The HBA Phase 1 Survey Guidance Notes

1. The Phase 1 habitat survey Introduction

The Phase 1 habitat survey is a well established, general purpose standard which has been devised to provide rapid mapping over wide areas of the British countryside. It evolved out of a system originally used to classify habitats for Sites of Special Scientific Interest (SSSI). There has been a lot of field testing and fine tuning, and the result, though far from perfect, is a mature system. The methodology is set out in the "***Handbook for Phase 1 habitat survey: A technique for environmental audit"*** (Nature Conservancy Council 1990). In this slim A4 volume the history and methodology are covered, as well as a listing of habitat definitions and map codes. Aspects of the survey are somewhat dated now: it was devised before the widespread use of computers in nature conservation, and takes no account of GIS mapping or the possibility of using mobile tablets or PDAs to record directly on to computer whilst in the field. This latter technology is expensive and not yet used by the HBA, but has been tried elsewhere. Details of the phase I habitat classification may be obtained from: http://www.jncc.gov.uk/page-4258

This also contains links to downloadable PDFs of both the full A4 handbook and the A5 field manual.

2. The Classification System

In the Habitat Biodiversity Audit (HBA), we primarily use a subset of the Phase 1 habitat survey system, with some modifications. This is largely a hierarchical system based both on plant communities and land use, and because of this there can be ambiguities. There are up to 4 hierarchical levels, the topmost level having 10 broad categories:

2.1. First (top) level

A. Woodland and scrub
B. Grassland and marsh
C. Tall herb and fern
D. Heathland
E. Mire
F. Swamp, marginal and inundation
G. Open Water
H. Coastland
I. Rock exposure and waste
J. Miscellaneous

2.2. Second level

Take the example of **A**; **Woodland and scrub**. This is divided as follows:

A1: Woodland
A2: Scrub
A3: Parkland/scattered trees
A4: Recently felled woodland

2.3. Third level

Take the example of **A1, woodland**. This is divided as follows:

A11: Broad-leaved woodland
A12: Coniferous woodland
A13: Mixed Woodland

2.4. Fourth (lowest) level

Take the example of **A11, broad-leaved woodland.** This is divided as follows:

A111: Broad-leaved semi-natural woodland
A112: Broad-leaved plantation woodland

Each of these habitat types has a name, alphanumeric code, alphabetical code and mapping colour code associated with it. (See the Key to the HBA Phase 1 Habitat Survey for the colour codes associated with each habitat).

3. Phase 1 and the HBA

The HBA uses a sub-set of Phase 1 categories which have been found useful in Warwickshire. For example, category H (coastland) is omitted altogether for obvious reasons. Category A5 (Orchard (commercial) has been added, although absent in Phase 1. For the detailed list of categories used in the HBA Phase 1, please see section 6, page 8 of this document. This list matches the HBA Phase 1 habitat type mapping codes on page 17.

3.1. The HBA Map Sets and associated documents

The HBA survey map sets consist of 9 maps, a set of target notes and the HBA Phase 1 survey key. The first 5 maps are the survey area maps which are referred to as tetrads. Each tetrad is a unique survey area consisting of a 2 x 2 sq. km grid, giving a total of 4 sq. km (hence the name tetrad). With these maps comes the target notes associated with the tetrad points.

The other 4 maps are the 1 km sq. recording maps for each tetrad. These come with the tetrad recording sheet for noting down changes to map features and adding or amending target notes.

3.1.1. *1:10,000 OS Map.*

The Ordnance Survey 1:10,000 scale background mapping showing man-made and natural features for the tetrad. The presence of designated, proposed and deferred Local Wildlife Sites (LWS) is shown as a reminder of the potential habitat importance. SSSIs and Ancient Woodlands may also be shown for reference. The date of the previous survey is also shown for reference, and may help the user to prioritise their efforts on more out of date areas.

3.1.2. 1:25,000 OS Map

Users may be familiar with the 1:25,000 scale OS Explorer paper maps. These have been included to help you plan a route to cover the tetrad using public footpaths.

3.1.3. OS County Series Map 1881-1890

The first edition OS County Series Map from 1881-1890 has been included to give a historical context, and may assist with classifying woodland, hedgerows and grasslands. Not available for all tetrads.

3.1.4. Aerial Imagery

The aerial image of the tetrad shows the extent of vegetation such as natural woodland, plantations arable and grassland areas as well as built-up areas. Currently, the imagery is from 2006 to 2009, so should be used with caution.

3.1.5. Previous Phase 1 Survey Map

This shows the current phase 1 habitat types for the tetrad, including polygons, lines and target notes.

3.1.6. HBA Target Notes

The latest set of target notes recorded for the tetrad. Each Target note point on the map refers to a specific target note by a unique number.

3.1.7. HBA Key

The key to the HBA habitat types for polygons and linear features

3.1.8. OS MasterMap 1km sq maps

A set of 4 large scale 1 km sq maps shown as NW/NE/SW/SE in the tetrad these are used for recording all map feature changes including; any new polygons, new linear features; changes to boundaries and for adding new target note points.

Each polygon should be coded with the habitat code, e.g. A111. If the base map OS MasterMap polygons need to be subdivided into smaller habitats, this should be drawn on the map and coded.

Each polygon should contain a habitat code, whether it has changed from the previous survey or not.
Linear features should be drawn in green, blue, red and black pens, using the styles in the map key.

The maps also need to have the surveyor initials and date of survey details to be filled in.

3.1.9. HBA Survey Form

The HBA recording form is used to record target notes and notes from the map. Each target note is referenced both on the map and on the reference sheet together with the accompanying notes.

The aim is to visit each target note location and comment on the condition and any changes to the described features. New target notes should be mapped using the next number available, which can be found on the main target notes document, and prefixed with 'T' on the form, for example, 'T49'.

Any notes to help describe the polygons drawn or codes used can be included, using a number on the map and against the note on the form.

This form also records the surveyor reference, date and time of survey and tetrad reference.

Please see the example set for Brandon Woods and surrounding area SP37Y.

4. Surveying

4.1. Equipment

- Field guides
  - Botanical – Use a good, up-to-date wild flower guide for identifying species in the field. Additional guides (grasses, trees etc.) may be taken but consideration should be given to the size and weight. See bibliography for some recommendations, or just use one which you like.
  - Phase 1 Field Manual -- see bibliography for details.
- Maps
  - Location – OS maps or atlas - see bibliography.
  - HBA Survey Pack – collect these from the HBA Office
- Clothing
  - Seasonally appropriate clothing plus spare layers
  - Hat – for sun or cold winds
  - Appropriate footwear – walking boots or wellingtons
- Health & safety
  - Mobile phone
  - First aid kit
  - Sun block
  - Insect repellent.
  - Drink/food
  - High visibility jacket (for road verges)
- Other items
  - Rucksack or bag
  - Bags or pouches for plant samples
  - HBA ID and/or HBA Phase 1 letter
  - Clipboard
  - Pens and pencils – Blue, Green, Red
  - Money – for emergencies
  - Binoculars
  - Hand lens (X 20)

4.2. Preparation

4.2.1. Before the Survey

- Obtain a survey pack from the HBA office.
- Study them carefully, including the target notes. If possible, examine the area using aerial photography or Google Earth.
- Identify one or more suitable destination points on each tetrad. These are where you should park your car or bicycle, prior to proceeding on foot. Devise a circular route, which you may wish to mark on the map. Between them, each destination point and its associated route should provide more or less full coverage of the tetrad.

4.2.2. On the day

- Check weather forecast
- Leave details of itinerary and mobile number with another person (week-ends)
- HBA Staff members including WWT surveyors should call HBA/WBRC office for week day surveys – start and end of survey day.
- Assemble all kit.
- Head to the first destination point.

4.3. The survey

- Proceed on foot, taking care. Keep to public rights of way.
- **DO NOT ENTER PRIVATE PROPERTY WITHOUT THE LANDOWNER'S PERMISSION.**
- If challenged show ID or letter explaining purpose of the survey and if required give the telephone number of the Biological Records Centre and or the Habitat Biodiversity Audit. Both numbers are on the maps, survey sheet, ID and letter.
- Most landowners are naturally suspicious of people with clipboards but once you have identified yourself and purpose of your survey they are generally co-operative and can offer additional useful information.
- Be aware of farm animals in fields

4.4. Completing the forms

- Observe each feature in the landscape and compare with the features shown on the Previous Survey map. As each polygon is identified on the map, it should be clearly marked with the current habitat code.
- Linear features, such as hedgerows, should be drawn in colour using the appropriate style.
- See the examples given for how these should be completed. Where there have been changes in the size of the feature, this is to be indicated on the OS MasterMap 1km maps. When the maps are finished, they should be kept together in a plastic A4 wallet.

4.5. Points to remember

- Please fill in details of dates, your initials and tetrad information on all sheets used as and when they are started. Otherwise this is likely to be neglected and lead to possible confusion later on.
- Please write legibly.

- It may not be possible to cover all features, due to restricted access. This is quite normal and should not cause concern.
- If an area looks like it is important for a more detailed survey or should be re-visited then please note this down as well

4.6. Afterwards

- Return set of completed maps to HBA office.
- Any problems or questions about returning and completing the forms please notify the HBA office contact details are at the end of this document.

5. Bibliography

Listed below is a small selection of recommended books and maps. Prices are approximate. Many suitable titles can be obtained from the NHBS Environment Bookstore at http://www.nhbs.com/index.html there are good deals on Amazon as well.

- Collins Flower Guide, Streeter David et. al. (2010 paperback ed). (Harper-Collins) £19.99. Complete guide to 1,900 plant species in Britain and Ireland, with plant keys by family and genus with illustrations.
- Colour Identification Guide to the Grasses, Sedges Rushes and Ferns of the British Isles and north-western Europe. Rose, Francis. (1989) (Viking) Hardback £50.00 (£27.23 on Amazon!). Excellent illustrations and vegetative keys. To good to use in the field but a great reference.
- Grasses. Hubbard CE (1992) (Penguin) £12.99. Standard reference to grasses with key, detailed illustrations and descriptions.
- Collins Complete Guide to British Trees, Sterry, Paul. (Collins Field Guide series) (2007?) £15.99. One of a series of field guides produced by Collins. Has twig identification and leaf identification with good photographs.
- New Flora of the British Isles, Stace, Clive (2010 3rd ed.) £53.00 Standard reference for botanists. Goes well beyond Phase 1 requirements but if you are series about getting into plant identification a must have book.
- Wild Flowers of Britain & Ireland (Black) £16.99 Blamey M, Fitter R & Fitter A. (2003). Good illustrative guide of grasses, ferns, trees and wild flowers, but no vegetative keys.
- The Wildflower Key. Rose, Francis rev. ed. (2006) £19.99 (Frederick Warne & Co.) Compact guide with vegetative key by habitat. Well Illustrated. Wild flowers only though.
- Handbook for Phase 1 habitat survey - a technique for environmental audit JNCC (rev. ed. 2010).The Phase 1 survey manual available as a PDF A4 format freely downloadable from JNCC's website at http://www.jncc.gov.uk/page-2468 Paper copies are also available by mail order at £14.99 + p&p.
- Warwickshire's Wildflowers: The wildflowers, shrubs & trees of historic Warwickshire. (2009) Falk Steven, (Warwickshire County Council/Brewin Books) £15.00. A very useful book for plants and habitats found in the Vice-County of Warwickshire has a checklist of the higher plants including status and distribution.
- Field Services Council Identification Guides – various publications £2.75/£3.00 each see list at: http://www.field-studies-council.org/publications
- BSBI Handbooks. More specialist range of plant id books including grasses, sedges, dandelions etc. Prices vary list of publications available at: http://www.nhbs.com/bsbi_handbooks_tefno_2757.html
- Maps: Ordnance Survey Explorer Maps (£8.00) 1:25,000 Scale
  Ordnance Survey Landranger Maps (£7.00) 1:50,000 Scale

6. Summary of the HBA Phase 1 Categories

A. Woodlands and Scrub

A111. Broad-leaved semi-natural woodland

1. A woodland block will have a canopy formed by tree species that grow to more than five metres tall. The canopy may be 'open', but the trees will still be the dominant vegetation.
2. Broad-leaved woodland will have no more than ten percent of its canopy made by coniferous trees.
3. Woodland is counted as semi-natural if it does not obviously originate from planting. There are also the following 'exceptions':
    a. Woodland with both semi-natural and plantation where the plantation is less than 30% of the canopy.
    b. Woods with planted standards in semi-natural coppice.
    c. Mature plantations of native tree species with ground flora and shrub communities associated with semi-natural woodland.
    d. Self-sown (secondary) stands of non-native (exotic) tree species.
    e. Alder carr and willow carr where the willows are taller than five metres.
    f. Sweet-chestnut coppice over twenty-five years old.
    g. Woods that have been completely under planted but the planted trees do not yet contribute to the canopy.
    h. Stands of young trees and coppice re-growth when less than five metres tall.

A112. Broad-leaved plantation

1. A woodland block will have a canopy formed by tree species that grow to more than five metres tall. The canopy may be 'open', but the trees will still be the dominant vegetation.
2. Broad-leaved woodland will have no more than ten percent of its canopy made by coniferous trees.
3. A plantation is obviously planted woodland of any age, excluding the types mentioned above.

A121. Coniferous semi-natural woodland

1. A woodland block will have a canopy formed by tree species that grow to more than five metres tall. The canopy may be 'open', but the trees will still be the dominant vegetation.
2. Coniferous woodland will have no more than ten percent of its canopy made by broad-leaved trees.
3. Woodland is counted as semi-natural if it does not obviously originate from planting. There are also the following 'exceptions':
    a. Woodland with both semi-natural and plantation where the plantation is less than 30% of the canopy.
    b. Woods with planted standards in semi-natural coppice.
    c. Mature plantations of native tree species with ground flora and shrub communities associated with semi-natural woodland.
    d. Self-sown (secondary) stands of non-native (exotic) tree species.
    e. Alder carr and willow carr where the willows are taller than five metres.
    f. Sweet-chestnut coppice over twenty-five years old.
    g. Woods that have been completely under planted but the planted trees do not yet contribute to the canopy.
    h. Stands of young trees and coppice re-growth when less than five metres tall.

A122. Coniferous plantation

1. A woodland block will have a canopy formed by tree species that grow to more than five metres tall. The canopy may be 'open', but the trees will still be the dominant vegetation.
2. Coniferous woodland will have no more than ten percent of its canopy made by broad-leaved trees.
3. A plantation is obviously planted woodland of any age, excluding the types mentioned above.

A131. Mixed semi-natural woodland

1. A woodland block will have a canopy formed by tree species that grow to more than five metres tall. The canopy may be 'open', but the trees will still be the dominant vegetation.
2. A mixed woodland will have a canopy made up of between ten and ninety percent of either broad-leaved or coniferous trees.
3. Woodland is counted as semi-natural if it does not obviously originate from planting. There are also the following 'exceptions':
    a. Woodland with both semi-natural and plantation where the plantation is less than 30% of the canopy.
    b. Woods with planted standards in semi-natural coppice.
    c. Mature plantations of native tree species with ground flora and shrub communities associated with semi-natural woodland.
    d. Self-sown (secondary) stands of non-native (exotic) tree species.
    e. Alder carr and willow carr where the willows are taller than five metres.
    f. Sweet-chestnut coppice over twenty-five years old.
    g. Woods that have been completely under planted but the planted trees do not yet contribute to the canopy.
    h. Stands of young trees and coppice re-growth when less than five metres tall.

A132. Mixed plantation

1. A woodland block will have a canopy formed by tree species that grow to more than five metres tall. The canopy may be 'open', but the trees will still be the dominant vegetation.
2. Coniferous woodland will have no more than ten percent of its canopy made by broad-leaved trees.
3. A plantation is obviously planted woodland of any age, excluding the types mentioned above.

A21. Dense / Continuous scrub

1. A block of scrub is dominated by the shrub species less than five metres tall. It may have a few scattered trees but there will be no recognisable canopy.
2. To be dense or continuous, the scrub must cover must be thirty percent or more.

A21. Linear scrub

1. A line of scrub species less than five metres tall.

This classification is used for linear features only and is an adaption of the "Dense / Continuous scrub" classification.

A22. Scattered scrub

1. A block of scrub is dominated by the shrub species less than five metres tall. It may have a few scattered trees but there will be no recognisable canopy.
2. To be scattered, the scrub must cover must be less than thirty percent.

A3. Linear trees

1. A line of tree species that grow to more than five metres tall.

Note: This classification is used for linear features only and is an adaptation of the "Parkland / Scattered trees" classification set.

A31. Broad-leaved parkland / Scattered trees

1. This is a classification for habitats that are neither woodland nor scrub, but have trees present.
2. Tree cover must be less than thirty percent.
3. The tree species present must be at least ninety percent broad-leaved.

Note: There are potentially coniferous (A32) and mixed (A33) parklands in the sub-region, these will be not less than ninety percent coniferous and ten to ninety percent of either broad-leaved or coniferous, respectively.

A4. Recently-felled woodland

1. Only areas of felled trees where the future land-use is not known should be included in this category.

A5. Orchard (commercial)

1. Any block of trees that is used to produce fruit for commercial use or that is a nursery has been classified as a commercial orchard.

B. Grassland and Marsh

B11. Unimproved acidic grassland

1. Grassland is generally considered unimproved when it has been treated with fertiliser or herbicide over a long period of time, e.g. thirty or more years, and has not been intensively grazed or drained. This can result in high species diversity (relative to the soil type).
2. Acidic grasslands occur on acid soils with a pH less than 5.5. It is often species-poor. Typical species present may include:
    a. Wavy hair-grass (*Deschampsia flexuosa*)
    b. Mat-grass (*Nardus stricta*)
    c. Heath rush (*Juncus squarrosus*)
    d. Heath bedstraw (*Galium saxatile*)
    e. Sheep's sorrel (*Rumex acetosella*)

Note: Unimproved grassland is very rare, so in cases of doubt, it will be classified as semi-improved grassland.

B12. Semi-improved acidic grassland

1. Semi-improved grassland will have been modified by fertilising, grazing and/or draining. The result is generally less diverse and more uniform than unimproved grassland but more diverse and less uniform than improved grassland.
2. It can be difficult to identify the character of semi-improved grassland, but acidic grasslands occur on acid soils with a pH less than 5.5. It is often species-poor. Typical species present may include:
    a. Wavy hair-grass (*Deschampsia flexuosa*)
    b. Mat-grass (*Nardus stricta*)
    c. Heath rush (*Juncus squarrosus*)
    d. Heath bedstraw (*Galium saxatile*)
    e. Sheep's sorrel (*Rumex acetosella*)

B21. Unimproved neutral grassland

1. Grassland is generally considered unimproved when it has been treated with fertiliser or herbicide over a long period of time, e.g. thirty or more years, and has not been intensively grazed or drained. This can result in high species diversity (relative to the soil type).
2. Neutral grasslands occur on soils with a pH between 5.5 and 7.0. Grassland that is periodically inundated, permanently moist or water-logged may be classified as neutral where it is not marsh or marshy grassland. Typical species present may include:
    a. Meadow foxtail (*Alopecurus pratensis*)
    b. Oat grass (*Arrhenatherum elatius*)
    c. Cock's-foot (*Dactylis glomerata*)
    d. Tufted hair-grass (*Deschampsia cespitosa*)
    e. Meadow fescue (*Festuca pratensis*)

Note: Unimproved grassland is very rare, so in cases of doubt, it will be classified as semi-improved grassland.

B22. Semi-improved neutral grassland

1. Semi-improved grassland will have been modified by fertilising, grazing and/or draining. The result is generally less diverse and more uniform than unimproved grassland but more diverse and less uniform than improved grassland.
2. It can be difficult to identify the character of semi-improved grassland, but neutral grasslands occur on soils with a pH between 5.5 and 7.0. Grassland that is periodically inundated, permanently moist or water-logged may be classified as neutral where it is not marsh or marshy grassland. Hay meadows usually fall into this category. Typical species present may include:
    a. Meadow foxtail (*Alopecurus pratensis*)
    b. Oat grass (*Arrhenatherum elatius*)
    c. Cock's-foot (*Dactylis glomerata*)
    d. Tufted hair-grass (*Deschampsia cespitosa*)
    e. Meadow fescue (*Festuca pratensis*)

B31. Unimproved calcareous grassland

1. Grassland is generally considered unimproved when it has not been treated with fertiliser or herbicide over a long period of time, e.g. thirty or more years, and has not been intensively grazed or drained. This can result in high species diversity (relative to the soil type).
2. Calcareous grasslands occur on base soils with a pH greater than 7.0. Typical species present may include:
    a. Tor-Grass or Chalk False-brome (*Brachypodium pinnatum*)
    b. Upright brome (*Bromus erectus*)
    c. Crested hair-grass (*Koeleria macrantha*)
    d. Meadow oat-grass (*Avenula pratensis*)
    e. Hairy thyme (*Thymus praecox*)

Note: Unimproved grassland is very rare, so in cases of doubt, it will be classified as semi-improved grassland.

B32. Semi-improved calcareous grassland

1. Semi-improved grassland will have been modified by fertilising, grazing and/or draining. The result is generally less diverse and more uniform than unimproved grassland but more diverse and less uniform than improved grassland.

2. Calcareous grasslands occur on base soils with a pH greater than 7.0. Typical species present may include:
    a. Tor-Grass or Chalk False-brome (*Brachypodium pinnatum*)
    b. Upright brome (*Bromus erectus*)
    c. Crested hair-grass (*Koeleria macrantha*)
    d. Meadow oat-grass (*Avenula pratensis*)
    e. Hairy thyme (*Thymus praecox*)

B4. Improved grassland

1. Meadows and pastures that have been heavily improved with the use of fertilisers, grazing and/or draining. Typical signs are:
    a. Bright, green and even sward.
    b. Dominated by grasses.
    c. Low species diversity.

Note: Leys (i.e. temporary grassland) are counted as arable (J12).

B5. Marsh / Marshy grassland

1. The following grasslands are counted as Marsh or Marshy grassland:
    a. *Molinea* grasslands (those dominated by purple moor grass/*Molinia caerulea*).
    b. Grasslands with a high proportion of rush (*Juncus*) and sedges (*Carex*) species or meadowsweet (*Filipendula ulmaria*).
    c. Wet meadows and pastures that support species such as marsh marigold (*Caltha palustris*) or the valerians (*Valeriana spp.*), where broadleaved herbs predominate over grasses.

B6. Poor Semi-improved grassland

1. This was introduced because there was a gap between improved grassland (B4) and semi-improved grasslands (B12, B22 & B32) which was not adequately covered. This consists of semi-improved grassland which is more improved, poorer in species diversity, and more resembles species-poor neutral grassland, regardless of its origin. However, it is noticeably less improved and more species rich than improved grassland (B4).

C. Tall Herb and Fern

C11. Continuous bracken

1. Areas dominated by bracken (*Pteridium aquilinum*).

C32. Tall ruderal

1. Any area dominated by tall perennial or biennial dicotyledons of more than twenty-five centimetres tall is classified as “Tall ruderal”. Typical species present may include:
    a. Rosebay willowherb (*Chamerion / Chameanerion angustifolium*)
    b. Stinging nettle (*Urtica dioica*)
    c. Japanese knotweed (*Reynoutria japonica*)

D. Heathland

D5. Dry heath / acid grassland mosaic

1. This category is used for ease of mapping when there is a mixture of dry heath and acid grassland blocks covering very small areas.

2. Acidic grasslands occur on acid soils with a pH less than 5.5. It is often species-poor. Typical species present may include:
    a. Wavy hair-grass (*Deschampsia flexuosa*)
    b. Mat-grass (*Nardus stricta*)
    c. Heath rush (*Juncus squarrosus*)
    d. Heath bedstraw (*Galium saxatile*)
    e. Sheep's sorrel (*Rumex acetosella*)
3. Dry heath is an area with a greater than twenty-five percent cover of ericoids or small gorse (furze) species. Typical species present may include:
    a. Cross-leaved heath (*Erica tetralix*)
    b. Dwarf gorse (*Ulex minor*)
    c. Western gorse (*Ulex gallii*)
    d. Crowberry (*Empetrum nigrum*)
    e. Bearberry (*Arctostaphylos uva-ursi*)

E. Mire (Flush and Spring)

E21. Acid / neutral flush

1. Flushes are fed by ground water or streams and occur on gently sloping ground.
2. Acid/neutral flush are typically species poor, consisting of a *Sphagnum* moss carpet with an overlay of rush (*Juncus*) and sedges (*Carex*) species.

E32. Basin mire

1. Basin mires are a type of fen, fed by ground water or streams. It develops in a waterlogged basin and does not contain much open water.
2. There are two types of species communities:
    a. Predominantly *Sphagnum* mosses with beaked sedge (*Carex rostrata*) and ericoids such as bog heather (*Erica tetralix*).
    b. Predominantly tall swamp plants including common reed (*Phragmites australis*), common club-rush (*Schoenoplectus /Scirpus lacustris*) and reedmace (*Typha*) species. In base soils, great fen sedge (*Cladium mariscus*) may also be present.

F. Swamp, Marginal and Inundation

F1. Swamp

1. Swamps are generally in standing water and contain tall emergent vegetation. Although, as they are a successional habitat between open water and marshy grassland, some swamps may be in areas that are rarely immersed.
2. Swamps can be mixed or single-species stands of the following:
    a. Common reed (*Phragmites australis*)
    b. Common club-rush (*Schoenoplectus /Scirpus lacustris*)
    c. Reedmace (*Typha*) species
    d. Reed canary grass (*Phalaris arundinacea*)
    e. Reed sweet grass (*Glyceria maxima*)
    f. Greater tussock sedge (*Carex paniculatal*)
    g. Lesser pond sedge (*Carex acutiformis*)
    h. Great fen sedge (*Cladium mariscus*)

F22. Inundation vegetation

1. Inundation vegetation covers areas that are periodically inundated.
2. The species community is generally open and inherently unstable. Typical species present may include the following as well as ruderal species:

a. Knot grass (*Polygonum*) species
b. Bulbous rush (*Juncus bulbosus*)
c. Beggartick and Bur-marigold (*Bidens*) species
d. Creeping bent grass (*Agrostis stolonifera*)
e. Marsh foxtail (*Alopecurus geniculatus*)

G. Open water

G1. Standing water

1. Lakes, reservoirs, pools, flooded gravel pits, ponds, water-filled ditches, canals and brackish lagoons.

G2. Running water

1. Rivers and streams.

I. Rock Exposure and Waste

I21. Quarry

1. Gravel, sand or chalk pits and stone quarries, and their associated workings such as spoil heaps.

"Quarries" that now have a new land use will not be labelled as such.

I22. Spoil

1. Abandoned industrial areas and tips of waste materials such as mine spoil and slag.

I23. Mine

1. All mines.

I24. Refuse-tip

1. All other waste tips not counted in "Spoil".

J. Miscellaneous

J11. Arable

1. This includes all arable cropland, horticultural land, freshly ploughed land and leys (temporary grassland) except for allotments and set-aside.

J112. Allotments

1. All allotments.

J113. Set-aside

1. All set-aside which includes field margins, recently abandoned fields and game cover.

J12. Amenity grassland

1. This category comprises all intensively managed, regularly mown grasslands, such as lawns, playing fields, golf courses, parks and some road verges.

J13. Ephemeral / Short perennial

1. Patchy communities of short plants on freely draining land with (usually) shallow and stony soil. This habitat is associated with derelict urban sites, quarries and railway ballast. Typical species present may include:
    a. Greater plantain (*Plantago major*)
    b. Creeping buttercup (*Ranunculus repens*)
    c. Ragwort (*Senecio*) species
    d. Rocket (*Sisymbrium*) species
    e. Melilot (*Melilotus*) species

J14. Introduced shrub

1. Any block of vegetation dominated by non-native (exotic) species such as Rhododendrons (*Rhododendron* spp.) and Laurel (*Laurus* spp.) is classified as "Introduced shrub".

J21. Intact hedge

1. Any hedge that has no trees and has less than ten percent of its length made up of gaps.

J22. Defunct hedge

1. Any hedge that has no trees and has ten percent or more of its length made up of gaps.

J23. Hedge with trees

1. Any hedgerow with trees.

J24. Fence

1. Any fence.

J25. Wall

1. Any (boundary) wall.

J26. Dry ditch

1. Any ditch that is dry for most of the year.

Wet ditches are classified as "Standing water" or "Swamp", depending on the vegetation present.

J27. Feature removed

1. If a previously mapped linear feature has been removed, then it is marked as "Feature removed".

Prior to the 200X update, this had been "Boundary removed". It was changed due to the confusion between boundaries and features that it generated.

J36. Buildings

1. Buildings

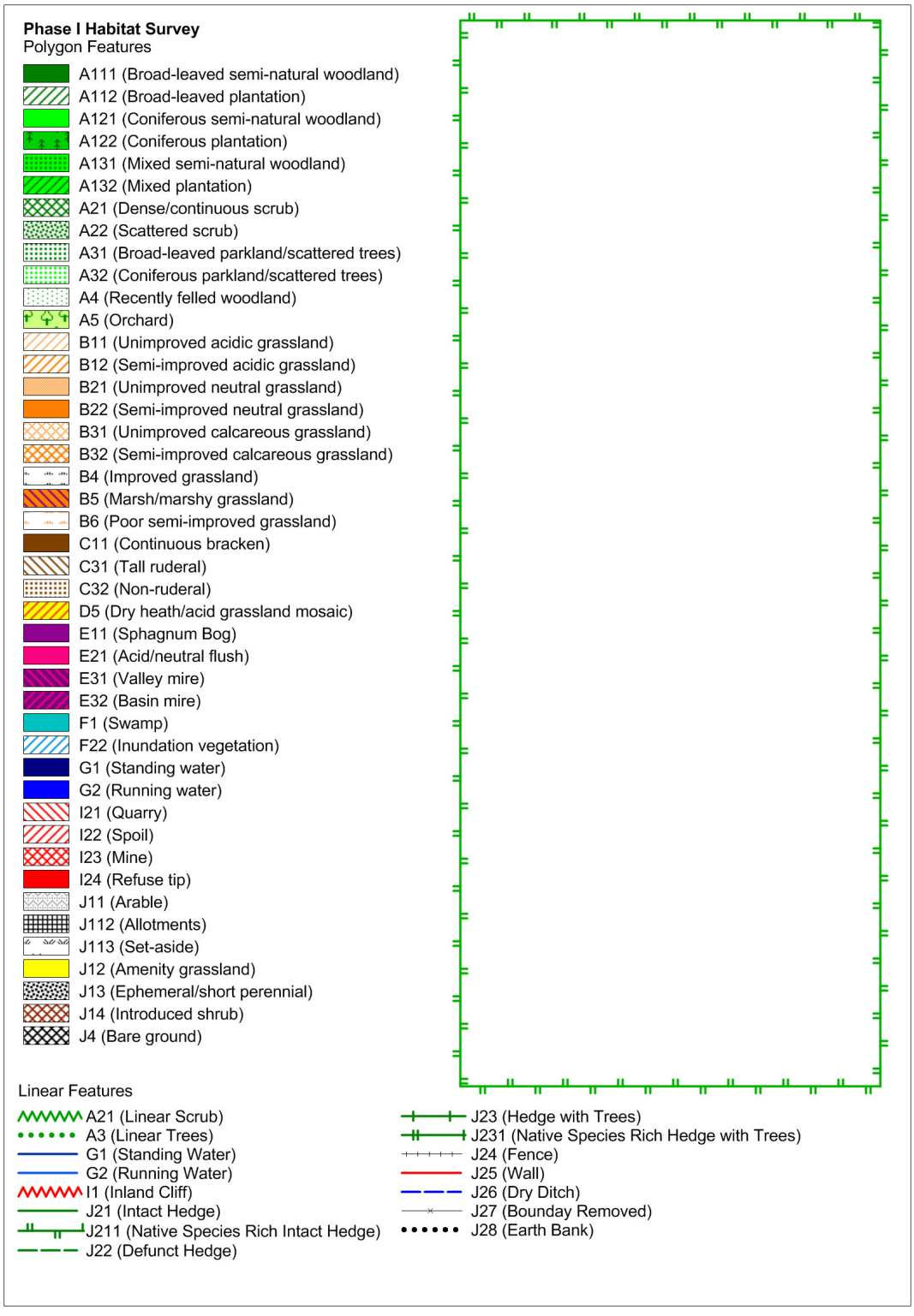
J4. Bare ground

1. All bare ground.

K. Unclassified

1. This is not a Phase 1 category, but is used to maintain an audit trail. It is used in two contexts.
    a. To give a classification letter to areas which previously lacked one? These are typically large built up areas and roads. A more detailed survey may well result in some parts being re-classified
    b. For areas which have just been surveyed and which typically may encompass building developments. Again a more detailed survey may yield true phase 1 categories.

7. HBA Phase 1 Habitat mapping colour codes



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