zoom you to the corresponding location (the longer the grid reference, the further in you will zoom). Don't forget to include the letters – this will be SO or SP in Worcestershire

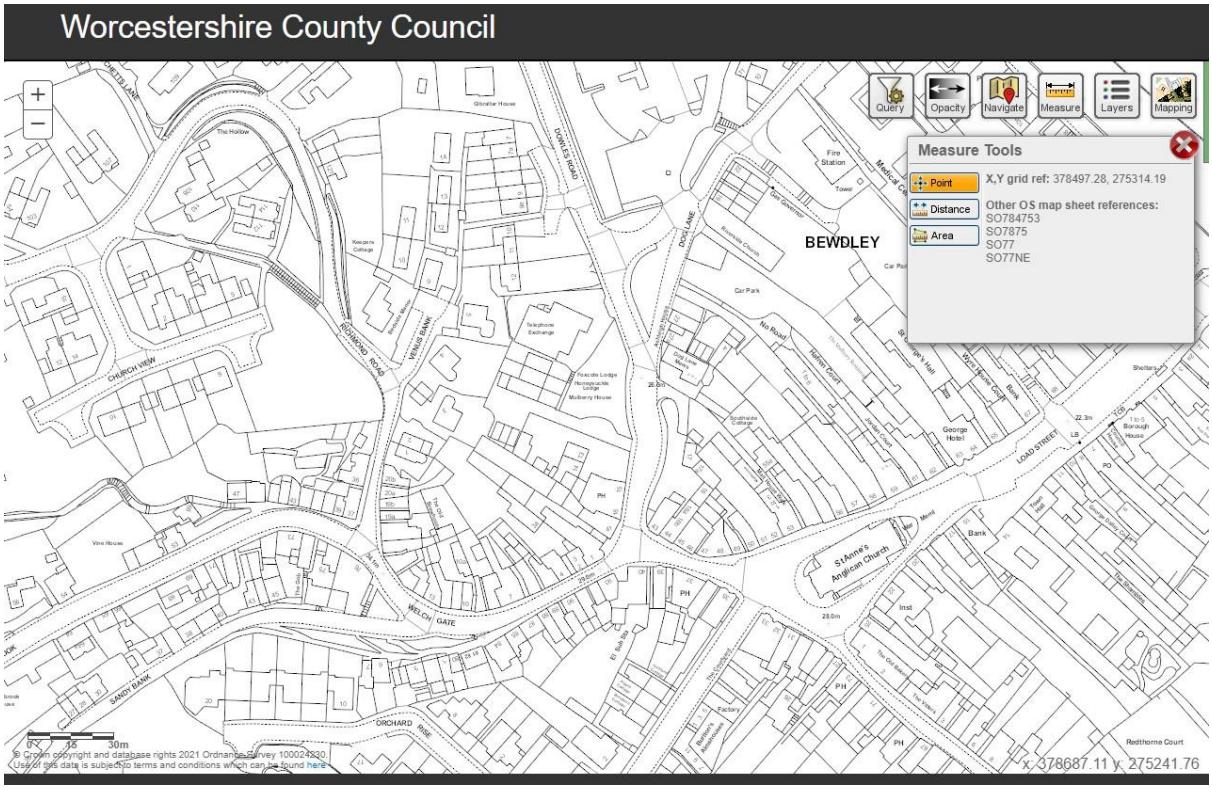
Use the 'Zoom to Full County' button to return the map to its county extents.

Measure tool

This tool has four functions.

Point

Select this function, click on any location on the map and you will be given the Grid Reference co-ordinates.

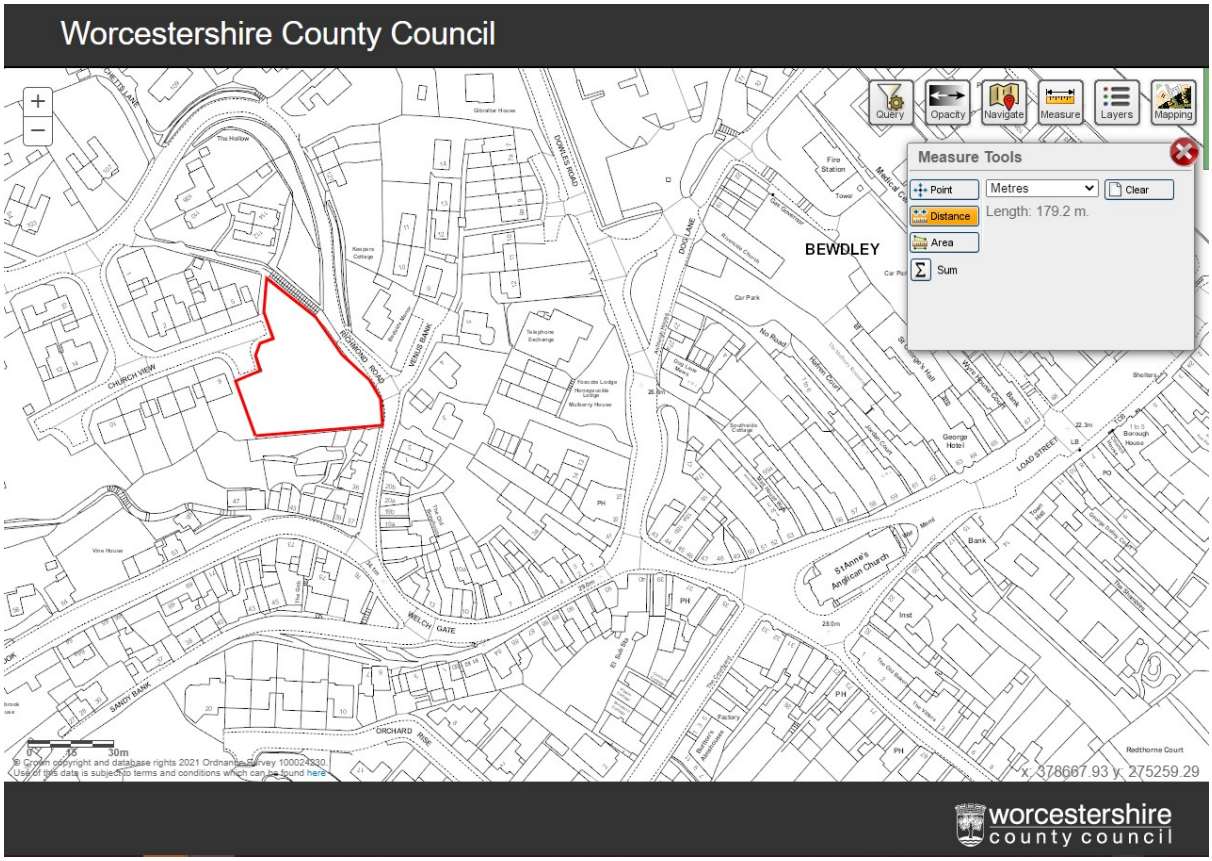


The Grid Reference information is given in five different ways. From top to bottom these are:

- x-y co-ordinates giving accuracy to 1m
- 6-figure grid reference giving accuracy to 100m
- 4-figure grid reference giving accuracy to 1km
- 2-figure grid reference giving accuracy to 10km
- 2-figure grid reference giving accuracy to 5km

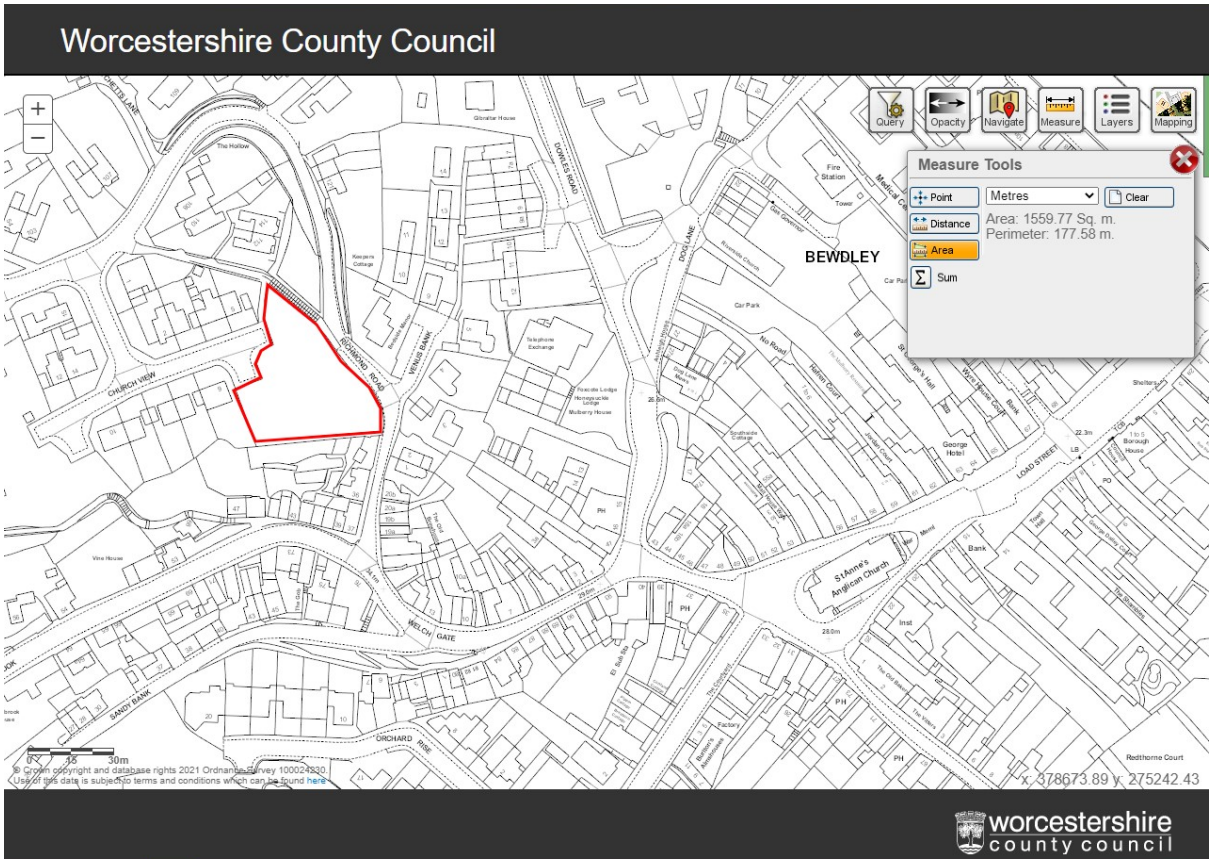
Distance

This function allows you to measure distances on the map in a number of units (use drop down box to change units). Click on the map to begin drawing a line and to alter direction. Double-click to finish the line and complete the measurement.



Area

This function allows you to measure the area of a feature on the map in a number of units (use drop down box to change). Click on the map to begin drawing a line and to alter direction. Double-click to finish the polygon and complete the measurement.



Sum

If your query requires you to sum the measurements of a number of different distances (lines) or areas (polygons) you can use the Sum function to add up those measurements as you go along. Double click to complete one line or polygon before immediately beginning another.

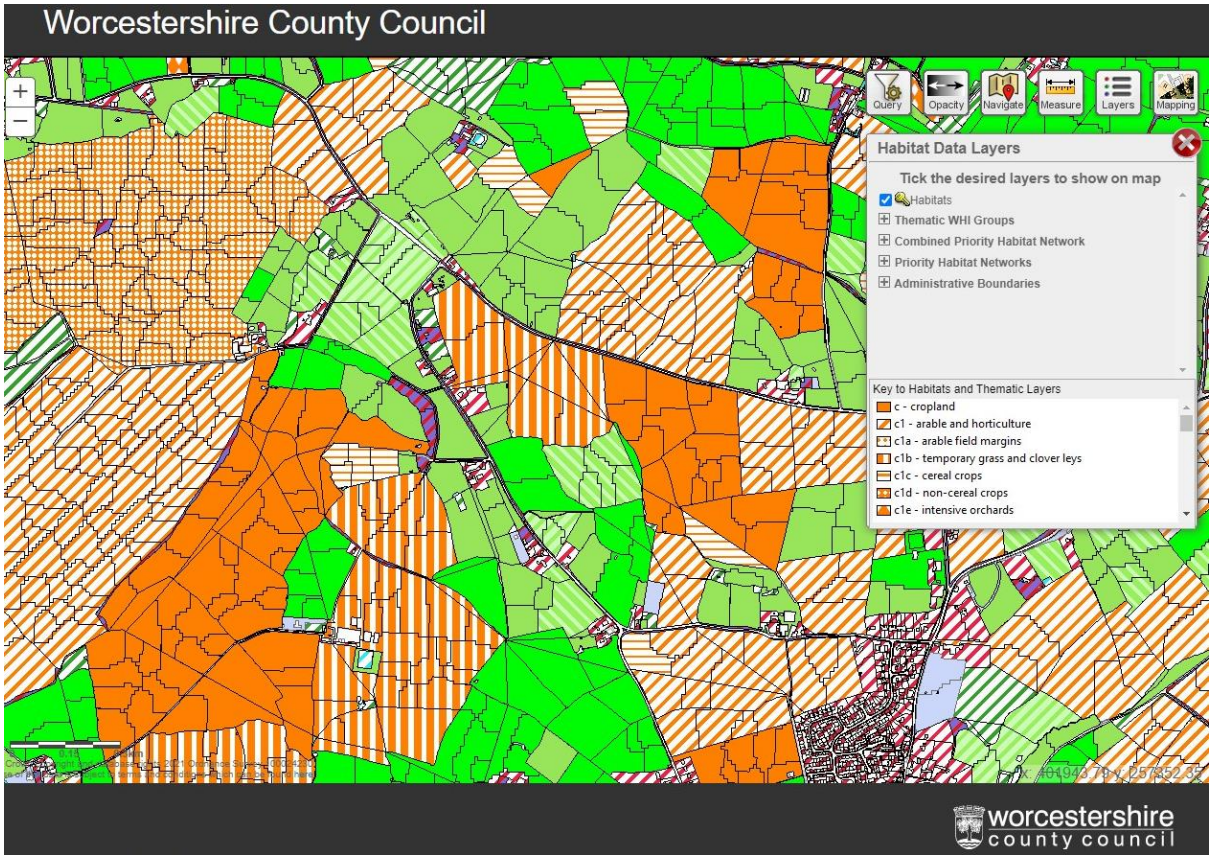
Layers tool

This button brings up a list of all the layers of habitat data available to view within the Web Tool. Clicking on the '+' signs next to the text will expand the groups to view more available data layers.

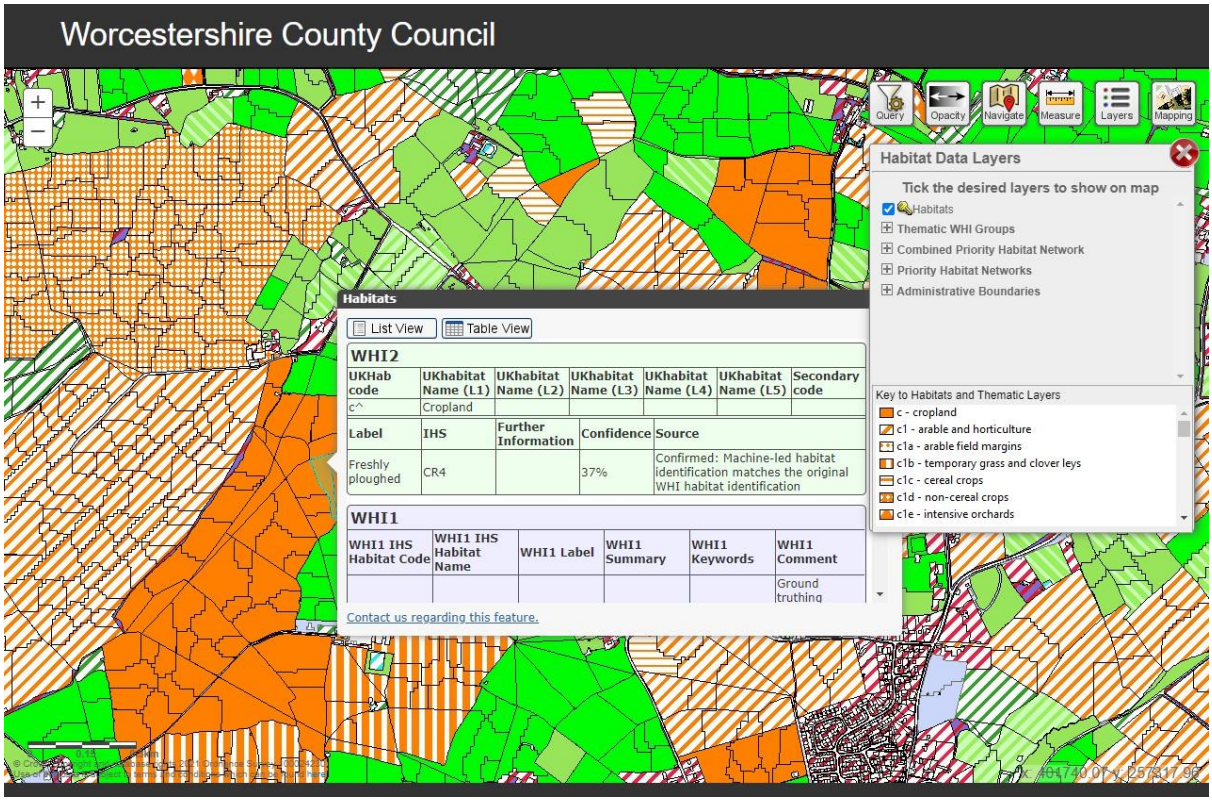
Habitats

Ticking on the 'Habitats' data layer will load all of the habitat information contained within the WHI2 dataset. Habitats are mapped at field-scale and your map (minus any areas with no mapping information) should now be covered in blocks of colour. These colours and patterns represent the respective habitats present as have been mapped using the UKHabitat code system.

Clicking on the key symbol next to the 'Habitats' layer name will bring up a key/legend at the bottom of the Habitat Data Layers box which allows you to examine the UKHab symbology for different habitat classes and also provides both UKHab codes and full habitat class names.



Click on a polygon if you want more information about it. This will bring up an attributes box. If the attributes box is partially hidden you can temporarily close the Habitat Data Layers box or grab and drag the map to move the entirety of the attributes box into view.



You can view the attributes results either in List View (more helpful in portrait orientated displays) or Table View (more helpful in landscape orientated displays) by clicking on the respective button to change presentation. A Panel View option is also available to move the results box to a discrete window at the bottom of the screen, this is particularly helpful on mobile devices such as tablets to prevent the results window obscuring the mapping window. Once entering Panel View mode, options to return to the 'popup window' mode for List or Table View are available at the top of the panel. Alternatively, a 'Close' option is available at the top right hand side of the Panel. Ensure you scroll to the bottom of the attributes results box to review all available information, which may include some or all of the following:

<u>WHI2</u>

- UKHab code. The recorded UKHabitat code for the polygon will be displayed here. This is linked to the polygon's symbology and will be at the lowest level of naming hierarchy available within the UKHab naming system (ie the greatest specificity of habitat type available).
- UKHab Name. The habitat class name associated with the UKHab code will be displayed here where available.
- Secondary code. UKHab secondary codes will be displayed here where available. Note that many habitat classes are a function of their management and can be queried using secondary codes. For example, traditional orchard is not a UKHab habitat class, however traditional orchards are recorded using the secondary code '21'. Refer to https://ukhab.org/ for more information.
- Label. The WHI uses a variety of codes covering plant identification and management types. The 'Label' field interprets these codes for any given parcel of land.
- IHS. The Integrated Habitat System habitat class will be provided here where available. Refer to www.somerc.com/wp-content/uploads/2019/01/IHS-Definitions.pdf for further information on these codes.

- Further information. Any additional information associated with this polygon will be presented here, where available.
- Confidence. Expressed as a percentage this figure represents the level of certainty in habitat class identification, as provided by the machine-led analysis of remote-earth observation data.
- Source. Describes how the habitat classification was derived and can have the following values:
    - 'Confirmed' – the model's first or second prediction (the most likely habitat class) match the original 2010 inventory habitat class.
    - 'Predicted' – where the model's first prediction has high accuracy or where there is no original WHI1 class.
    - 'Original WHI' – Where the model prediction is of low accuracy (likely that the habitat is not possible to classify based on a remote sensing approach) and therefore the original WHI1 classification is retained.
    - 'Input data' – Where the class has been attributed on the basis of one of the input datasets (e.g. hedgerows or OS MasterMap).
    - 'Training data' – where the class has been attributed on the basis of new training data.
    - *Further periodic updates will be integrated within WHI2 as a 'live' dataset with the date of validation and input to WHI2 provided here.*

WHI1 (Please note that WHI2 has retained all historic WHI1 data)

- IHS Habitat Code. The Integrated Habitat System habitat class recorded in WHI1 will be provided here where available. Refer to www.somerc.com/wp-content/uploads/2019/01/IHS-Definitions.pdf for further information on these codes.
- IHS Habitat Name. The habitat class name associated with the IHS code recorded in WHI1 will be provided here, where available.
- WHI1 Label. The WHI uses a variety of codes covering plant identification and management types. The 'Label' field interprets these codes for any given parcel of land.
- WHI1 Summary. This provides a summary of relevant information as entered within WHI1 as relates to habitat formation (the composition of a particular habitat, for example plantation or semi-natural woodland) or habitat management (eg coppice, wood-pasture and parkland, grazing land or amenity grassland).
- WHI1 Keywords. Any keywords added to the WHI1 dataset (e.g. 'ridge and furrow') will be available to view here.
- WHI1 Comment. WHI data has been extracted from multiple datasets including Local Wildlife Site surveys, targeted ground truthing and habitat condition reports. This means that for some land parcels there is a wealth of data available on-site quality and condition or possible causes for its deterioration. The comments section tells you which dataset(s) the information for this land parcel have come from.
- Link to document. Some of the mapped habitat types have Habitat Information Sheets written. Where these are available there will be a link to a downloadable PDF.

'Contact us regarding this feature'

At the bottom of the information box is a link via which you can contact us to provide us with feedback or additional data about any mapped land parcel within the WHI2. We welcome such feedback as the validity and usefulness of the database is improved the more up to date the information within it. Clicking on the link opens a form for you to complete, which reaches us

as an email when you press submit. The email will automatically generate and include a weblink that will allow us to open the WHI2 web tool at the specific land parcel you highlighted and clicked on. This means:

- That you do not need to include location information within the feedback form – this will happen automatically.
- That you do need to send a separate feedback form for each parcel of land on which you wish to comment/provide data.

What happens when you submit a feedback form?

We are grateful for all of the feedback we receive about the WHI2. The information you provide can be anonymised and will be shared with the partners who help us to maintain the database including Worcestershire Biological Records Centre. The information will inform future reviews of the WHI2 database, which we aim to do annually.

Thematic WHI Groups

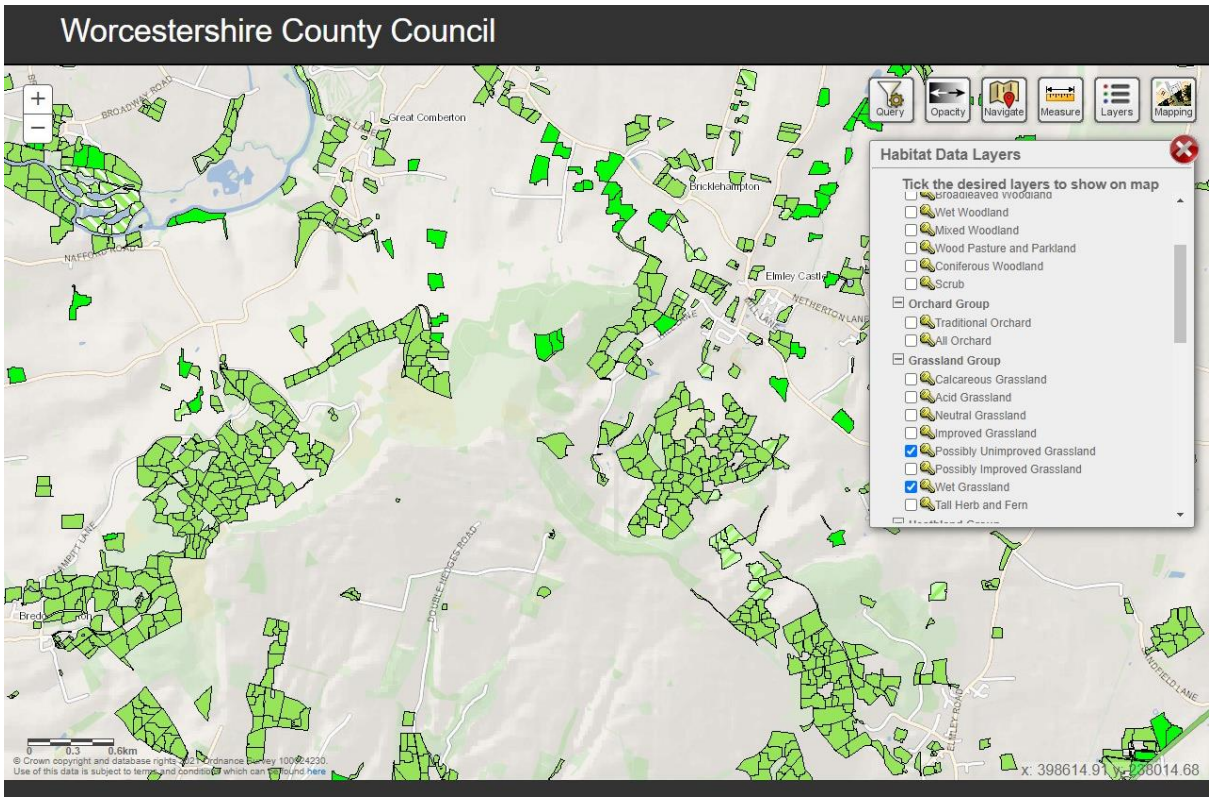
These map layers allow you to select and view individual habitat types or groups of related habitats. The habitats are grouped together for ease of sorting and selection into:

- Cropped land
- Woodland Group
    - Ancient woodland
    - Plantation on Ancient Woodland Site (PAWs)
    - Broadleaved Woodland
    - Wet Woodland
    - Mixed Woodland
    - Wood Pasture and Parkland
    - Coniferous Woodland
    - Scrub
- Orchard Group
    - Traditional Orchard
    - All Orchards
- Grassland Group
    - Calcareous Grassland
    - Acid Grassland
    - Neutral Grassland
    - Improved Grassland
    - Possibly Unimproved Grassland
    - Possibly Improved Grassland
    - Wet Grassland
    - Tall Herb and Fern
- Heathland Group
    - Heathland
    - Heathland and Acid Grassland
- Rock Quarries and Landfills
- Water Group
    - Wetland
        - All Wetland
        - Reedbeds
        - Wet Grassland

        - Wet Woodland
        - Fen/Marsh/Swamp
    - Waterbodies
        - Ponds, Lakes and Canals
    - Flowing Water
        - Rivers and Streams
- Linear Features & Built Environment
    - Transport Corridors
    - Major Linear Features
    - Built-up Areas

Clicking on the '+' will expand a group to show individual habitats. In the example below the Grassland group has been expanded and two grassland habitat types – 'Possibly Unimproved Grassland' and 'Wet Grasslands' – have been ticked so that they appear on the map.

Left-click on any block of habitat (polygon) to bring up the attributes pop-up box (contents as before).



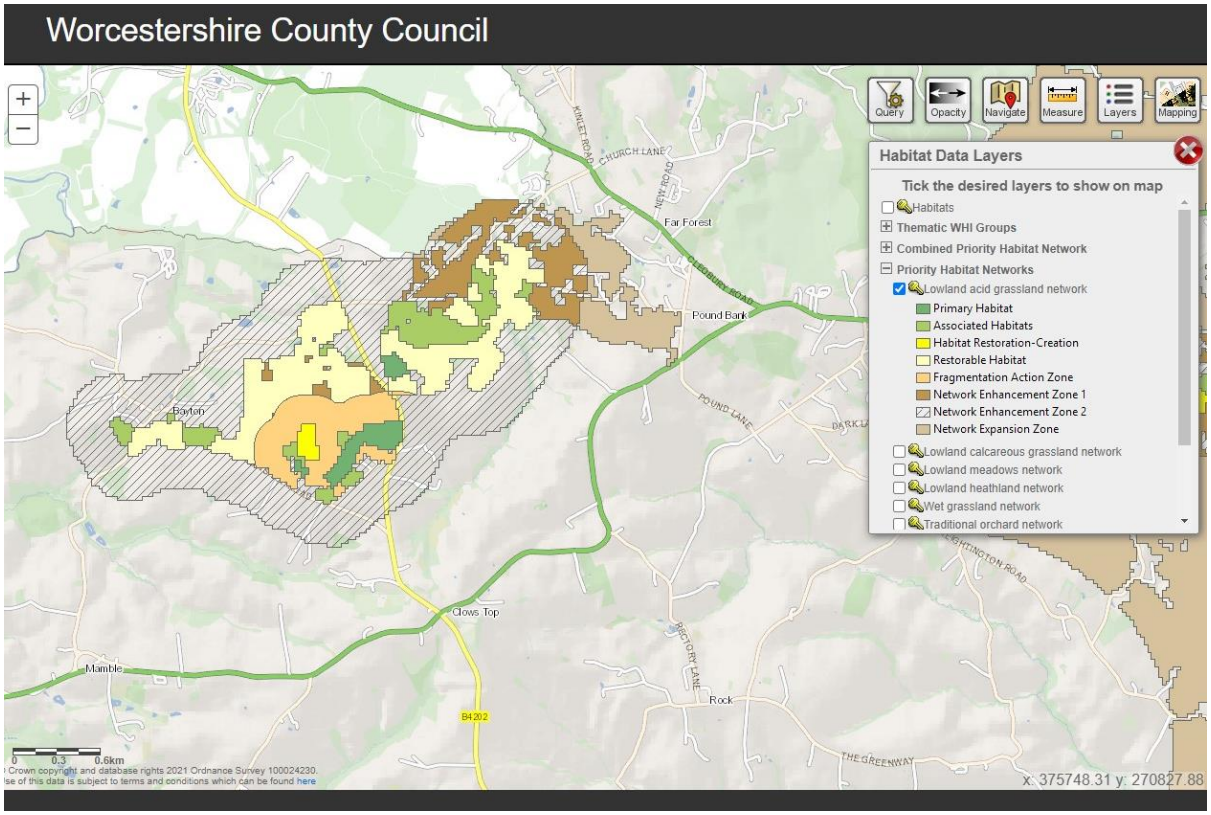
Priority Habitat Networks
See the WHI2 website for an explanation of Habitat Networks. http://www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory.

These map layers allow you to select and view different habitat networks. The layers are grouped into related priority habitat types:

- Lowland acid grassland network
- Lowland calcareous grassland network

- Lowland meadows network
- Lowland heathland network
- Wet grassland network
- Traditional orchard network
- Reedbeds network
- Lowland fen network
- Wood pasture and parkland network
- Ancient semi natural woodland network

In the example below the 'Lowland heathland network' layer has been ticked on.



Clicking on the key symbol next to the layer name will expand a legend to show the individual zones (described further below) and the symbology for those zones.

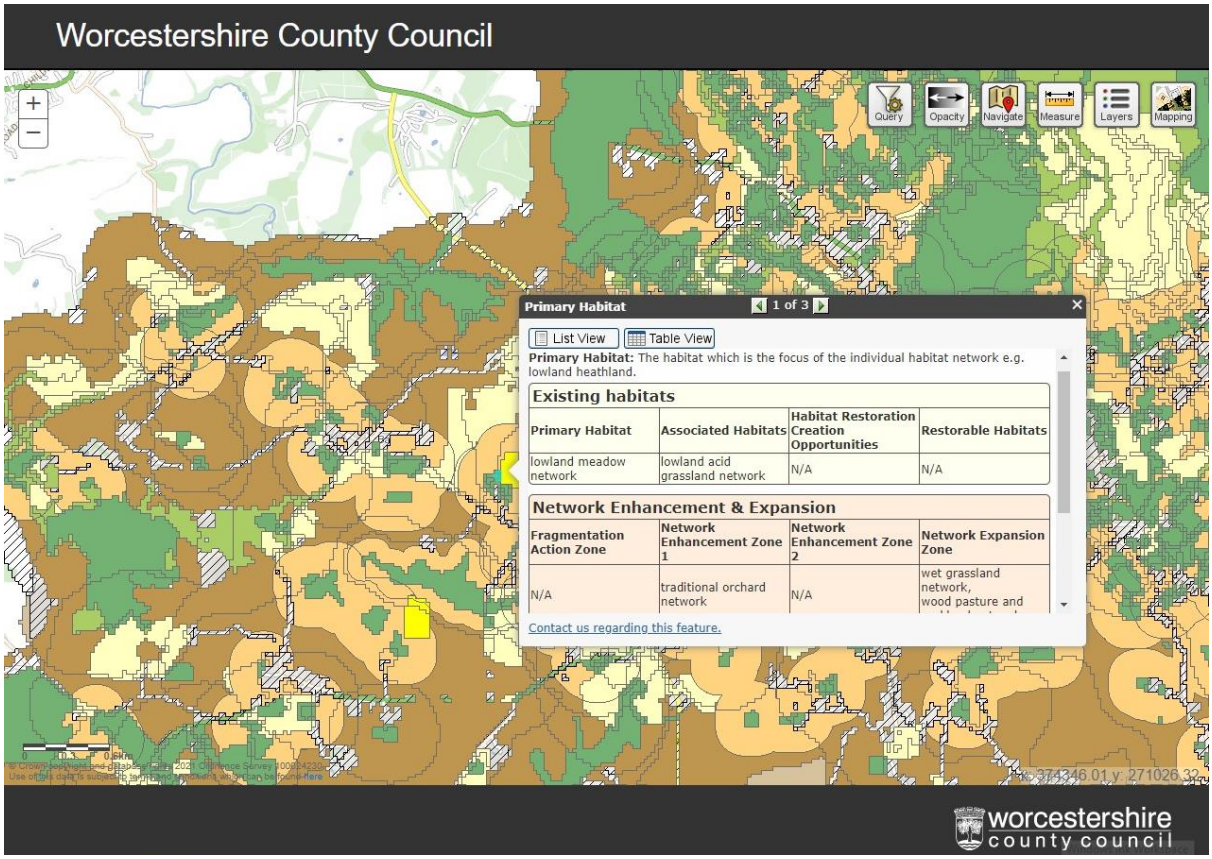
Each of the Priority Habitat Network layers shows a number of underpinning zones. The WHI2 methods for calculating each zone's location and extent are based on Natural England's Priority Habitat Network Map methodology, available at: https://magic.defra.gov.uk/Metadata_for_magic/Habitat%20Network%20Mapping%20Guidance.pdf. The priority habitat network zones are as follows:

- **Primary Habitat.** The habitat which is the focus of the individual habitat network e.g. lowland heathland.
- **Associated Habitat.** Other habitat types that form a mosaic or an ecologically coherent group within the landscape and may, for example, be essential for some species associated with the primary habitat.

- **Habitat Restoration-Creation.** These are areas where work is underway to either create or restore the primary habitat.
- **Restorable Habitat.** These are areas of land, predominantly composed of existing semi-natural habitat where the primary habitat is present in a degraded or fragmented form and which are likely to be suitable for restoration.
- **Network Enhancement Zone 1.** This is land connecting existing patches of primary and associated habitats which is likely to be suitable for creation of the primary habitat. Factors affecting suitability include the following: proximity to primary habitat, land use (urban/rural), soil type and slope. Action in this zone to expand and join up existing habitat patches and improve the connections between them can be targeted here.
- **Network Enhancement Zone 2.** This is land connecting existing patches of primary and associated habitats which is less likely to be suitable for creation of the primary habitat. Action in this zone that improves the biodiversity value through land management changes and/or green infrastructure provision can be targeted here.
- **Fragmentation Action Zone.** This is land within Network Enhancement Zone 1 that connects existing patches of primary and associated habitats which are currently highly fragmented and where fragmentation could be reduced by habitat creation. Action in this zone to address the most fragmented areas of habitat can be targeted here.
- **Network Expansion Zone.** This is land beyond the Network Enhancement Zones with potential for expanding, linking/ joining networks across the landscape i.e. conditions such as soils are potentially suitable for habitat creation for the specific habitat in addition to Network Enhancement Zone 1. Action in this zone to improve connections between existing habitat networks can be targeted here.

Combined Priority Habitat Network

A Combined Priority Habitat Network has also been provided within WHI2. In this network each of the underpinning zones can be toggled on or off. Clicking on any part of the combined habitat network will return the attributes of that polygon and this will list each of the zones present in the respective and individual underpinning Priority Habitat Networks. Each polygon will detail the nature of the zone present and list any overlapping or underpinning zones from other Priority Habitat Networks. In the example below the polygon is located in the Network Expansion Zones for wet grassland, wood pasture and parkland, and is also located in the Network Enhancement Zone 1 for traditional orchards. This illustrates the priorities for habitat restoration and creation efforts. However, the polygon is also located within the associated habitat zone of lowland acid grassland and primary habitat zone of the lowland meadow network (and so is displayed as 'Primary Habitat') with other no data displayed under the other respective zones as none are present at this polygon's location. When considered in combination, these zones help prioritise the most appropriate conservation interventions in any given location.



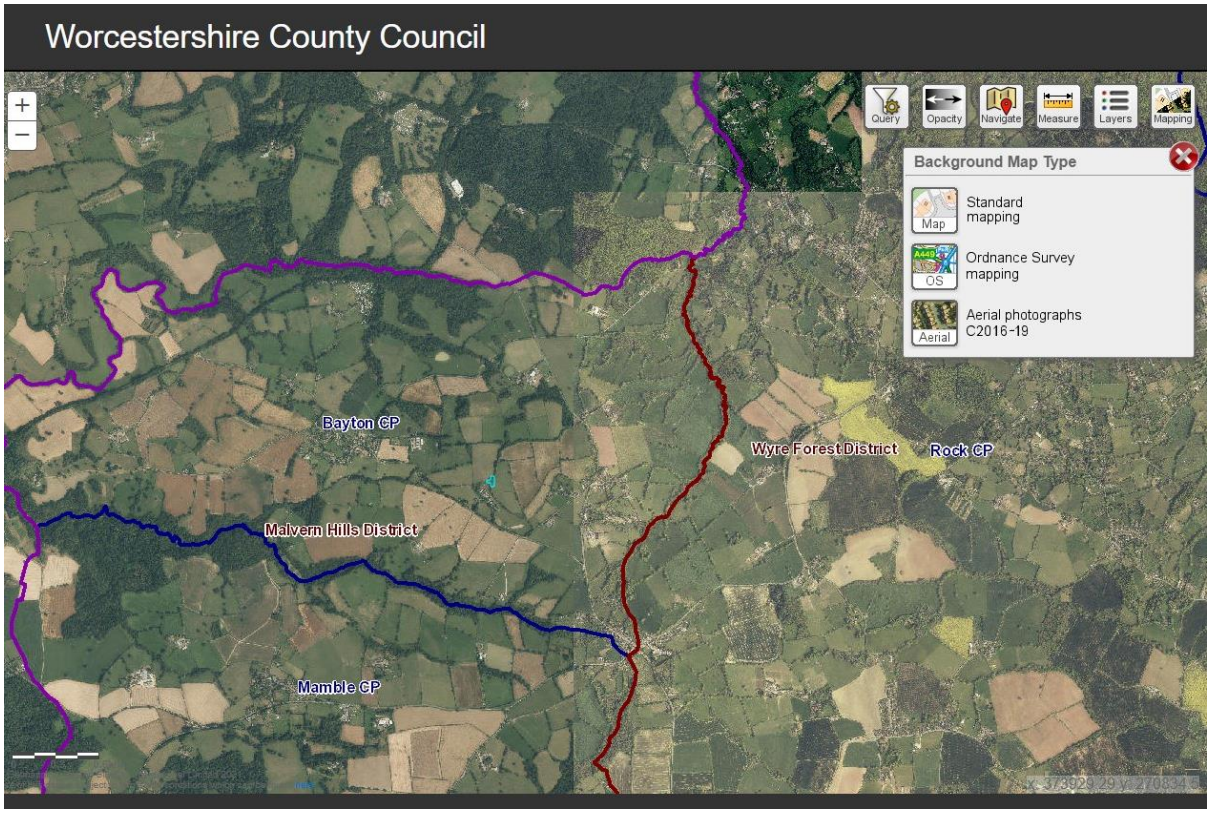
Administrative Boundaries

To aid with map navigation the county's administrative boundaries (Parish, District and County boundaries) can be turned on or off.

Mapping tool

Clicking on this button gives you three options for map backgrounds:

- Standard mapping (the default setting)
- Ordnance Survey mapping
- Aerial photographs (depending on location within the county aerial imagery is provided between 2016 and 2019. Updated aerial photo sets will be added when available)



Change the map background by clicking on the one you want.

Section 3: Understanding data accuracy and data confidence

The WHI data is primarily intended for use and interpretation at a landscape-level scale, however many users are likely to also want to view data at a habitat parcel or site-level scale. The WHI webpage has more detail on the limitations of the online mapping tool, which is relevant to gaining an understanding of data accuracy and confidence. For further information refer to www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory/1241/worcestershire_habitat_inventory_web_tool

Each habitat mapped within the WHI has been given a confidence score. This score is shown in the 'confidence' field of the attributes box that appears when you click on a polygon. Scores are between 0 and 1, with 1 being 100% confidence in the accuracy of the identification of the habitat type within that polygon. A 'confusion matrix' has also been produced to show which habitats were correctly predicted and which were more difficult to uniquely distinguish. The matrix illustrates which habitat classes are potentially misclassified as other, similar habitats. This information feeds into the confidence score determination.

If using the data at a landscape-level scale, it is important that you:

- Review and consider the confidence score given by the WHI to the identification of that habitat

- Review the confusion matrix to understand any potential misclassifications of the habitat. This is available within our Non-technical Guidance: Refreshed Habitat Inventory and Habitat Network Connectivity, available to download at www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory/1029/what_is_the_worcestershire_habitat_inventory
- Review the Crick Framework to understand the extent to which Earth Observation techniques can be used to accurately identify habitats and features on the ground. Further information on the Crick Framework is available at: https://jncc.gov.uk/our-work/the-crick-framework/

If using the data at a habitat parcel or site-level scale, it is important that you:

- Check how the identification of the habitat was determined using the 'habitat_source' field in the attribute box
    - If habitat_source is 'confirmed' the habitat class prediction made for WHI2 using the remote sensing data matched that within the original WHI1. You should review the attribute fields relating to the original WHI1 inventory to check if the location has been ground-truthed, if there are any survey data available or if the original habitat classification was determined by aerial photograph interpretation only. Also consider the date of identification as the habitat class may have changed in the intervening period since ground-truthing was undertaken. Finally you should consider the caveats applicable to WHI1 in the event the method of identification was through Aerial Photographic Interpretation as further limitations may be present, for example through partial visibility caused by cloud coverage, transient land-use for example through crop rotation, precision of identification of certain habitat classes through use of remote sensing (for example certain typologies of unimproved grassland) or land-use change in the intervening period since the original habitat identification was compiled.
    - If habitat_source is 'predicted' the habitat class prediction made for WHI2 exceeded a determined accuracy threshold and overruled the original WHI1 classification OR there was no original WHI1 prediction made. You should consider the confidence score of that habitat and check the confusion matrix for potential misclassifications.
    - If habitat_source is 'original WHI' the habitat class prediction made for WHI2 fell below a determined accuracy threshold and the original WHI1 classification was therefore retained.
    - If habitat source is 'input data' then the habitat class has been determined based solely on one of the input datasets (e.g. Hedgerow dataset or Ancient Woodland Inventory) and not on a prediction made by the rules-based model.
- Consult latest aerial photograph imagery
- Consult local knowledge/expertise if available
- Be mindful of important but cryptic micro-features at high spatial scales, which may not be discernible using Earth Observation techniques

For further information on WHI2 interpretation, please refer to our Non-technical Guidance: Refreshed Habitat Inventory and Habitat Network Connectivity, available to download at www.worcestershire.gov.uk/info/20302/worcestershire_habitat_inventory/1029/what_is_the_worcestershire_habitat_inventory