The Wildlife Information Centre
Guidance on Woodland Screening:
How to access a report of existing biodiversity data for woodland applications

Version 1 – 14/12/2021

Contents

1. Introduction

"In 2070, Scotland will have more forests and woodlands, sustainably managed and better integrated with other land uses. These will provide a more resilient, adaptable resource, with greater natural capital value, that supports a strong economy, a thriving environment, and healthy and flourishing communities."

This is the ambitious target set by the Scottish Government for the Forestry Strategy 2019-2029 (Scottish Government 2019). With the number of new planting schemes set to increase, The Wildlife Information Centre in collaboration with Scottish Borders Council (SBC) and Scottish Forestry (SF) have finalised a **Woodland Screening Service** for forestry agents and applicants.

Background

In 2016 the Scottish Government published the MacKinnon report (MacKinnon 2016), that details constraints and future recommendations to improve the forestry grant application process. In response to some of the recommendations, Forestry Commission Scotland (now Scottish Forestry) introduced a revised Woodland Creation Application process in 2018 (Forestry Commission Scotland 2018)[1].

The revised process was found to place a greater onus on applicants and agents to carry out due diligence with a pre-application phase of consultation. An issues log is produced as part of the process to set out how key issues identified at pre-application have been mitigated and addressed.

The guidance associated with the application process identified both Local Authorities (LAs) and Local Environmental Records Centres (LERCs) as potential sources of advice and information. LERCs like The Wildlife Information Centre can provide a key role in the pre-application stage by providing high quality biological data as part of desk-based searches to forestry agents and applicants.

In response to the Woodland Creation Application Process, Scottish Borders Council produced an Advisory Note[2] to guide applicants on key considerations and sources of information including biological records.

Until now, data provided to forest agents were based on the format provided to ecological consultants for developments. Feedback received from forestry agents suggested that a more tailored service for woodland applications could ease interpretation and highlight potential biodiversity constraints.

To further improve the screening process, Scottish Borders Council in partnership with Scottish Forestry commissioned TWIC to develop a bespoke screening methodology tailored to the woodland creation application process. Screening criteria and report outputs were subsequently developed and tested with a small number of willing forestry and ecological agents. This guidance is the final product of the screening process, which has been refined using the generous feedback received from participating agents.

Purpose

The Woodland Screening data request aims at delivering all the biological information that are relevant to forestry users, in a format that is easy to read and use. The Woodland Screening should be requested for any woodland planting scheme as part of a desk-top search prior to species or habitat surveys being undertaken. The information provided by the Woodland Screening can help identify the need for surveys and wildlife licences (e.g. presence of Schedule I species). However, it is important to note that the Woodland Screening data request cannot be considered a replacement for field surveys or ecological appraisals.

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[1]Scottish Forestry – Woodland Creation: https://forestry.gov.scot/support-regulations/woodland-creation [Accessed: 25/10/2021]
[2] Scottish Borders Council - Planning guidance - Woodland creation advice:
https://www.scotborders.gov.uk/directory_record/54705/woodland_creation_advice_note/category/28/approved_planning_guidance [Accessed: 25/10/2021]

Online Data Sources and Data Licences

Data are available from a range of online sources, including the NBN Atlas, but care must be taken to ensure that licence conditions set by the data provider/ owner are observed. In particular, data held under CC-BY-NC licence must not be used for commercial purposes without the consent of the data provider.

The NBN Trust (2018) set out what is meant by commercial use on their website:

> [Commercial data use is] any use which is primarily intended or directed towards commercial advantage or monetary compensation (this includes cost recovery) e.g.
>
> - Any part of the process directed at gaining planning consent, land or infrastructure development including background research and report writing
> - Use on a third-party data aggregation website or app, even if that website or app is not in itself commercial
>
> Indirect use of the data in order to create some other product (e.g. including the data in a wider report on other matters) for commercial gain is still regarded as commercial use of the original data.
>
> **Using information gained by viewing data on the NBN Atlas for commercial purposes is a breach of the CC-BY-NC licence, i.e. data does not have to have been downloaded for the licence conditions to apply.** Not all use by a business is necessarily "commercial" and, on the other hand, use by a non-profit organisation is not necessarily non-commercial.
>
> In the majority of cases if you are being paid or contracted to do the work it is considered as commercial, even if the eventual outputs aren't, and regardless of whether the client is private, public or third sector.
>
> Like all Creative Commons licences, the NC licences are non-exclusive. Which means that the data owner/provider can offer the same data under different terms, including commercial use. A potential user could, therefore, contact the data provider to seek permission to use data publicly available on the NBN Atlas under a CC-BY-NC licence for commercial use

The NBN Trust also clarify that **"viewing data [on the NBN Atlas] to inform work for which you are being paid, including basic summaries of presence or absence of species is a breach of the licence".** However if data are being viewed only to see which organisations hold data, with the view to then contact them for permission to use these data, this is not a breach of the licence.

For further guidance on the definition of "Commercial" or "Non-Commercial" please consult the relevant webpage on the NBN Atlas website.[3]

TWIC Woodland Screening Service

In collating data from a range of sources, TWIC has obtained the necessary permissions from data providers to use these data for Local Environmental Record Centre purposes, including supply to commercial clients. In some instances, TWIC has obtained permission to use datasets publicly available on the NBN Atlas under a CC-BY-NC licence for commercial use.

As with other commercial requests, Woodland Screening data requests are charged. The charge is an administrative fee to cover our costs in processing the request as well as a contribution to our data collation and data management work. For details on our current fees and turn-around times please visit our Data Request page.

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[3] NBN Atlas, Guidance on the Definition of Non-Commercial User: https://docs.nbnatlas.org/guidance-on-the-definition-of-non-commercial-use/ [Accessed: 14/12/2021]

2. Recommended Search Criteria

2.1 Buffer Distance

A buffer of **500m** from the site boundary is recommended. This buffer size was chosen to be consistent with the search criteria found on Scottish Forestry's Land Information Search (LIS) portal (Scottish Forestry 2021). This ensures biological data for the site and adjacent areas are flagged in the report – enabling an assessment of implications for both the site and adjoining habitats or sites of biodiversity interest. Note that any records that intercept (overlap) with the buffer are included in the report output.

2.2 Resolution of Species Data (OS Grid Reference)

Species are recorded at different resolutions – from very precise records at 1m square resolution up to 2km- or even 10km- squares. **It is recommended that records of 2km-square resolution or better are included in woodland screening data requests.** This will include records for 2km, 1km, 100m, 10m or 1m squares. Higher resolutions can be requested, i.e. to exclude the coarser 2km records, but before doing so it is important to note that some of data providers, such as Scottish Ornithologists' Club, commonly provide bird and wader atlas data at 2km- square resolution. Therefore, excluding 2km-square records from a request will potentially exclude important information on sensitive breeding waders in the area.

We are often asked why the resolution of records varies. TWIC's data holdings are derived from a variety of sources, for example from volunteer recorders, recording schemes, consultants, Local Authorities and members of the public. The resolution chosen for recording depends on the taxon group concerned, species commonness, the purpose of recording and even recorder choice. Highly mobile species like birds might be recorded at a coarser resolution compared to sedentary organisms like lichens. The resolution of species records has improved in recent years owing partly to the advent of GPS-enabled technology. However, records provided at 1km or 2km-square resolution are still common, and this is the resolution required for different regional or national Atlas projects e.g. the Botanical Society of Britain and Ireland's (BSBI) Atlas 2020 project (BSBI 2020). TWIC encourages all recorders to allocate their records more precise grid references (100m-square resolution or better) for rare, scarce, or protected species or features e.g., Badger setts, so that it is possible to pinpoint these sightings in relation to a site.

2.3 Age of Species Data

It is recommended that records of all dates are included in data searches. This is because some species groups are less well-recorded due to for example, scarcity of specialists, difficulties associated with recording or due to the ecology of the organism. For instance, fungi recording has traditionally relied on the presence of fruiting bodies, but some species rarely fruit, and those that do fruit may only be detectable for a short period. Therefore, an ill-timed site visit may miss some species completely. Furthermore, not all sites are surveyed regularly or systematically, so it is advantageous to include all available data in desktop searches.

Another reason for including older records is that **some protected species or features are long lived** – notably badger setts. Setts can take many years to be created and can be occupied for decades – some are even over 100 years old (Badger Trust 2021). Discounting older records may therefore mean valuable information is not included in the report.

Even where species have long become extinct from a site, these **historical records** may still be useful as they can give an indication of which species flourished at a site in the past – potentially informing habitat restoration.

3. Woodland Screening Report

The Woodland Screening Report is the comprehensive report in PDF text format, listing all potential biodiversity constraints (or opportunities) from a planting proposal for the site and buffer area. For ease of analysis, the report is divided in 4 sections:

Section	What is included:
Designated Sites	All Local (statutory and non-statutory), National and International Designated Sites are listed including site names.
Notable Habitats	**Ancient Woodland Inventory data** – including the Woodland name and category of ancient woodland. Refer to section 5.4 for the categories. **Notable Phase 1 Habitats** – including the standard Phase 1 habitat name and survey date (if available). Refer to Chapter 5 and Appendix II for details.
Native Woodland Survey of Scotland	Habitat type, dominant habitat type, forest maturity and what percentage of native trees are present.
Notable Species	Species protected at international, national and local level are listed along with summary record details – date of sighting, location, grid reference and source of the record.

It is also possible to request **two separate reports** – one for the **site boundary** and another for the **site buffer**. The report for the site boundary will only include records that overlap or are within the site boundary. The report for the site buffer will include records that overlap or fall within the site buffer excluding any records found within the site.

4. Species Data

In addition to the **Woodland Screening Report** above, it is possible to request more detailed Notable and Protected species data from TWIC, as well as information not included in the woodland screening report such as **Invasive Non-Native Species** and **Habitat Indicator Species**. These data can also be requested in additional formats such as shapefile and as an Excel spreadsheet.

If no resolution is specified by the data requester, all species outputs will contain 2km-square records or better. When available, each species record is supplied with information on the location, the date of the record, the source of the record, protected statuses, abundance, and any other available information supplied by the data provider on the habitat, method of data capture or behaviour.

4.1 Notable and Protected Species

This report includes species of conservation concern that have international, national or local designations (including European Protected Species). Refer to Appendix 1 for a list of the statuses included.

4.2 European Protected Species (EPS)

This report is a subset to the Notable and Protected Species report. European Protected Species have the highest level of protection and are listed according to the Annex IV of the Habitats Directive (European Community 1992), and Habitats Regulations 1994 (as amended in Scotland) Schedule 2 (UK Government 1994a) and 4 (UK Government 1994b). Therefore, it may be useful to have this information supplied in a separate report from other notable and protected species.

4.3 Habitat Indicator Species (HIS)

Habitat Indicator Species (HIS) are species – predominantly vascular plants – that are indicative of a particular habitat type. Indicator lists have been selected for several notable habitat types that may be affected by, or particularly sensitive to, a woodland creation proposal. The results of this search may therefore help to flag potential habitats on site or close by that may be affected by, or would be sensitive to, a woodland creation proposal. The habitats with indicator lists are:

- Basic Flush
- Calcareous Grassland
- Unimproved Waxcap Grassland
- Heathland
- Sphagnum Bog

HIS may be especially useful for some important localised or small scale habitats that fall below the threshold for traditional Phase 1 Habitat survey mapping or where there is poor coverage in habitat data. This report type should be used to complement the habitat data that TWIC can also supply.

4.4 Invasive Non-Native Species (INNS)

Invasive Non-Native Species (INNS), sometimes referred to "invasive alien species", are non-native species that have potential to spread rapidly, causing environmental and economic impact, such as loss of native biodiversity. Knowledge about the presence of these species on a site is important for site management and

control. The INNS report flags species that are listed on NatureScot's (formerly SNH) **Scottish Invasive Non-Native Species priority lists**: strategic management, and local management and containment.[4]

5. Habitat Data

In addition to the **Woodland Screening Report** above which lists any notable habitats present on site or in the site buffer, it is recommended that habitat data are requested separately in map format. Data can be supplied as PDF maps, Google Earth files (.kmz) or GIS shapefiles (.shp). The user can choose to request all habitats present rather than just notable habitats, plus any associated target notes.

5.1 Phase 1 Habitats, Notable Phase 1 Habitats & Target Notes

The Phase 1 Habitat dataset held by TWIC is currently available for the Lothians, Scottish Borders and Clackmannanshire Council areas. There is also partial coverage for Stirling and Falkirk Council areas – with coverage restricted to the Forth valley region (mostly within M9 corridor). The Phase 1 Habitat dataset has been derived from multiple sources, including a combination of field surveys and aerial photograph interpretation – the latter applied to most of Scottish Borders Council area. Each habitat type/feature is described by a specific name, an alpha-numeric code, and unique mapping colour – for example grassland habitats are mapped in orange e.g. Calcareous Grassland – unimproved (B3.1) in Figure 1 below.

Notable Phase 1 Habitats is a subset of Phase 1 Habitat dataset and only includes habitats of conservation concern for the region.

Phase 1 Target Notes are available for the Lothians only and may identify a habitat too small to map, detail a notable feature, or provide further information on a habitat type e.g. dominant or characteristic species.
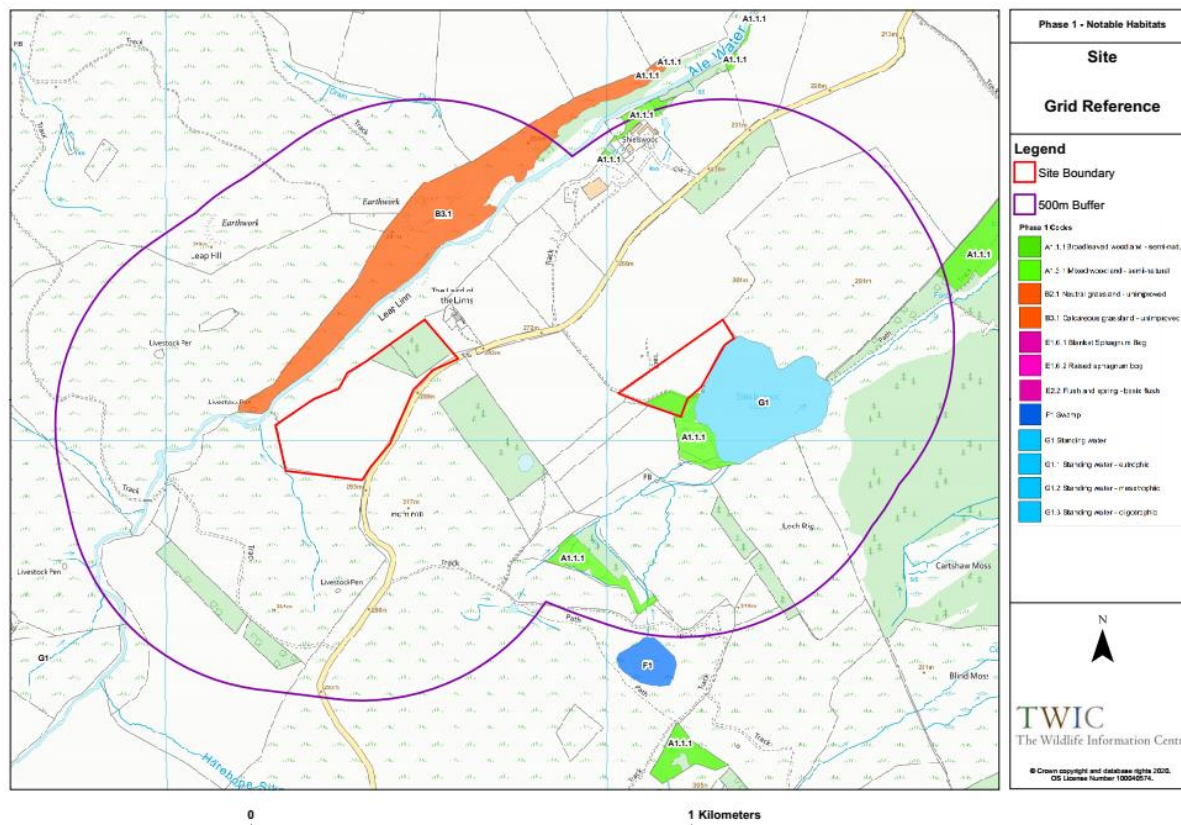

Figure 1. Map showing Notable Phase 1 Habitats for an example search area.

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[4] For the full list of INNS included by TWIC, see: http://www.wildlifeinformation.co.uk/downloads/Invasive%20Species.pdf [Accessed: 02/07/2021]

5.2 National Vegetation Classification

The National Vegetation Classification (NVC) survey dataset includes details on plant communities where available. An alpha-numeric code, and mapping colour represent the different communities on the map. Note that there is only partial coverage of NVC data for the TWIC area.

5.3 Habitat Map of Scotland

The Habitat Map of Scotland (HABMoS) is a composite habitat map (NatureScot 2021), containing data originated from different sources and re-classified into EUNIS (European Nature Information System) codes (EEA 2021). HABMoS Mapping colours and codes are used to identify the land types.

5.4 Ancient Woodland Inventory

The Ancient Woodland Inventory (AWI) contains 3 categories of woodland that hold value for biodiversity due to their antiquity. The categories are:

i)   Ancient Woodland, semi-natural woodlands
ii)   Long-established woodlands of plantation origin
iii)   Other woodlands on 'Roy' woodland sites

5.5 Native Woodland Survey of Scotland

The Native Woodland Survey of Scotland (NWSS) maps the location and other information for all of Scotland's native woodland. The data provided includes information on the dominant habitat, the maturity of the woodland and percentage of native species.

6. Designated Sites Data

In addition to the **Woodland Screening Report** above which lists any designated sites present on site or in the site buffer, maps of designated sites can be requested separately in map format. Data can be provided as PDF maps, Google Earth files (.kmz) or GIS shapefiles (.shp).

6.1 National and International Designated Sites

The national and international designated sites data provided are detailed below:

National Designated Sites	European Designated Sites (Natura sites)	International Designated Sites
Sites of Special Scientific Interest (SSSI): SSSI are important for their geological or biological features, or a mixture of the two.	**Special Protection Areas (SPA)**: Designated to protect the habitats of migratory or rare birds as under the EU Birds Directive.	**RAMSAR:** Wetland sites protected by the Ramsar Convention established by UNESCO.
National Nature Reserves (NNR): Hold nationally or internationally important species and habitats. They also provide an opportunity for people to enjoy and learn about nature.	**Special Areas of Conservation (SAC)**: Protect the habitats and species of European interest as listed in Annex I and II of the Habitats Directive.	

6.2 Local Designated Sites

Local designated sites provided by TWIC are listed below:

Statutory Sites	Non-Statutory Sites
Local Nature Reserves (LNR): Preserve natural heritage that is at least locally important. They are managed by Local Authorities.	**Local Biodiversity Sites (LBS) / Local Nature Conservation Sites (LNCS)**: Non-statutory wildlife sites designated by Local Authorities for their local or regional importance for biodiversity.
	Local Wildlife Sites (LWS) Clackmannanshire Council, East Lothian Council, Falkirk Council, Scottish Borders Council and Stirling Council, area only.

6.2.1 Local Nature Reserves (LNR)

Local Nature Reserves are **statutory sites** and as such have legal mechanisms put in place to safeguard their features.

6.2.2 Local Biodiversity Sites (LBS) / Local Nature Conservation Sites (LNCS)

In the TWIC area **Local Biodiversity Sites (LBS)** and **Local Nature Conservation Sites (LNCS)** are the principle local designated sites designations, selected for their local importance for biodiversity and are **non-statutory**. LBS/LNCS refer to the same designation – the different naming is due to internal council decisions[5].

LBS can be found in the Lothians Local Authority areas and Scottish Borders Council Local Authority area. LNCS is the name used for these sites in Clackmannanshire and Stirling Council areas. Please note that LBS/LNCS data are not available for Falkirk and East Lothian Council areas. [6]

The LBS/LNCS systems build on the Scottish Wildlife Trust's (SWT) Wildlife Sites System, and many of the LBS/LNCS have been derived from the former Wildlife Sites list.

LBS/LNCS are run by the Local Authority and in most cases coordinated by TWIC. LBS/LNCS receive protection through the Local Authorities Local Development Plan process and are a material consideration in planning applications. The different sub-categories of LBS/LNCS in the dataset reflect the current status of the sites as outlined below:

- *LBS/ LNCS* are sites that have passed their site assessment and have been formally adopted by the Local Authority.
- *LBS or LNCS to be adopted* are sites that have passed their site assessment but are yet to be formally adopted by the Local Authority.
- *pLBS/ pLNCS* are sites which have been identified as having biodiversity interest but have not been formerly assessed to determine if the site meets the criteria for an LBS/LNCS. In some cases these sites will have little/no up-to-date survey information.

For LBS/LNCS or LBS or LNCS to be adopted a **Site Statement** will be provided with a data search. This includes the site boundary and details further information on the features present on site that have warranted the site becoming an LBS/LNCS.

6.2.3 Local Wildlife Sites (LWS)

Local Wildlife Sites are defined areas with considerable nature conservation value and are non-statutory. These sites can be of variable size and play a critical role in preserving locally or nationally threatened wildlife. In Scotland they are managed by the Scottish Wildlife Trust (SWT).

Note that many of these sites are being replaced by the LBS/ LNCS Systems. However, some Local Authorities are retaining the Local Wildlife Sites Systems until the LBS/ LNCS are formerly adopted.

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[5] For more information on LBS/LNCS see:
http://www.wildlifeinformation.co.uk/downloads/TWIC%20LBS%20information%20leaflet%20v1.5.pdf [Accessed: 14/12/2021]
[6] To obtain LBS data for East Lothian Council area please contact: policy&projects@eastlothian.gov.uk

7. Data Interpretation – Understanding the Results

7.1 Species Data

Data searches provided by TWIC include **presence only records**. Species absence records are not supplied i.e. details of where a species has been searched for and not found.

As with all biological data, sampling effort can vary considerably, and this results in uneven coverage of records in both space and time. Data held by TWIC therefore reflects both the geographic and taxonomic coverage of species or biological recording and this may include gaps in coverage, therefore **the absence of records does not necessarily imply absence of species.**

Interpretation of data is therefore required by a suitably qualified ecologist in order to determine which species *may be present* based on ecological knowledge and based on the woodland screening results.

7.2 Species Data: Filtering and Visualising

A data search may return upwards of 100 or even 1000 species records. Therefore, one of the most important steps in understanding and interpreting the output is the ability to filter the resulting data. This is where **Excel spreadsheets** can be extremely useful including a range of tools to analyse and summarise information.

Using the **filter** function in Excel allows the user to quickly restrict the results by any of the columns in the file – such as taxon group, species, location name, grid reference or international/national status. For example, if the user wished to only see records pertaining to species listed on the Scottish Biodiversity List, then the user can filter on the term "ScotBL" in the "International/National Status" column and only records of species with this status will be visible in the file. Similarly the user can filter on records for a single or sub-set of select taxonomic groups at a time – see Figure 2 below.
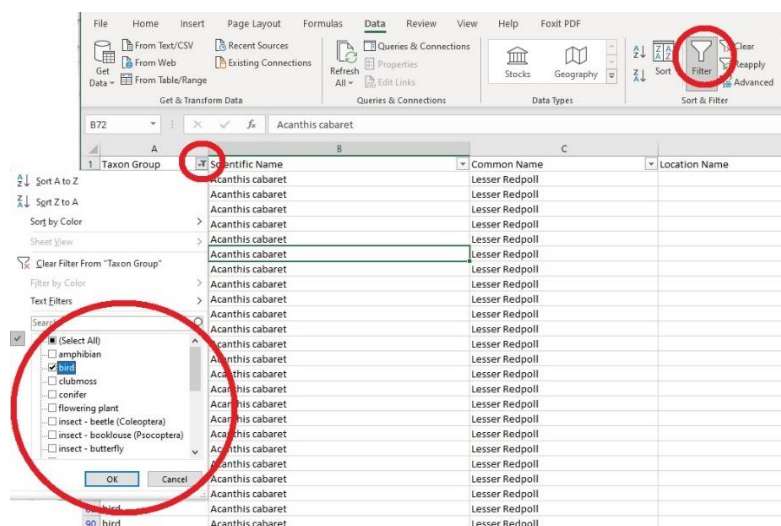

Figure 2. Excel-like software included with Microsoft Office, Open Office and Libre Office packages allows users to restrict the search to fewer records. In this case the ecologist uses the Filter option to visualise bird records only, to plan an ecological survey.

For GIS users, visualising and analysing the data should be straightforward. Details of individual records are shown in the **attribute table** and the user may select and zoom to any number of the records in the file. The attribute table will also contain additional information on the species records – for example the comments attribute can provide additional information such as indicating that the record relates to roadkill sighting.

When displaying records in any GIS we recommend users to keep the symbology and colour coding file provided by TWIC (file with the extension **.lyr**) in order to allow records of different resolutions to be visible.

The symbology file displays each record as a square with a coloured outline according to the recording resolution and with no fill, so to avoid the problem of coarser resolution records 'covering up' records of finer resolution when displayed on a map – which happens normally.

A word of warning about exploring data <u>visually</u> **in GIS – if viewing the data at the site scale, say 1:10,000 resolution, 1m square resolution records will appear as a dot, and may not be obvious.** It is therefore better to explore the data using the attribute table and select and zoom to different records on site, so these finer scale records are not missed.
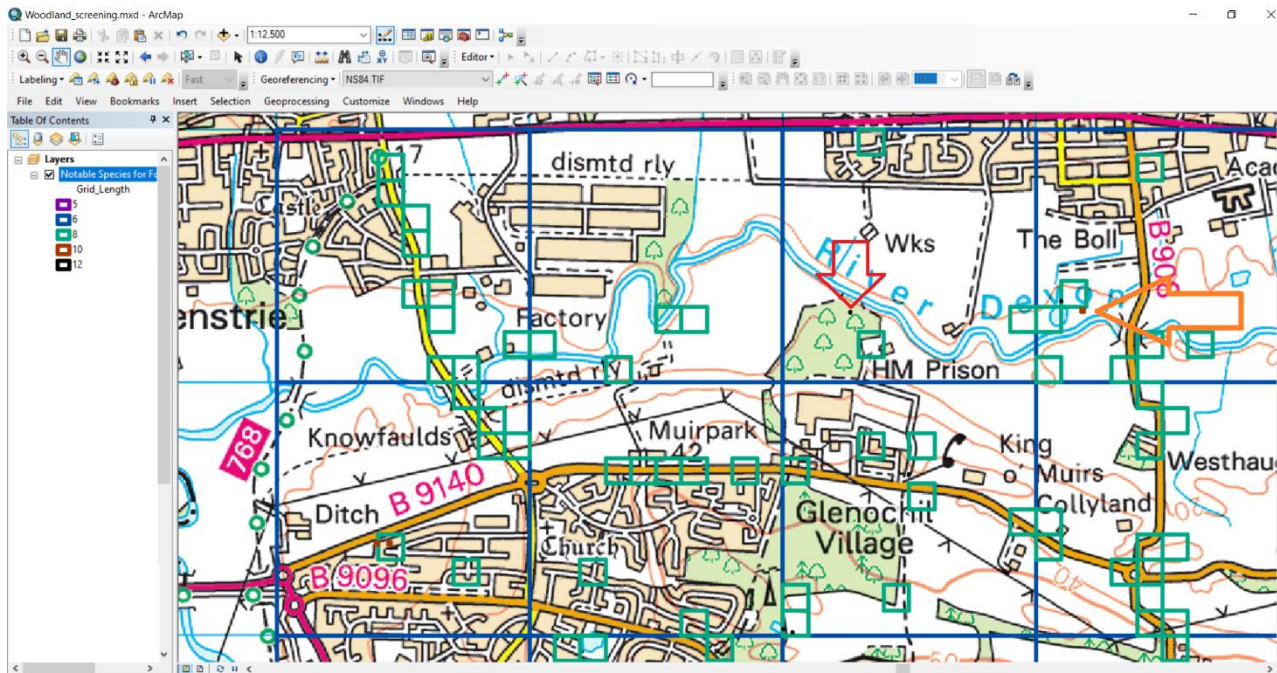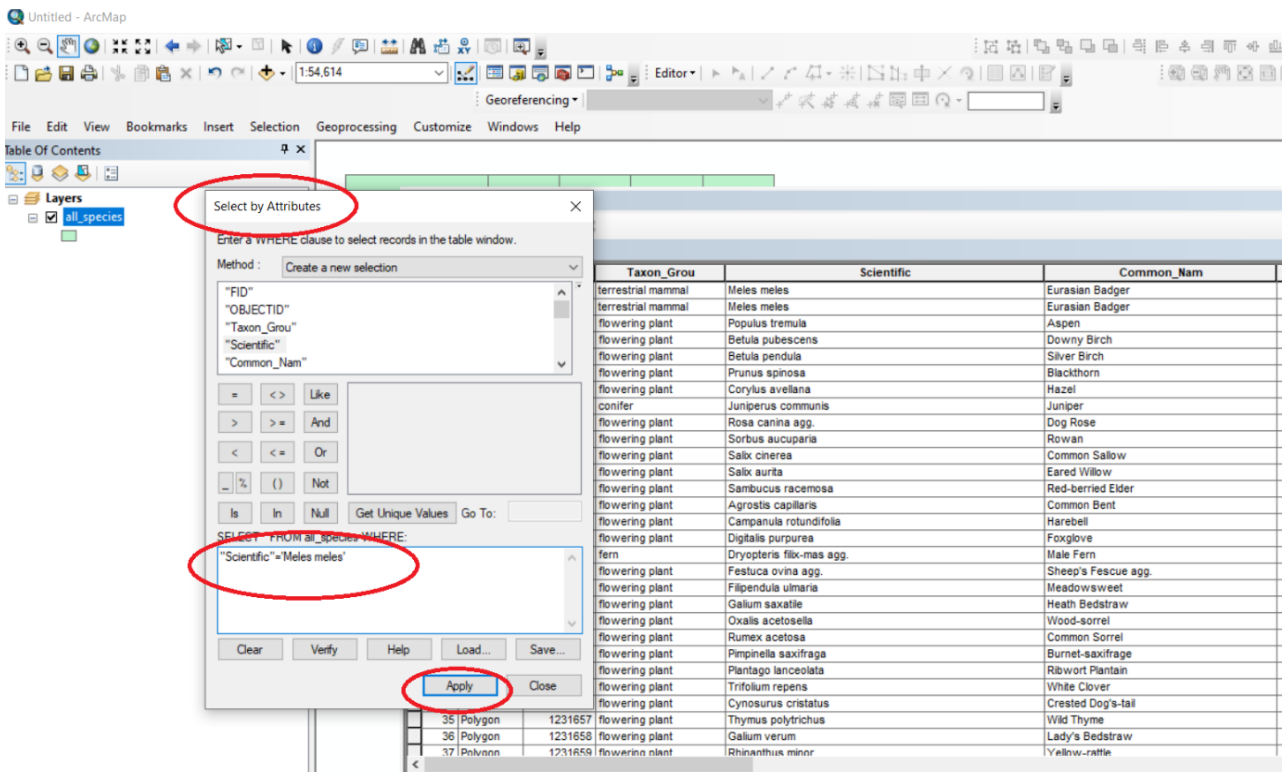

Figure 3. Visualising records on a map can be challenging, especially when records at 1m (red arrow pointing at black dot) or 10m (orange arrow pointing at brown dot) resolutions are barely distinguishable from an artefact of the backdrop map (© Crown copyright and database rights 2021. OS License Number 100040574).

ArcGIS or QGIS, like Excel, also allows the user to filter sightings. In this instance using a 'Select by attributes' function can be used to filter/ highlight any one of the data attributes e.g. species name, taxon group or status.[7] An example of selecting only Badger records from a species layer is shown in Figure 4.

[7] For more information on 'Select by attributes' in ArcMap, please check ESRI's official website: https://desktop.arcgis.com/en/arcmap/latest/map/working-with-layers/using-select-by-attributes.htm [Accessed: 02/07/2021]

Figure 4. To display only Badger records from the species layer provided, the function "Select By Attributes" is used in ArcMap to select all records with the scientific name 'Meles meles'. After that, a temporary or a new layer with badger records can be created on the map.

For users without GIS capabilities, visualising the data in relation to the site may be more difficult especially if the site is extensive. In many instances filtering on the location name and/ or grid reference may help. However, it may be necessary to use one of the free online tools such as *Grab a Grid Reference* webpage to plot grid references – see Figure 5 below.
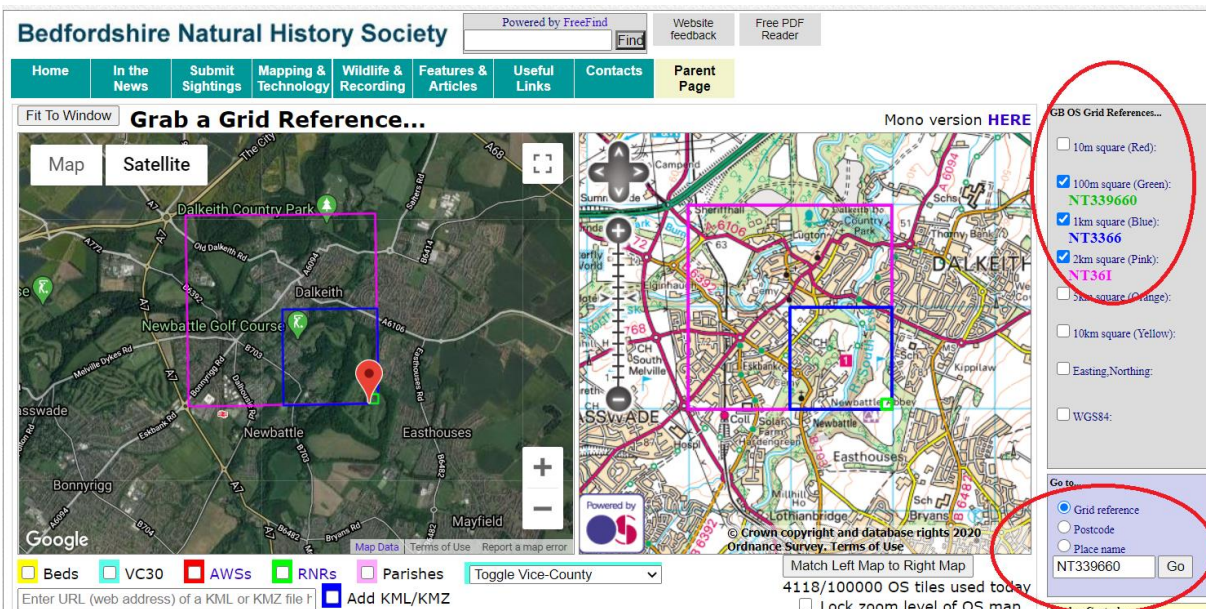
Figure 5. *Grab a Grid* (https://www.bnhs.co.uk/2019/technology/grabagridref/gagr.php) **loads Google maps imagery and OS maps freely, allowing users to locate records in relation to grid references, postcodes or place names.**

7.3 Habitat Indicator Species (HIS)

The presence of HIS records may highlight the presence of notable habitats on site. These lists are useful for small scale habitats, that are too small to map using the Phase 1 Habitat classification. They can also provide a helpful clue to habitats present where habitat data are lacking for an area, or where habitat data are dated or rely solely on aerial photo interpretation. **The presence of a single/ few habitat indicators cannot be used to assume the presence of a notable habitat**. However, the likelihood of the habitat being present increases with the greater number of indicators recorded and may help flag the presence of a notable habitat at the site, which can be verified by field survey. Refer to Figure 6 for an example of how to interpret the results.

Habitat Indicator Species - (Site Boundary)

The following habitat indicator species have grid references that overlap with the application site. For species records made at coarser resolution, for example 1km or 2km grid references, please check the location name to confirm whether the record is within the site boundary.

BASIC FLUSH INDICATORS

Taxon Group	Scientific Name	Common Name	Location Name	Grid Reference	Date	Source
moss	Scorpidium revolvens	Rusty Hook-moss				

CALCAREOUS GRASSLAND INDICATORS

Taxon Group	Scientific Name	Common Name	Location Name	Grid Reference	Date	Source
flowering plant	Helianthemum nummularium	Common Rock-rose				
flowering plant	Helianthemum nummularium	Common Rock-rose				
flowering plant	Helianthemum nummularium	Common Rock-rose				
flowering plant	Koeleria macrantha	Crested Hair-Grass				
flowering plant	Thymus polytrichus	Wild Thyme				
flowering plant	Thymus polytrichus	Wild Thyme				
flowering plant	Thymus polytrichus	Wild Thyme				

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Figure 6. The presence of several Calcareous Grassland indicators gives a good indication that this habitat type may be present on site. In the case of Basic Flush, it seems unlikely that the single record of a moss species is enough to flag a habitat type, however this may be worth verifying with a field visit.
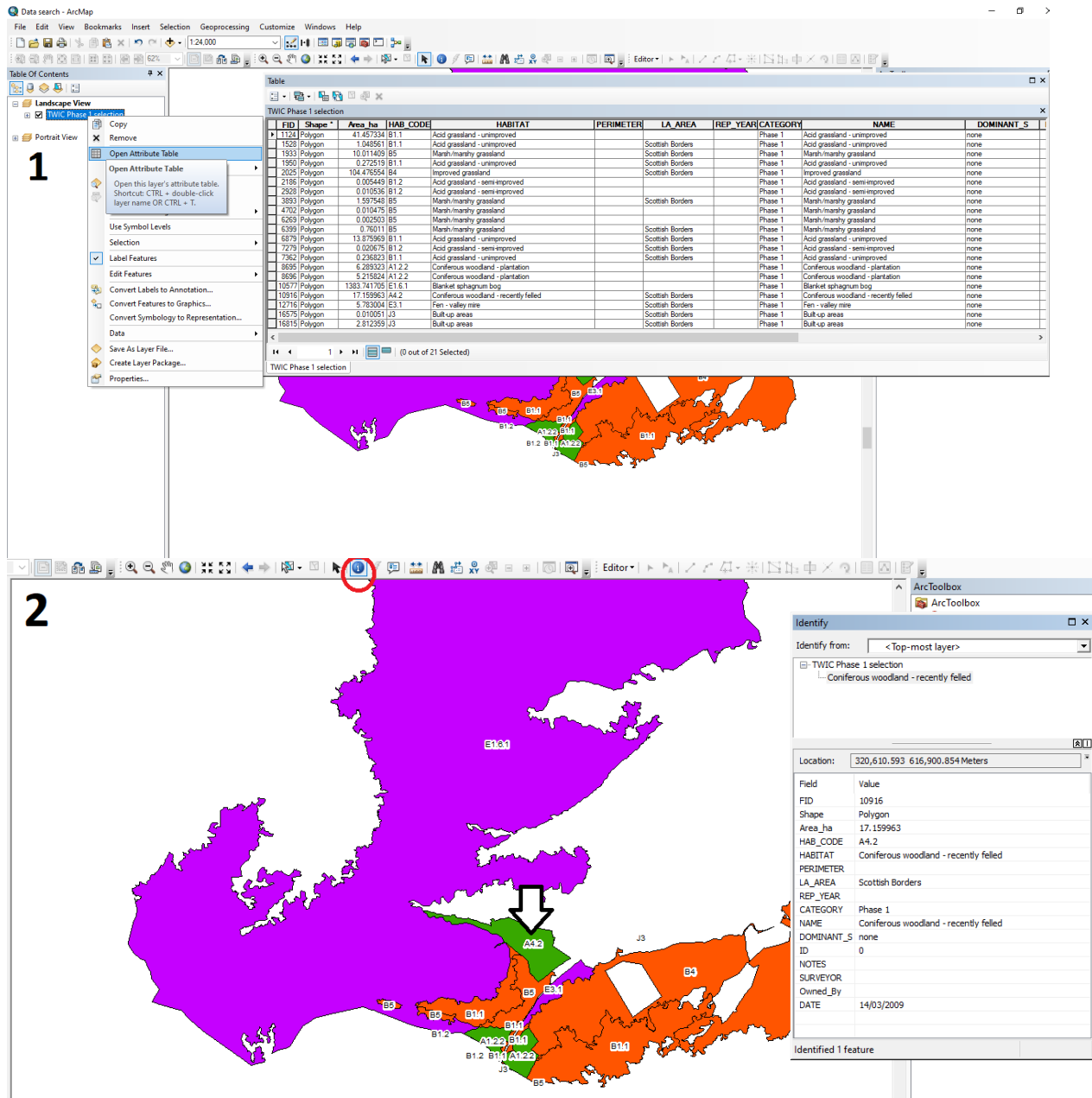
7.4 Habitat Data

Habitat information provided by TWIC can help the user identify:

- Potential areas where habitats of conservation interest are found where tree planting should be avoided.
- Potential areas of habitat of low conservation interest that may provide opportunities for woodland planting.
- Potential areas where woodland planting on site may link with wider woodland networks on site or in the buffer area e.g. ancient woodland.

The habitats found on site should have a direct implication for the design of, and selection of tree species used in any planting scheme. In some instances habitat information may suggest that planting is not advisable

from a conservation perspective, as existing habitats present on site are of high conservation interest e.g. raised sphagnum bog or unimproved calcareous grasslands.

On GIS like ArcMap, the habitat data can be queried and explored for more details – see Figure 6.1 and 6.2 below:

Figure 6.1. The attribute window allows users to visualise detailed information of the habitat data, including habitat name, area (ha), dominant species (when available) and year of survey. The attribute table can be accessed by right clicking the habitat layer name and selecting "Open Attribute Table".

Figure 6.2. When selecting the Identify Tool (circled in red), users can click onto a polygon loaded in the map to display all the information pertaining to it in a pop-up window.[8]

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[8]More information on the Identify tool with ArcMap at: https://desktop.arcgis.com/en/arcmap/latest/map/working-with-layers/identifying-features.htm [Accessed: 02/07/2021]

Habitat data can also supplement the species data provided, by helping the user determine which **protected species** may be present and therefore which surveys will be required. For instance, riverine habitats on site might indicate Otter presence even when no records are held for the area.

Habitat information held by TWIC is originated from multiple sources, usually from conservation organisations and professional ecologists, so in general the quality of the data is high. However, these data may have limitations. Data originated from aerial photography interpretation, as is largely the case for Scottish Borders Council region, may be less reliable for certain habitat types like grasslands for example. In recent years few large-scale field based Phase 1 mapping projects have been funded. As a result some of the field based data provided – for example for the Lothians region – may not be up-to-date. Nevertheless, use of existing data can flag potential constraints and can help prioritise survey effort.

7.5 Designated Sites Data

Depending on the degree of protection, the presence of a designated site within the search area will require specific assessments to ensure that the forestry operations will not affect the special wildlife/habitat present on-site (see Chapter 6 for the list of Designated Sites supplied by TWIC). The GIS files provided by TWIC can help determine the distance of the designated sites from the project site and the degree of overlap between them[9]. The ecologist can also consult the **Site Statements** for LBS/LNCS, LBS/LNCS to be adopted to find information such as the description of the site, the list of biodiversity features, extent of the site, etc.

To find more information on International, National designated sites and LNR, users can refer to NatureScot's SiteLink[10] where the relevant designated site can be searched by entering the name of the site or the Local Authority, users can also search and view designated sites by navigating the interactive map on the website.

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[9] Find more about measuring distances and areas with ArcMap: https://desktop.arcgis.com/en/arcmap/latest/map/working-with-layers/measuring-distances-and-areas.htm [Accessed: 02/07/2021]

[10] NatureScot's portal on Designated Sites: https://sitelink.nature.scot/home [Accessed: 14/12/2021]

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Appendix I – Notable Species: List of Designations

International and National Statuses

Bern1: Bern Convention Appendix 1
Bern2: Bern Convention Appendix 2
Bern3: Bern Convention Appendix 3
BAmb: Bird Population Status Amber
BRed: Bird Population Status Red
CMS_A1: Convention on Migratory Species Appendix 1
CMS_A2: Convention on Migratory Species Appendix2
CMS_EUROBATS-A1: Convention on Migratory Species - EUROBATS Annex 1
CMS_ASCOBANS: Convention on Migratory Species - Small Cetaceans Agreement
CMS_AWEA-A2: Convention on Migratory Species - African-Eurasian Waterbirds Agreement - Annex II
HabRegs2: The Conservation (Natural Habitats c.) Regulations 2010 (Schedule 2)
HabRegs4: The Conservation (Natural Habitats c.) Regulations 2010 (Schedule 4)
HabRegs5: The Conservation (Natural Habitats c.) Regulations 2010 (Schedule 5)
HSD2np: Habitats Directive Annex 2 (Non-Priority Species)
HSD2p: Habitats Directive Annex 2 (Priority Species)
HSD4: Habitats Directive Annex 4
HSD5: Habitats Directive Annex 5
N: Nationally Notable
Na: Nationally Notable A
Nb: Nationally Notable B
NR-excludes: Nationally Rare. Excludes Red Listed Taxa
NS-excludes: Nationally Scarce. Excludes Red Listed Taxa
OSPAR: The Convention for the Protection of the Marine Environment of the North-East Atlantic
PBA: Protection of Badgers Act (1992)
RLGB.Lr(NT): IUCN (2001) GB Red List - Lower Risk (Near Threatened)
RLGB.VU: IUCN (2001) GB Red List - Vulnerable
RLGB.CR: IUCN (2001) GB Red List - Critically Endangered
RLGB.DD: IUCN (2001) GB Red List - Data Deficient
RLGB.EN: IUCN (2001) GB Red List - Endangered
RLGB.EX: IUCN (2001) GB Red List – Extinct
RLGB.EW: IUCN (2001) GB Red List – Extinct in the Wild
RLGLB.DD: IUCN-Global Red List: Data Deficient
RLGLB.EN: IUCN-Global Red List: Endangered
RLGLB.EX: IUCN-Global Red List: Extinct
RLGLB.Lr(cd): IUCN-Global Red List: Lower Risk (Conservation Dependent)
RLGLB.Lr(NT): IUCN-Global Red List: Lower Risk(Near Threatened)
RLGLB.VU: IUCN-Global Red List: Vulnerable
ScotBL: Scottish Biodiversity List of species of principal importance for biodiversity conservation
UKBAP: UK Biodiversity Action Plan Priority Species
WCA1i: Wildlife and Countryside Act 1981 Schedule 1 Part 1
WCA1ii: Wildlife and Countryside Act 1981 Schedule 1 Part 2
WCA5/9.1k/l: Wildlife and Countryside Act 1981 Schedule 1 Section 9.1k
WCA5/9.1t: Wildlife and Countryside Act 1981 Schedule 1 Section 9.1t
WCA5/9.4a: Wildlife and Countryside Act 1981 Schedule 5 Section 9.4a
WCA5/9.4b: Wildlife and Countryside Act 1981 Schedule 5 Section 9.4b
WCA5/9.4c: Wildlife and Countryside Act 1981 Schedule 5 Section 9.4c
WCA8: Wildlife and Countryside Act 1981 Schedule 8

Local Biodiversity Action Plan (LBAP)

CE - City of Edinburgh
CL - Clackmannanshire
E - East Lothian
F - Falkirk
F(I) - Falkirk Indicator Species
SB - Scottish Borders
ST – Stirling
W(I) – West Lothian Indicator Species
W(K) – West Lothian Key Species

Local Rarity

Lothian/Borders/Forth Rarity: L: Local;
Lothian/Borders/Forth Rarity: VL: Very Local

Appendix II – Phase 1 Habitats: Notable Habitats

The following codes and habitat names refer to JNCC (2010) Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit. Joint Nature Conservation Committee, Peterborough.

A1.1.1: Broad-leaved Woodland, Semi-natural.

A1.3.1: Mixed Woodland, Semi-natural.

B1.1 & B1.2 Acid Grassland -unimproved and semi-improved.

B2.1 & B2.2 Neutral grassland – unimproved and semi-improved.

B3.1 & B3.2 Calcareous Grassland – Unimproved and semi-improved.

B5 Marsh/Marshy Grassland.

D: Heathland (and habitat subcategories).

E1.6.1 & E1.6.2 Bog - Blanket Sphagnum Bog and Raised Sphagnum Bog).

E2 Flush and Spring (and habitat subcategories).

E3 Fen (and habitat subcategories).

F Swamp, marginal and inundation.

G1 Standing Water (and habitat subcategories).

G2 Running Water (and habitat subcategories).

H2.6 Dense/continuous saltmarsh.

H6 Sand dune (including H6.4 Sand-dune, dune slack, H6.5 Sand-dune, dune grassland, H6.6 Sand-dune, dune heath, H6.7 Sand-dune, dune scrub).

H8.1 Maritime Hard Cliff.

H8.4 Coastal Grassland.

H8.5: Coastal Heathland.