



# IHS DEFINITIONS

*Version 2-SWT  
2017  
Use in Somerset Only*





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***Version 2-002 SWT  
2017***

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## *Introduction*

IHS was developed in the 1990s by the staff and project officers of SERC. The original team were Bill Butcher, Liz Biron, Tony Price & Derek May. The principle was to make a hierarchical habitat system that was machine readable, logical and to be based on published definitions with the emphasis on national and international habitat designations; Broad, Priority and the E.U. Annex 1 habitats.

The basic details of IHS are these;

- No new definitions; all previously published by others except for some SERC had to include to complete the hierarchy.
- Structure based on level of detail and national and international status. Broad habitats through to Annex 1
- Multiplex code allows for a level of detail not found in other systems [see below]
- Inverse categories or none of the above; this allows the user to see what is known and what is not [see below]

IHS has four main sections in general use

1. Habitat
2. Matrix
3. Origin
4. Land-Use

When combined these codes form a multiplex code.

A simple code for a woodland might be WB3.WF11 [Broadleaved woodland. Native semi-natural] or more interesting WB32.WF11.WM1 [Upland mixed ashwoods. Native semi-natural. High forest]

Codes within IHS are usually post fixed with a tag in brackets. They denote the type of code or the origin of that code.

AN1	Annex 1 [EU protected habitat from the habitats directive]
BHT	Broad habitat type [UK (JNCC) top level habitat]
IC	Inverse category [most habitats trees require a non-of-the-above denoting proper data acquisition]
LU	Land-use [codes that define how the land is used or managed]
PH1	Phase 1 [synonymous with a Phase 1 Habitat code]
PHT	Priority habitat type [UK (JNCC) priority habitat]
PPHT	Proposes priority habitat
RC	Remote category [for use in aerial photo interpretation]
SC	SERC category [to fill logical gaps in the hierarchy]

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### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## Habitats

### WOODLANDS

#### Broadleaved woodland

##### WB0 Broadleaved, mixed, and yew woodland (BHT)

**Description:** All broadleaved and yew *Taxus baccata* stands (i.e. where tree cover exceeds 20%), and mixed broadleaved and coniferous stands which have more than 20% of the cover made up of broadleaved and yew trees. It also includes all patches of dense/continuous (>90% cover) broadleaved and juniper *Juniperus communis* scrub >0.25 ha (except dwarf gorse scrub *Ulex minor*, and *U. gallii*, which should be included under a Dwarf-shrub heath or Supralittoral rock category). Stands of broadleaved or yew trees may be either ancient or recent woodland and either semi-natural (arising from natural regeneration of trees) or planted. Recently felled broadleaved, mixed and yew woodland is also included in this broad habitat type where there is a clear indication that it will return to woodland. Also included are rides and glades, and stands of young trees or coppice regrowth. Areas of wet woodland within broadleaved, mixed and yew woodland are also included. Areas of carr associated with fen, marsh or swamp are included here if they exceed 0.25ha. Traditional/Unintensively managed orchards are included here provided tree cover exceeds 20%. (Jackson D.L., 2000)

**Not included:** Dense bracken *Pteridium aquilinum* stands >0.25ha in clearings should be assigned to a BR~ Bracken category. Hedges (woody vegetation that has been managed as a linear feature) are included in LF~ Boundary and Linear features Category. Unintensively managed orchards where canopy cover is <20% should be coded as the underlying grassland habitat. Intensively managed orchards are included under the Arable category CR31.

**Required multiplex codes:** Matrix codes: Scattered or patchy bracken (<0.25ha), other tall herb and fern, and introduced shrubs (PA~, OT~, and IH~ categories respectively) within Broadleaved, mixed and yew woodlands should be included as a cross-referenced (multiplex) code. Formation code: A Woodland formation (WF~) multiplex code is required. Land Use/Management codes: A Woodland management (WM~) multiplex code should be included. Recently felled woodland, rides and glades, should be included by cross-reference with a WG~ woodland clearings and openings category. Unintensively managed orchards must be qualified by using a CL3 (Unintensively managed orchard) code from the Land-use/Management section e.g. WB3Z.WF2.CL3. In cases where the habitat lies over limestone pavement, it should be cross-referenced with a LP1 (Limestone pavement) habitat complex.

##### WB1 Mixed woodland (SC)

**Description:** 20-80% of either broadleaved or conifer in the canopy. The canopy is not necessarily intimately intermixed.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

##### WB2 Scrub woodland (SC)

**Description:** Includes patches of broadleaved and juniper scrub with a continuous closed canopy (>90% cover) of >0.25ha. Scrub woodland includes locally native shrubs, usually less than 5m tall, (occasionally with a few scattered trees), including: common gorse *Ulex europaeus*, broom *Cytisus scoparius* and juniper *Juniperus communis* scrub; bramble *Rubus fruticosus* and dog rose *Rosa canina* scrub; and hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* or grey willow *Salix cinerea* stands even if more than 5m tall (but see below for exceptions). Also included are stands of non-native shrubs, for example areas greater than 0.25ha of planted shrubs in extensive ornamental gardens.

**Not included:** Patches of dwarf-gorse scrub (*Ulex minor*, *U. gallii*) should be included in a HE~ Dwarf-shrub heath category. Grey willow *Salix cinerea* carr or stands of bog myrtle *Myrica gale* more than 1.5m tall should be included under a WB34~ category. Montane willow scrub should be included in MH~ Montane Category, and scrub on sand dunes and shingle is included in SS~ Supralittoral sediment (Jackson D. L., 2000). Low or patchy bog myrtle *Myrica gale* should be included under an EO~ or EM~ category. Stands of young or stunted trees or stump regrowth less than 5m high should be included under the appropriate WB~ category for their species mix and habitat type. See WB0.

**Required multiplex codes:** A Woodland formation (WF~) multiplex code is required to qualify whether the scrub is composed of native or introduced species. A Woodland management (WM~) multiplex code should also be included.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### WB3 Broadleaved woodland (SC)

**Description:** 'Dry' woods predominantly composed of broadleaf and yew *Taxus baccata* species (i.e. with >80% broadleaves and yew in the canopy). Yew woodland is included here since it has affinities with broadleaved woodland especially beech *Fagus sylvatica*.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB31 Upland oakwood [=Old sessile oak woods with Ilex and Blechnum in the British Isles(AN1)] (PHT)

**Description:** Characterised by the predominance of oak (usually *Quercus petraea*) and birch (usually *Betula pubescens*), with varying amounts of holly *Ilex aquifolium*, rowan *Sorbus aucuparia*, and hazel *Corylus avellana*, on wet but free-draining western and upland mostly acid soils, often with many ferns, mosses and lichens. (Brown *et. al.*, 1997)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB32 Upland mixed ashwoods (PHT)

**Description:** Comprises a broad range of woodland types on well-drained base-rich soils in the uplands, of which ash *Fraxinus excelsior* is a major species, and where there is local abundance of oak *Quercus* spp., birch *Betula* spp, elm *Ulmus* spp and small-leaved lime *Tilia cordata*. The core type is ash-dominated woodland growing on limestone where ash and wych elm *Ulmus glabra* are, or were, the main canopy species. The underwood contains substantial amounts of hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, and calcicole shrubs. (UK Biodiversity Group, 1998)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB321 Tilio-Acerion forests of slopes, screes and ravines (upland) (AN1)

**Description:** Mixed woodlands found on base-rich (calcareous, but also siliceous) substrates associated with coarse scree or colluvion on slopes, or on abrupt rocky slopes or usually humid ravines. Ash tends to dominate but elm *Ulmus* spp. and lime *Tilia* spp. are often present, and sycamore *Acer pseudoplatanus* may also be prominent. (Brown *et. al.*, 1997)

**NB SWT** There is also a Lowland version of this habitat type WB363 Tilio-Acerion forests of slopes, screes and ravines (lowland) (AN1)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB32Z Other upland mixed ashwoods (IC)

**Description:** Upland mixed-ash woodland not found in ravines, or on scree or colluvion on slopes.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB33 Beech and yew woodlands (SC)

**Description:** Beech *Fagus sylvatica* dominated often high-forest woodlands found on acid to calcareous soils. Usually only formations within the native range of beech are considered a Priority Habitat. See WB331.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

---

*Habitats Section*

All IHS code strings must include one (and only one) code from the Habitats Section.

**WB331 Lowland beech and yew woodland (PHT)**

**Description:** Beech *Fagus sylvatica* dominated often high-forest woodlands found on acid to calcareous soils in the lowlands. Yew *Taxus baccata* is found in its most abundant association with beech on calcareous soils. Usually only formations within the native range of beech are considered a Priority Habitat. (UK Biodiversity Group, 1998)

**Not included:** Wood pasture and parkland is dealt with under WM5. Yew stands on the Carboniferous and Magnesian limestones of central and northern Britain are considered under WB32. See WB0.

**Required multiplex codes:** See WB0.

**WB3311 Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion) (AN1)**

**Description:** Beech *Fagus sylvatica* woodlands in the southern UK on acid soils with holly *Ilex aquifolium*, and sometimes also yew *Taxus baccata*, and rich in epiphytes, often with other 'old growth' characteristics, and with a moderate humus layer. Often these woods are (or were) managed as wood-pasture. (Brown *et. al.*, 1997)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

**WB3312 Asperulo-Fagetum beech forests (AN1)**

**Description:** Beech *Fagus sylvatica* woodland on neutral or near neutral soils with a mull humus layer, and a richer and more abundant herb layer than WB3311. Also found on chalk and southern limestones. (Brown *et. al.*, 1997)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

**WB3313 Taxus baccata woods of the British Isles (AN1)**

**Description:** Woods dominated by yew *Taxus baccata*, with whitebeam *Sorbus aria* or dog's mercury *Mercurialis perennis* of dry calcareous valleys and scarps. (Yew stands on the Carboniferous and Magnesian limestones of central and northern Britain should be included with upland mixed-ash woodlands.) (Brown *et. al.*, 1997)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

**WB331Z Other lowland beech and yew woodland (IC)**

**Description:** Other beech *Fagus sylvatica* and yew *Taxus baccata* woodlands in the lowlands. Includes, amongst others, woods where beech is outside of its native range; and woods on acid soils where beech is native but the wood is not rich in epiphytes, or does not contain other 'old growth' characteristics.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

**WB33Z Other beech and yew woodlands (IC)**

**Description:** Other beech *Fagus sylvatica* and yew *Taxus baccata* woodlands in the uplands.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### WB34 Wet woodland (PHT)

**Description:** Occurs on poorly drained or seasonally wet soils. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, and in peaty hollows. These woodlands occur on a range of soil types including nutrient-rich mineral and acid, nutrient-poor organic ones. Dominated in the canopy by alder *Alnus glutinosa*, willows *Salix* spp., and downy birch *Betula pubescens*. Includes alder, willow, and alder buckthorn *Frangula alnus* carr, swampy bog myrtle *Myrica gale* scrub, birch mire woodland, riparian willow woodland and scrub, and riverine ash-alder woodlands where either they are associated with drier woodlands, or they are associated with fen, marsh or swamp and are >0.25ha. (UK Biodiversity Group, 1998)

**Not included:** Carr woodlands associated with fen, marsh or swamp which are <0.25ha. See WB0.

**Required multiplex codes:** See WB0.

#### WB341 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*, *Salicion albae*) (AN1)

**Description:** A riverside woodland of alder *Alnus glutinosa* on alluvial floodplains in various situations including on braided channels of fast flowing rivers, on islands in river channels, on low-lying wetlands or fringes alongside the channel, and in estuaries. Usually developed on moist to wet meso-eutrophic to eutrophic mineral soils generally rich in alluvial deposits which are periodically inundated by the rise of the river, but at least patchily dry at the surface in summer, but also occurring as stands on organic soils, base-rich and moderately eutrophic, such as on former peat cuttings along fenland rivers. This habitat type occurs in small fragments with diffuse boundaries, often in transition to dry woodland. Alder *Alnus glutinosa* is constant and often dominant in the canopy, but with willows *Salix* spp. especially crack willow *Salix fragilis*, ash *Fraxinus excelsior*, and downy birch *Betula pubescens* often common. On the drier margins ash *F. excelsior*, and elm *Ulmus* spp., may become abundant. (Brown *et al.*, 1997)

**Not included:** See WB34.

**Required multiplex codes:** See WB0.

#### WB342 Bog woodland (AN1)

**Description:** Marginal woodland found on peaty humid to wet and moderately acid soils with the water level high and even higher than the surrounding water table, colonising bogs of reduced peat-building activity and acid fens. Downy birch *Betula pubescens* is dominant in a relatively open canopy. (Brown *et al.*, 1997)

**Not included:** See WB34.

**Required multiplex codes:** See WB0.

#### WB34Z Other wet woodland (IC)

**Description:** Alder *Alnus glutinosa* carr and swamp woodland (i.e. not found on eutrophic alluvium in or along river channels), alder-buckthorn *Frangula alnus* and willow *Salix* spp. carr, lowland swampy bog myrtle *Myrica gale* scrub, and riverine willow woodland (especially osier *Salix viminalis* or almond willow *S. triandra*).

**Not included:** See WB34.

**Required multiplex codes:** See WB0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### WB35 Upland birch woodland (PHT)

**Description:** Upland birchwoods are defined as woodlands in the upland zone of Britain (predominantly in Scotland) which are dominated by birch *Betula* spp.. Woods of almost pure birch are particularly common in the Scottish Highlands, partly as a result of human exploitation of other species, and partly due to the ability of birch to colonise moorland after fires or periods of heavy grazing. This habitat embraces a) birchwoods which develop in the boreal climatic zone of the eastern and central Scottish Highlands where fire has played an important part in determining successional changes and b) the apparently natural stands of pure birch which form at high altitudes and latitudes. Boundaries of these woods are often diffuse and liable to change as woodlands expand and contract in response to fires and changes in grazing pressure. In areas with base-rich soils or flushing, a particularly herb-rich flora with prominent shrub layers of hazel *Corylus avellana*, hawthorn *Crataegus monogyna* and bird cherry *Prunus padus* can develop.

In the Western Highlands, birch often supports a rich assemblage of lichens characteristic of the *Parmelion laevigatae* alliance. In these upland birchwoods, where oak *Quercus* spp. is less frequent or restricted to shaded situations, birch is an especially important host for certain lichen communities. (JNCC, 2000DRAFT)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB36 Lowland mixed deciduous woodland (PHT)

**Description:** This is a large category that incorporates most of the semi-natural woodland in southern and eastern England, and in parts of lowland Wales and Scotland (as well as relevant planted native broadleaved woods). In many respects it is complementary to the Upland oakwood and Upland mixed ashwood types. Despite great variety in the species composition of the canopy layer and the ground flora, some features are common to many stands: Most were traditionally coppiced, particularly those on moderately acid to base-rich soils. Pedunculate oak *Quercus robur* is generally the commoner oak (although sessile oak *Quercus petraea* may be abundant locally) and may occur with virtually all combinations of other locally native tree species. Most sites are relatively small and have well-defined boundaries compared with, for example, Upland oak or Native pine woodlands. Oak *Quercus* spp. and ash *Fraxinus excelsior* normally dominate, with hazel *Corylus avellana* as the commonest underwood species. Field maple *Acer campestre*, wych elm *Ulmus glabra*, wild cherry *Prunus avium*, suckering elms *Ulmus* spp. and willows *Salix* spp. are frequent within WB, whilst silver birch *Betula pendula*, small-leaved lime *Tilia cordata*, hornbeam *Carpinus betulus* and alder *Alnus glutinosa* may be present in W10. Conifers are naturally absent, save for yew *Taxus baccata* on a few limestone outcrops. Mixed woods with just a few beech *Fagus sylvatica* can occur. Sycamore *Acer pseudoplatanus*, sweet chestnut *Castanea sativa* and other non-native trees have colonised many woods. Within these woods there is therefore considerable variation in stand composition, giving rise to a complex, small-scale patchwork of different dominants. Hawthorns *Crataegus* spp., dogwood *Cornus sanguinea*, spindle *Euonymus europaeus* and other shrubs are frequently found in the underwood. Wild service tree *Sorbus torminalis* occurs sparingly. A typical example is a wood of 10-30ha, growing on a flat or gently sloping site at or below 300m altitude, entirely surrounded by farmland, dominated by mixtures of oak, ash, and hazel, which was treated as coppice until 30-70 years ago. (English Nature, 2002)

**Not included:** Includes only those woodland in the lowlands which are not included in another Priority Habitat Type. See WB0.

**Required multiplex codes:** See WB0.

#### WB361 Old acidophilous oak woods with *Quercus robur* on sandy plains (AN1)

**Description:** Acidophilous forests of the Baltic-North Sea plain, composed of pedunculate oak *Quercus robur*, silver birch *Betula pendula* and downy birch *B. pubescens*, often mixed with rowan *Sorbus aucuparia* and aspen *Populus tremula*, on very oligotrophic, often sandy and podzolised or hydromorphic soils. The poorly developed bush layer includes alder-buckthorn *Frangula alnus*, and the herb layer always includes wavy hair-grass *Deschampsia flexuosa* and purple moor-grass *Molinia caerulea*, and is often invaded by bracken *Pteridium aquilinum*. (Brown *et al.*, 1997)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### WB362 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli (AN1)

**Description:** Woodlands with hornbeam *Carpinus betulus* coppice occurring interspersed with pedunculate oak *Quercus robur* stands and introduced sweet chestnut *Castanea sativa*. Great wood-rush *Luzula sylvatica* is locally dominant in the woodland, and the characteristic greater stitchwort *Stellaria holostea* is found in more open patches. (Brown *et. al.*, 1997)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB363 Tilio-Acerion forests of slopes, screes and ravines (lowland) (AN1)

**Description:** Mixed woodlands found on base-rich (calcareous, but also siliceous) substrates associated with coarse scree or colluvion on slopes, or on abrupt rocky slopes or usually humid ravines. Ash *Fraxinus excelsior* tends to dominate but elm *Ulmus* spp. and lime *Tilia* spp. are often present, and sycamore *Acer pseudoplatanus* may also be prominent. (Brown *et. al.*, 1997)

**NB SWT 2015:** There is also an Upland version of this habitat type; WB321. Mendip woodlands are more likely to fall within the WB363 Lowland category.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB36Z Other lowland mixed deciduous woodland (IC)

**Description:** Lowland mixed-deciduous woods not as described in the annex 1 types above.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WB3Z Other broadleaved woodland (IC)

**Description:** Other broadleaved woodland types not currently discriminated for evaluation. Includes suckering elm woodland, and lowland oak and mixed deciduous woodland types not described in other categories. Also includes unintensively managed orchards where canopy cover is >20%.

**Not included:** See WB34.

**Required multiplex codes:** See WB0. Unintensively managed orchards are qualified by using a CL3 (Unintensively managed orchard) code from the Land-use/Management section.

## Conifer woodland

#### WC0 Coniferous woodland (BHT)

**Description:** This habitat type is characterised by vegetation dominated by trees that are more than 5 m high when mature, which form a distinct, although sometimes open canopy which has a cover of greater than 20%. It includes stands of both native and non-native coniferous trees species (with the exception of yew *Taxus baccata*) where the percentage cover of these trees in the stand exceeds 80% of the total cover of the trees present. Recently felled coniferous woodland is included where there is a clear indication that it will return to woodland, as are rides and glades, and stands of young trees. (Jackson D.L., 2000)

**Not included:** Dense bracken stands (>0.25ha) in clearings should be assigned to a BR~ Bracken category.

**Required multiplex codes:** Scattered or patchy bracken (<0.25ha), other tall herb and fern, and introduced shrubs, within coniferous woodlands (PA~, OT~, and IH~ categories) should be included as a cross-referenced (multiplex) code. Recently felled woodland, rides and glades, should be included by cross-reference with a WG~ woodland clearings and openings category.

#### WC1 Native pine woodlands (PHT)

**Description:** Includes all coniferous stands dominated by Scots Pine *Pinus sylvestris* within its native range. Native Pine woodlands occur on infertile, strongly-leached, podsolic soils. (Hall J.E. & Kirby K.J., 1988)

**Not included:** See WC0.

**Required multiplex codes:** See WB0.



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### WC11 Caledonian forest (AN1)

**Description:** Relict indigenous pine forests of Scots pine *Pinus sylvestris* var. *scotia* endemic in the central and north-eastern Grampians and the northern and western Highlands of Scotland. They are mostly open and have a ground layer rich in ericaceous species and bryophytes. Dominant tree species include rowan *Sorbus aucuparia*, downy birch *Betula pubescens*, silver birch *B. pendula*, juniper *Juniperus communis*, holly *Ilex aquifolium* and aspen *Populus tremula*. (Brown *et. al.*, 1997)

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WC1Z Other native pine woodlands (IC)

**Description:** Includes all Scots pine *Pinus sylvestris* dominated stands not falling within the WC11 definition.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

#### WCZ Other coniferous woodland (IC)

**Description:** Includes all coniferous plantation and other forest with >20% cover of introduced coniferous species.

**Not included:** See WB0.

**Required multiplex codes:** See WB0.

### Scrub Patches

#### NOT to be used except on SWT Reserve Monitoring Surveys

NB: This habitat has NO minimum mappable unit (MMU) so that reserves can be monitored at an appropriate level of detail.

#### SP0 Scrub/tree patches (SWT) Reserves Only

**Description:** Differentiated from scrub woodland [WB2] by including patches of broadleaved and juniper scrub with a continuous closed canopy of <0.25ha, (>90% cover). Includes only locally native shrubs. Small patches of trees are also included.

Not included: Patches of dwarf-gorse scrub (\**Ulex minor*, *U. gallii*\*) should be included in a HE~ Dwarf-shrub heath category. Grey willow \**Salix cinerea*\* carr or stands of bog myrtle \**Myrica gale*\* more than 1.5m tall should be included under a WB34 (Wet woodland) category (if >0.25ha in area); or under a WB34, EM~ or EO~ category (if <0.25ha), depending on the associated habitat. Stands of creeping willow \**S. repens*\* on dunes should be included under a dune/coastal/supralittoral category. Low or patchy bog myrtle \**Myrica gale*\* should be included under an EO~ or EM~ category. Hedges should be included under an LH~ category. Young trees or stump regrowth less than 5m high should be included under the appropriate WB~ category for their species mix and habitat type. Large dense stands (>0.25ha) are included under WB2 Scrub woodland (SC). Includes dense stands of bramble \**Rubus fruticosus*\*.

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### *Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

#### **Notes on use of woodland codes:**

“Wood pasture and parkland” is a land-use. It will comprise scattered trees over field-layer vegetation and will show characteristics of being currently or formerly managed as parkland or wood pasture. This includes areas derived from medieval forests or park and pastures with veteran trees in them; recent (post 19th century) parklands with veterans derived from an earlier landscape; relict wood pastures (with veterans) in a matrix with secondary woodland regeneration; and arable, forestry, or amenity-use land with surviving veteran trees formerly of wood pasture and parkland. It does not include upland sheep-grazed high canopy oak woodland, or recent parklands with no veteran trees. (UK Biodiversity Group, 1995 & 1998). (Defined by management - see WM5 Lowland wood pasture and parkland)

#### **Orchards:**

Orchards also represent a land-use. Intensively managed orchards are included under the arable and horticulture class as CR31. These are distinguished by the intensity of the ground vegetation management. E.g. There may be herbicide alleys present (herbicide spray lines bare of vegetation sited beneath the trees) (Just Ecology, 2005a). Frequent mowing of the orchard floor (rather than grazing or cutting for hay) and planting of short-lived, high density, dwarf or bush fruit trees are indicative of intensively managed orchards (JNCC, 2006).

Where the ground layer underneath an orchard is unimproved, it is classified as unintensively managed. If tree canopy cover is <20%, a habitat section category code for the ground vegetation should be cross-referenced with the arable management/land-use section category CL3 - e.g. an orchard on unimproved neutral pasture would be GN3.CL3 (i.e. Other neutral grassland (IC). Unintensively managed orchards (LU)). If tree canopy cover is >20%, a woodland habitat code should be cross-referenced with the arable management/land-use section category CL3 - e.g. WB3Z.WF2.CL3.

#### **Native woodland:**

All five native woodland HAPs in England have been combined to produce one generic set of native woodland targets in line with guidance on the '2005 Targets Review from the UK BAP Partnership'. The working definition for native woodland for this is: 'Woodland where at least 80% of the canopy comprises species that are suited to the site and are within their natural range, taking into account both history and future climate change' (The England Woodland Biodiversity Group, 2006).

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## GRASSLANDS

### Acid grassland

#### GA0 Acid grassland (BHT)

**Description:** This habitat type is characterised by vegetation dominated by grasses and herbs on a range of lime-deficient soils which have been derived from acidic bedrock or from superficial deposits such as sands and gravels. Such soils usually have a low base status, with a pH of less than 5.5. It also includes pioneer annual rich calcifuge communities on dry sandy soils as well as wet acidic grasslands typified by species such as heath rush *Juncus squarrosus*. (Jackson D.L., 2000)

**Not included:** Saltmarsh and sand-dune communities should be included under an appropriate supralittoral category. *Molinia* meadows and rush pastures are included under EM4~ in the Fen, marsh and swamp category. Acid grassland types and snow-bed communities which occur exclusively in the montane (Alpine) zone are included in the MH~ Montane category and acid grassland types found on shingle habitats are included in the SS~ Supralittoral sediment category. Continuous patches of non-dwarf-gorse scrub >0.25ha (including common gorse) should be included under WB2 Scrub woodland (SC). Continuous patches of bracken >0.25ha should be included under a BR~ Bracken category. Patches of dwarf-gorse scrub should be included under a HE~ Dwarf-shrub heath category.

**Required multiplex codes:** Include scattered trees by cross-referencing to a TS~ category; scattered scrub by cross-referencing with SC12; patches of non-dwarf-gorse scrub species with a continuous canopy up to 0.25 ha by cross-referencing with SC11; and patches of scattered bracken and continuous bracken <0.25ha by cross-referencing with a Patchy Bracken (PA1~) category. Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section. In cases where the habitat lies over limestone pavement, it should be cross-referenced with a LP1 (Limestone pavement) habitat complex. Where wind turbines are installed see GM8.

#### GA1 Lowland dry acid grassland (PHT)

**Description:** Occurs on nutrient-poor, acid, generally free-draining, dry (to moist) soils with pH 4- to 5.5, overlying acid rocks or superficial deposits such as sands and gravels. Characterised by abundant or frequent wavy hair-grass *Deschampsia flexuosa*, mat-grass *Nardus stricta*, heath bedstraw *Galium saxatile*, sheep's fescue *Festuca ovina*, common bent *Agrostis capillaris*, sheep's sorrel *Rumex acetosella*, sand sedge *Carex arenaria*, and tormentil *Potentilla erecta*. Dwarf shrubs (heaths) and bilberry *Vaccinium myrtillus* occur at low abundance (<25% cover). It also includes pioneer annual rich calcifuge communities on parched/dry sandy soils. (UK Biodiversity Group, 1998a)

**Not included:** See GA0.

**Required multiplex codes:** See GA0.

#### GA11 Inland dunes with open *Corynephorus* and *Agrostis* grasslands (AN1)

**Description:** This is an extremely rare habitat in the UK that is found in one small part of the Breckland area of East Anglia. Dune grassland containing grey hair-grass *Corynephorus canescens*, occurs on the coast and very rarely inland in the UK. (Brown *et al.*, 1997)

**Not included:** Coastal sand dunes with *Corynephorus canescens*.

#### GA12 Lowland Dry Acid Grassland with Calcareous Indicators (SWT)

**Description:** Occurs where typical Lowland Acid grasslands occur with a number of calcicole species at low cover. Lowland Acid grasslands in the Mendips are commonly characterised by abundant common bent *Agrostis capillaris*. Other grasses that can typically occur are wavy hair grass (*Deschampsia flexuosa*, mat-grass *Nardus stricta*, Sheep's fescue *Festuca ovina*, Brown bent *Agrostis vineale*) with herb species such as heath bedstraw *Galium saxatile*, Tormentil *Potentilla erecta* sheep's sorrel *Rumex acetosella*; Calcicolous species occurring within this habitat include salad burnet *Sanguisorba minor*, Calcareous grasses: Upright Brome *Bromus erectus*, Meadow and Downy Oat-grass *Helictotrichon pratense* *H. pubescens*, Crested Hair-grass *Koeleria macrantha* and hoary plantain *Plantago media*. This is a rare habitat where the unusual occurrence of limestone bedrock influences the vegetation present on the acidic soil.

**Distinguished from** GC1A by abundance of Acidophiles and relatively low abundance of calcicolous species.

#### GA13 Species-rich Lowland Acid Grassland (meeting FEP handbook definition) (SWT)

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

Semi natural grassland generally dominated by fine-leaved grasses on nutrient –poor free-draining soils in the lowlands and enclosed upland fringe. Mosses and/or lichens are sometimes frequent. Managed primarily by grazing. Some sites may be species-poor (dominated for example, by bristle bent or wavy hair-grass). However, lowland acid grassland is a scarce resource and any site is likely to be considered of high value. Typical grasses include: common bent, early hair-grass, heath-grass, sheep's fescue, sweet vernal-grass, wavy hair-grass.

If at least **one** of the following wildflower indicator species are *frequent* and another three at least occasional in the sward then the grassland fully meets the definition for this habitat;

Bell heather, Betony, Bilberry, Bird's-foot, English stonecrop, Bitter-vetch

Buck's horn plantain, Common bird's-foot trefoil, Common centaury, Common Stork's-bill, Harebell, Heath bedstraw, Heath speedwell, Heather, Lady's bedstraw,

Devil's-bit scabious, Lousewort, Lichens, Maiden Pink, Milkwort, Mouse-eared hawkweed, Parsley-pierts, Purple milk-vetch, Rough/lesser hawkbit, Saw-wort, Sheep's bit, Sheep's sorrel, Shepherd's cress, Thymes, Tormentil, Violets, Wild strawberry, Wood anemone, Wood sage.

(nb for our purposes calcicolous species on the original list, Blue fleabane and Common rockrose have been excluded as if these were present it would probably fall into another category) and biting stonecrop has been replaced by English stonecrop.

#### GA14 Fairly Species-poor Lowland Acid grassland (SWT)

If three indicator species are *occasional*, or four are present at lower frequency (but not limited to field corners or edges) then the habitat meets this definition.

Bell heather, Betony, Bilberry, Bird's-foot, English stonecrop, Bitter-vetch

Buck's horn plantain, Common bird's-foot trefoil, Common centaury, Common Stork's-bill, Harebell, Heath bedstraw, Heath speedwell, Heather, Lady's bedstraw,

Devil's-bit scabious, Lousewort, Lichens, Maiden Pink, Milkwort, Mouse-eared hawkweed, Parsley-pierts, Purple milk-vetch, Rough/lesser hawkbit, Saw-wort, Sheep's bit, Sheep's sorrel, Shepherd's cress, Thymes, Tormentil, Violets, Wild strawberry, Wood anemone, Wood sage.

(nb for our purposes calcicolous species on the original list, Blue fleabane and Common rockrose have been excluded as if these were present it would probably fall into another category) and biting stonecrop has been replaced by English stonecrop.

#### GA1Z Other lowland dry acid grassland (IC)

**Description:** All lowland dry acid grassland that is not on inland dunes with grey hair-grass *Corynephorus canescens*.

#### GAZ Upland acid grassland (IC)

**Description:** Includes generally open (unenclosed) grazed (often heavily) upland pastures on base-poor, acid, podsolized soils in the uplands.

**Not included:** See GA0.

**Required multiplex codes:** See GA0.

## Calcareous grassland

#### GC0 Calcareous grassland (BHT)

**Description:** This habitat type is characterised by vegetation dominated by grasses and herbs on shallow, well-drained soils which are rich in bases (principally calcium carbonate) formed by weathering of chalk and other types of limestone or base-rich rock. Although the base status of such soils is usually high, with a pH of above 6, it may also be more moderate and calcareous grassland communities can occur on soils with a pH as low as 5. (Jackson D.L., 2000). **N.B. SWT:** A list of reliable calcareous indicators was agreed by SWT ecologists in 2014:

Grasses: upright brome, blue moor-grass, meadow oat-grass, tor-grass, crested hair-grass,

Herbs: bloody crane's-bill, carline thistle, clustered bellflower, common rock-rose, gentians (Somerset only), greater knapweed, hairy violet, hoary plantain, hoary rock-rose, horseshoe vetch, kidney vetch, marjoram, purple milkvetch, salad burnet, small scabious, squinancywort, stemless thistle, thyme-leaved sandwort, wild basil, wild thyme, yellowwort

**In 2016:** The following calcareous indicators were agreed to be added to the above list of herbs: Cowslip, Dropwort, fairy flx, Field scabious, Lady's bedstraw, Mouse-ear-hawkweed, Spiny restharrow, and Common restharrow, as requested by SWT Senior Monitoring Officer.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

**Required multiplex codes:** Qualify the GC~ calcareous grassland category with a management code from the Land-use/Description Section (a GM~ Grassland management category, and a GL~ Grassland use category if applicable). Include scattered trees by cross-referencing to a TS~ category; scattered scrub by cross-referencing with SC12; and patches of non-dwarf-gorse scrub species with a continuous canopy up to 0.25 ha by cross-referencing with SC11. Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section. If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex. In cases where the habitat lies over limestone pavement, it should be cross-referenced with a LP1 (Limestone pavement) habitat complex. Where wind turbines are installed see GM8.

#### GC1 Lowland calcareous grassland (PHT)

See APPENDIX 2 for BAP definition

**Description:** Usually enclosed grasslands managed, not intensively, as pasture, on shallow lime-rich soils in the lowlands, often on escarpments or dry valley slopes. They often support a very rich flora. (UK Biodiversity Group, 1998)

**Required multiplex codes:** See GC0.

#### GC11 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (AN1)

**Description:** Dry to semi-dry calcareous herb-rich and grass-rich Mesobromion grasslands with upright brome *Bromus erectus*, and common rock-rose *Helianthemum nummularium*, meadow oat-grass *Helictotrichon pratense*, sheep's fescue *Festuca ovina*, and lady's bedstraw *Galium verum* are typically found. (Brown *et. al.*, 1997)

**Required multiplex codes:** See GC0.

#### GC12 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (important orchid sites) (AN1)

**Description:** As above but includes sites recorded as special areas of conservation for orchids. (Brown *et. al.*, 1997)

**Required multiplex codes:** See GC0.

#### GC13 Lowland Calcareous Grassland with Acidic Indicators (SWT)

**Description:** Occurs where typical lowland calcareous grassland occurs with some acidophilous species at low cover. Calicole species include Salad Burnet *Sanguisorba minor*, common rock-rose *Helianthemum nummularium*, meadow oat-grass *Helictotrichon pratense*, and Lady's bedstraw *Galium verum*. Species more often associated with acidic habitats are also present at low cover such as tormentil *Potentilla erecta*, heath bedstraw *Galium saxatile*, Heath grass *Danthonia decumbens*, ericaceous species and Lichens such as *Peltigera* spp. and *Cladonia* spp may also be present

**Distinguished from** GA1C by abundance of calcicoles and relatively low abundance of acidophilous species. Distinguished from GC1H by the absence of ericaceous species

#### GC14 Heathy Lowland Calcareous Grassland (SWT)

**Description:** Dry-to semidry calcareous herb-rich limestone grassland with dwarf shrubs such as bilberry *Vaccinium myrtillus*, ling *Calluna vulgaris*, bell heather *Erica cinerea*, and Western gorse *Ulex gallii* are growing at a coverage of less than 25%. **Distinguished from** GC1A by presence of ericaceous species.

#### GC1Z Other Lowland Calcareous Grassland (SWT)

**Description:** Typical lowland calcareous with an absence of ericaceous species or acid indicators

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### GC2 Upland calcareous grassland (PHT)

**Description:** Often unenclosed grasslands developed on calcareous substrates in the uplands. Generally restricted to shallow soils derived from a variety of lime-rich bedrocks. This habitat comprises various forms of grassland characterised by the prominence of calcicolous ('calcium-loving') grasses and herbs. (UK Biodiversity Group, 1999b)

**Required multiplex codes:** See GC0.

#### GC21 Alpine and subalpine calcareous grasslands (AN1)

**Description:** These species-rich mat-grass *Nardus* spp. grasslands tend to develop where there is flushing through base-rich strata on siliceous bedrock. These may include moderately base-rich metamorphic and igneous rocks, but species-rich *Nardus* grasslands on limestone are excluded from the definition. The altitudinal range varies from near sea-level to moderately high at its upper limit of between 800 and 900 m. (Brown *et al.*, 1997)

**Required multiplex codes:** See GC0.

#### GC22 Species-rich *Nardus* grassland on siliceous substrates in mountain areas (AN1)

**Description:** This habitat type occurs on lime-rich soils from near sea-level to an altitude of over 1000m. It consists of short, often grazed, species-rich mixtures of mountain avens *Dryas octopetala*, arctic-alpine cushion herbs, grasses and sedges. At low-altitude, colonisation of the grasslands by trees and shrubs is prevented partly by exposure and partly by grazing. At high altitude the grasslands are maintained by the harsh climate, though species composition may be altered by grazing. This is one of the most important upland habitats in the UK for rare arctic-alpine plants and other rare montane plants and animals, including the endemic Scottish primrose *Primula scotica*. Indeed, areas with this habitat type form a large proportion of the localities in the Highlands traditionally regarded as important for their arctic-alpine flora. (Brown *et al.*, 1997)

**Required multiplex codes:** See GC0.

### Neutral grassland

#### GN0 Neutral grassland (BHT)

**Description:** Unimproved or semi-improved mesotrophic grassland on neutral soils (pH 4.5 - 6.5), typically enclosed and either grazed or mown or with a combination of both (as in aftermath grazing). Includes ungrazed, coarse grasslands; upland and lowland hay meadows and pastures; flood meadow and flood pasture (alluvial meadows and water meadows); inundation grassland (including silver meadows); species-poor tussocky and rushy moist grassland; permanently moist or even waterlogged grassland where the vegetation is dominated by grasses (other than *Molinia*); and tall and unmanaged grasslands. (Jackson D.L., 2000)

**Not included:** Moist or permanently waterlogged vegetation dominated by purple moor-grass *Molinia*, or rushes other than hard or soft rush *Juncus inflexus/effusus* should be included under a EM4~ purple moor grass and rush pastures category. Maritime grassland communities confined to coastal habitats are included in SS1 and SS2 categories. Continuous patches of non-dwarf-gorse scrub >0.25ha (including common gorse) should be included under WB2 Scrub woodland (SC). Continuous patches of bracken >0.25ha should be included under a BR~ Bracken category.

**Required multiplex codes:** Qualify the GN~ Neutral grassland category with a management code from the Land-use/Description Section (a GM~ Grassland management category, and a GL~ Grassland use category if applicable). Include scattered trees by cross-referencing to a TS~ category; scattered scrub by cross-referencing with SC12; patches of non-dwarf-gorse scrub species with a continuous canopy up to 0.25 ha by cross-referencing with SC11; and patches of scattered bracken and continuous bracken <0.25ha by cross-referencing with a Patchy Bracken (PA1) category and tussock rush by cross-referencing with a Tussock Rush (RU0) category. Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section. If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex. In cases where the habitat lies over limestone pavement, it should be cross-referenced with a LP1 (Limestone pavement) habitat complex. Where wind turbines are installed see GM8.



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### GN1 Lowland meadows (PHT)

See APPENDIX 2 for BAP definition

**Description:** Unimproved or good semi-improved grassland below 300m managed for hay or pasture. Characteristic species include fritillary *Fritillaria meleagris*, dyer's greenweed *Genista tinctoria*, green-winged orchid *Orchis morio*, greater butterfly orchid *Plantanthera chlorantha*, pepper saxifrage *Silaum silaus* and wood bitter vetch *Vicia orobus*. This habitat is also important for skylark *Alauda arvensis* and other farmland birds, notably the corncrake *Crex crex*. (UK Biodiversity Group, 1998)

**NB SWT:** In practice it is unusual to find these species; see description for GN1231 Somerset species-rich lowland meadows for a list of more commonly recorded species which are indicative of this habitat.

**Not included:** *Anthoxanthum odoratum* - *Geranium sylvaticum* grasslands which are covered in GN2 'Upland hay meadow'. See GN0.

**NB SWT 2015:** Grasslands with greater than 30% sharp-flowered rush or jointed rush AND either greater bird's-foot trefoil and/or common marsh bedstraw/ fen bedstraw are covered within EM42 Molinia meadow.

**Required multiplex codes:** See GN0.

#### GN11 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) (AN1)

**Description:** Species-rich hay meadows on little to moderately fertilised soils in the lowlands. These meadows occur on alluvial soils and are usually periodically flooded. (Brown *et al.*, 1997)

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

#### GN12 Somerset lowland meadows (SWT)

**Description:** Place holder to accommodate Somerset local lowland meadows. This is identical to **GN1Z Other lowland meadows (IC)**. All Habitats retained with this code will be converted to GN1Z. Should only be used if there is a strong belief that one of the codes below should be applied but there is not enough data to make the determination. Should **not** be used in the field.

**See:** GN1Z Other lowland meadows (IC)

#### ~~GN121 Somerset (SWT)~~

~~**Description:** Includes all lowland meadows dominated by neutral grassland indicators with some calcareous grassland indicators.~~

~~**Not included:** See GN0.~~

~~**Required multiplex codes:** See GN0~~

#### GN1211 Somerset lowland meadows with calcareous indicators (SWT) (formerly Mendip)

**Description:** Unimproved or good semi-improved grassland below 300m managed for hay or pasture. Characteristic species include common knapweed *Centaurea nigra*, greater knapweed *Centaurea scabiosa*, oxeye daisy *Leucanthemum vulgare*, cats-ear *Hypochaeris radicata*, lady's bedstraw *Galium verum* and crested dogs-tail *Cynosurus cristatus*. Species such as salad burnet *Sanguisorba minor*, hoary plantain *Plantago media* and cowslip *Primula veris* indicate that there is a calcareous element in the soil reflected in the vegetation composition. Equates with MG5b.

**NB SWT 2016:** If at least two of the following wildflower indicator species are frequent and another two are at least occasional in the sward, and at least one species indicative of more calcareous grassland is present, then the grassland fully meets the definition for this habitat (*species which are indicative of more calcareous grassland are listed in italics*):

Agrimony, Autumn hawkbit, Betony, Bitter vetch, Common knapweed, Bugle, Burnet saxifrage, Common bird's-foot trefoil, Devil's bit scabious, Dropwort, Dyer's greenweed, Eyebrights, Goat's-beard, Greater bird's-foot trefoil, Lady's mantles, Meadow vetchling, Meadowsweet, Milkworts, Rough hawkbit, Orchids, Oxeye daisy, Saw-wort, Wood anemone, Yellow rattle, Small blue-green sedges, Field scabious, Pignut, Pepper saxifrage, *Greater knapweed*, *Lady's bedstraw*, *Salad burnet*, *Hoary plantain*, *Cowslip*, *Agrimony*



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

(The above is a reduced version taken from the Defra FEP Handbook with indicators of both neutral and more calcareous grassland species included)

#### ~~GN122 Somerset lowland meadows with acid indicators (SWT)~~

~~**Description:** Includes all lowland meadows dominated by neutral grassland indicators with some acid grassland indicators.~~

~~**Not included:** See GN0.~~

~~**Required multiplex codes:** See GN0~~

#### GN1221 Somerset lowland meadows with acid indicators (SWT) (formerly Mendip)

**Description:** Unimproved or good semi-improved grassland below 300m managed for hay or pasture. Characteristic species include common knapweed *Centaurea nigra*, self heal *Prunella vulgaris*, common cats-ear *Hypochaeris radicata*, and crested dogs-tail *Cynosurus cristatus*. Species such as tormentil *Potentilla erecta*, betony *Stachys officinalis* and field woodrush *Luzula campestris* indicate that there is an acidic element in the soil reflected in the vegetation composition. Equates with MG5c

**NB SWT 2016:** If at least two of the following wildflower indicator species are frequent and another two are at least occasional in the sward, and at least one of the species indicative of more acid grassland is present, then the grassland fully meets the definition for this habitat (*species which are indicative of more acidic grassland are listed in italics*):

Agrimony, Autumn hawkbit, Betony, Bitter vetch, Common knapweed, Bugle, Burnet saxifrage, Common bird's-foot trefoil, Devil's bit scabious, Dropwort, Dyer's greenweed, Eyebrights, Goat's-beard, Greater bird's-foot trefoil, Lady's mantles, Meadow vetchling, Meadowsweet, Milkworts, Rough hawkbit, Orchids, Oxeye daisy, Saw-wort, Wood anemone, Yellow rattle, Small blue-green sedges, Field scabious, Pignut, Pepper saxifrage, *Tormentil*, *Betony*, *Field woodrush*,

(The above is a reduced version taken from the Defra FEP Handbook with indicators of both neutral and more acidic grassland species included)

#### ~~GN123 Somerset species-rich lowland meadows (SWT)~~

~~**Description:** Species-rich lowland meadow habitats with a variety of grasses, sedges and with a high cover of herbs.~~

~~**Not included:** See GN0.~~

~~**Required multiplex codes:** See GN0.~~

~~**Relevant NVC codes:** MG5, MG8 & AgCx (a Somerset Levels and Moore variation of MG8)~~

#### GN1231 Somerset species-rich lowland meadows (SWT) (formerly Mendip)

**Description:** If at least two of the following wildflower indicator species are frequent and another two are at least occasional in the sward then the grassland fully meets the definition for this habitat:

Agrimony, Autumn hawkbit, Betony, Bitter vetch, Common knapweed, Bugle, Burnet saxifrage, Common bird's-foot trefoil, Devil's bit scabious, Dropwort, Dyer's greenweed, Eyebrights, Goat's-beard, Greater bird's-foot trefoil, Lady's mantles, Meadow vetchling, Meadowsweet, Milkworts, Rough hawkbit, Orchids, Oxeye daisy, Saw-wort, Wood anemone, Yellow rattle, Small blue-green sedges, Field scabious, Pignut, Pepper saxifrage

(The above is a reduced version taken from the Defra FEP Handbook with indicators of more calcareous, more acidic and wetland/floodplain grasslands excluded. The latter three FEP indicator species were added in 2016 as typical neutral species not listed elsewhere in IHS Lowland meadow subcategories)

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### GN124 Somerset Less Species-rich Lowland Meadow (SWT) (formerly Mendip)

**Description:** If three of the following indicator species are occasional or four are present at lower frequencies (but not limited to field edges or corners) then the grassland meets the definition:

Agrimony, Autumn hawkbit, Betony, Bitter vetch, Common knapweed, Bugle, Burnet saxifrage, Common bird's-foot trefoil, Devil's bit scabious, Dropwort, Dyer's greenweed, Eyebrights, Goat's-beard, Greater bird's-foot trefoil, Lady's mantles, Meadow vetchling, Meadowsweet, Milkworts, Rough hawkbit, Orchids, Oxeye daisy, Saw-wort, Wood anemone, Yellow rattle, Small blue-green sedges, Field scabious, Pignut, Pepper saxifrage

(The above is a reduced version taken from the Defra FEP Handbook with indicators of more calcareous, more acidic and wetland/floodplain grasslands excluded. The latter three FEP indicator species were added in 2016 as typical neutral species not listed elsewhere in IHS Lowland meadow subcategories)

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

#### GN125 Somerset Lowland Meadow with Wetland Indicators (SWT)

**Description:** Unimproved or good semi-improved grassland below 300m managed for hay or pasture. Includes species which indicate a vegetation composition adapted to wet grassland (listed in *italics* below). Other wetland indicators may include Water-dropworts, Spike rushes, Brown sedge, Amphibious bistort.

If at least two of the following wildflower indicator species are frequent and another two are at least occasional in the sward, and at least one of the species indicative of wetland is present, then the grassland fully meets the definition for this habitat (species which are indicative of wetter habitats are listed in *italics*):

Agrimony, Autumn hawkbit, Betony, Bitter vetch, Common knapweed, Bugle, Burnet saxifrage, Common bird's-foot trefoil, Devil's bit scabious, Dropwort, Dyer's greenweed, Eyebrights, Goat's-beard, Greater bird's-foot trefoil, Lady's mantles, Meadow vetchling, Meadowsweet, Milkworts, Rough hawkbit, Orchids, Oxeye daisy, Saw-wort, Wood anemone, Yellow rattle, Small blue-green sedges, Field scabious, Pignut, Pepper saxifrage, *Common bistort*, *Common meadow rue*, *Great burnet*, *Marsh valerian*, *Marsh/Fen bedstraw*, *Marsh marigold*, *Pepper-saxifrage*, *Ragged robin*, *Sneezewort*, *Water avens*, and *Water mint*.

(The above list is a reduced version taken from the Defra FEP Handbook with indicators of both neutral and wet grassland included)

#### ~~GN12 Other lowland meadows (IC)~~

~~**Description:** Includes all lowland meadow not falling within the GN11 Lowland hay meadow category.~~

~~**NB SWT** SWT field surveyors should use GN12 codes when possible/appropriate, rather than this code~~

~~**Not included:** See GN0.~~

~~**Required multiplex codes:** See GN0.~~

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### GN2 Upland hay meadows [= Northern hay meadows (AN1)] (PHT)

**Description:** Upland hay meadows are confined to areas where non-intensive hay-meadow treatment has been applied in a sub montane climate. They are most characteristic of brown earth soils on level to moderately sloping sites between 200m and 400m altitude. The habitat comprises the NVC community MG3, *Anthoxanthum odoratum* - *Geranium sylvaticum* grassland and is characterised by a dense growth of grasses and herbaceous dicotyledons up to 60 - 80 cm high. No single grass species is consistently dominant and the most striking feature of the vegetation is generally the variety and abundance of dicotyledons, including wood crane's-bill *Geranium sylvaticum*, pignut *Conopodium majus*, great burnet *Sanguisorba officinalis* and lady's mantles *Alchemilla* spp. (UK Biodiversity group, 1998)

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

#### GN3 Somerset neutral grassland (SWT)

**Description:** All unimproved and semi-improved grasslands in the uplands, and unimproved and semi-improved grasslands in the lowlands aside from meadows and pastures regarded as Lowland hay meadow. This includes ungrazed coarse false oat-grass *\*Arrhenatherum elatius\** grasslands; (very species-poor examples of upland hay meadows); good semi-improved permanent grasslands; ill-drained permanent Yorkshire fog *\*Holcus lanatus\** and wavy hair-grass *\*Deschampsia cespitosa\** pastures and soft rush *\*Juncus effusus\** rush pastures; and inundation grasslands.

**This is identical to GNZ Other neutral grassland (IC).** All Habitats retained with this code will be converted to GNZ. Should only be used if there is a strong belief that one of the codes below should be applied but there is not enough data to make the determination. Should **not** be used in the field.

**See:** GNZ Other neutral grassland (IC)

**NB SWT:** This habitat is Neutral grassland (**most often semi-improved**) which doesn't fall into UK Priority Habitat Lowland Meadow or Improved grassland categories

**NB SWT 2015:** Grasslands with greater than 30% sharp-flowered rush or jointed rush are considered to be rush pasture.

Rush pastures which have **no greater bird's-foot trefoil and/or common marsh bedstraw/ fen bedstraw** should be coded as either GN35 Somerset Rush pasture "Species-poor" (SWT) – new code for 2015) or GN333 Levels rush pasture "Species-poor" (SWT)

Rush pastures which **do** support either **greater bird's-foot trefoil and/or common marsh bedstraw/ fen bedstraw** should be coded as an EM42 Molinia meadow code

#### GN31 Somerset neutral grassland "Species rich" (SWT) (formerly Mendip)

**Description:** Moderately species-rich, with typically 9–15 species/m<sup>2</sup>. Total cover of wildflowers and sedges usually less than 30%, excluding white clover, creeping buttercup and injurious weeds. Rye-grass cover generally less than 25%. **Four or more semi-improved grassland wildflower indicators at least occasional in the sward:**

Autumn hawkbit, black medick, cuckooflower, bulbous buttercup, Common cat's-ear, common sorrel, field wood-rush, germander speedwell, lesser trefoil, meadow buttercup, red clover, selfheal, yarrow, ribwort plantain

A limited number of indicator species from BAP grassland habitats may be present, and may be only rare or localized in the sward. **Can substitute for a semi-improved indicator if at least occasional.**

**NB SWT:** This habitat is Neutral grassland (**most often semi-improved**) which doesn't fall into UK Priority Habitat Lowland Meadow or Improved grassland categories

#### GN311 Somerset neutral grassland with Calcareous Indicators "Species-rich" (SWT) (formerly Mendip)

**Description:** A subset of GN3 (All mesotrophic grasslands not considered to be Improved Grassland or Lowland or Meadow or Upland Hay Meadow UK BAP Priority habitat) but also having very small amounts of calcicolous species throughout. Such species include upright brome *Bromus erectus* (at less than the 20% cover that would indicate GC1), salad burnet *Sanguisorba minor*, glaucous sedge *Carex flacca* dwarf thistle *Cirsium acaule*, agrimony *Agrimonia eupatoria*, yellow oat-grass *Trisetum flavescens*, spiny restharrow *Ononis spinosa*, meadow and downy oat grass *Avenula pratensis* and *A. pubescens* and crested hair-grass *Koeleria macrantha* present in the absence of species assemblages that indicate BAP priority habitat.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

**Additional note:** This calcareous sub category should be used to identify areas suitable for restoration to GC1, PHT. Where calcicolous species are **confined** to small outcrops scattered throughout this code should not be used.

#### ~~GN312 Somerset neutral grassland without Calcareous Indicators "Species-rich" (SWT) (formerly Mendip) (DO NOT USE — USE GN31Z INSTEAD)~~

~~**Description:** Non ruderal herb cover (excluding White Clover, Creeping Buttercup and injurious weeds — Nettle, Broad-leaved Dock, Curled Dock, Creeping Thistle, Spear Thistle & Ragwort) will normally exceed 10% during the summer months. There will normally be between 9 and 15 plant species per square metre. At least two species from the indicator list below are at least frequent in the sward and a further three are occasional.~~

~~Autumn hawkbit, black medick, cuckooflower, bulbous buttercup, Common cat's ear, common sorrel, field wood-rush, germander speedwell, lesser trefoil, meadow buttercup, red clover, selfheal, yarrow, ribwort plantain.~~

#### **GN31Z Somerset Other Species-rich Neutral Grassland (SWT) (formerly Mendip) REPLACEMENT FOR GN312 CODE**

**Description:** Any species-rich grassland which fits GN31 definition not classified in any of the above categories. **Four or more semi-improved grassland wildflower indicators at least occasional in the sward:**

Autumn hawkbit, black medick, cuckooflower, bulbous buttercup, Common cat's ear, common sorrel, field wood-rush, germander speedwell, lesser trefoil, meadow buttercup, red clover, selfheal, yarrow, ribwort plantain.

A limited number of indicator species from BAP grassland habitats may be present, and may be only rare or localized in the sward. **Can substitute for a semi-improved indicator if at least occasional.**

#### **GN32 Somerset neutral grassland "Species poor" (SWT) (formerly Mendip)**

**Fewer** than four semi-improved (or BAP) grassland wildflower indicators occasional in the sward:

Autumn hawkbit, black medick, cuckooflower, bulbous buttercup, common cat's ear, common sorrel, field wood-rush, germander speedwell, lesser trefoil, meadow buttercup, red clover, selfheal, yarrow, ribwort plantain

#### **GN321 Somerset neutral grassland "Species poor" with calcareous indicators (SWT)**

**Fewer** than four semi-improved (or BAP Meadow or Calcareous) grassland wildflower indicators occasional in the sward. See the semi-improved indicators above in GN32.

Unusually, habitat contains very small amounts of calcicolous species throughout, but fewer than 4 of these are occasional. Such species may include salad burnet *Sanguisorba minor*, glaucous sedge *Carex flacca*, agrimony *Agrimonia eupatoria*, in the absence of species assemblages that indicate BAP or species-rich semi-improved priority habitat.

*Nb. This habitat has been included to account for the circumstances found on Strip Lynchett sites. While initially found in the Mendip Hills this may occur elsewhere.*

#### **GN32Z Somerset neutral grassland "Species poor" without calcareous indicators**

This is identical to GN32 in description but has none of the calcareous indicators named in GN321. It is definitely species poor neutral grassland.

#### **GN35 Somerset Rush pasture "Species-poor" (SWT)**

### *Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

**Description:** Wet meadows with much sharp-flowered rush *Juncus acutiflorus*, jointed rush *Juncus articulatus* or soft rush *Juncus effuses* (soft rush will only ever co-dominate). Grasslands with greater than 30% sharp-flowered rush or jointed rush are considered to be rush pasture. Other species present include Yorkshire-fog *Holcus lanatus*, Meadowsweet *Filipendula ulmaria*, marsh thistle *Cirsium palustre*, water mint *Mentha aquatica* and cuckoo-flower *Cardamine pratensis*. Grasses may form a relatively dense understorey if grazed. Greater bird's-foot trefoil *Lotus pedunculatus* and/or common marsh bedstraw *Galium palustre* / fen bedstraw *Galium uliginosum* **must not** be present within the sward to be included within this category

**Not included:** Rush pastures with greater bird's-foot trefoil or common marsh bedstraw/ fen bedstraw (see EM421 Species-rich rush pastures (SWT))

**Required multiplex codes:** See GN0.

### **~~GNZ Other neutral grassland (IC)~~**

**Description:** ~~All unimproved and semi-improved grasslands in the uplands, and unimproved and semi-improved grasslands in the lowlands aside from meadows and pastures regarded as Lowland hay meadow. This includes ungrazed coarse fescue grass *Arrhenatherum elatius* grasslands; (very species poor examples of upland hay meadows); good semi-improved permanent grasslands; ill drained permanent Yorkshire fog *Holcus lanatus* and wavy hair grass *Deschampsia cespitosa* pastures and soft rush *Juncus effusus* rush pastures; and inundation grasslands.~~

**~~NB SWT: SWT field surveyors please do not use this code, use GN3 codes where possible instead~~**

**~~Not included:~~** See GN0.

**~~Required multiplex codes:~~** See GN0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## Levels Neutral grassland

**This section only applies to those neutral grasslands found in the Somerset Levels and Moors**

The Somerset Levels and moors are a coastal plain and wetland area of Somerset, South West England, running south from the Mendips to near the Blackdown Hills and South East towards Yeovil.

The Somerset Levels have an area of about 160,000 acres (650 km<sup>2</sup>) and are bisected by the Polden Hills; the areas to the south are drained by the River Parrett, and the areas to the North by the rivers Axe and Brue. The area is defined in APPENDIX 1 on page128

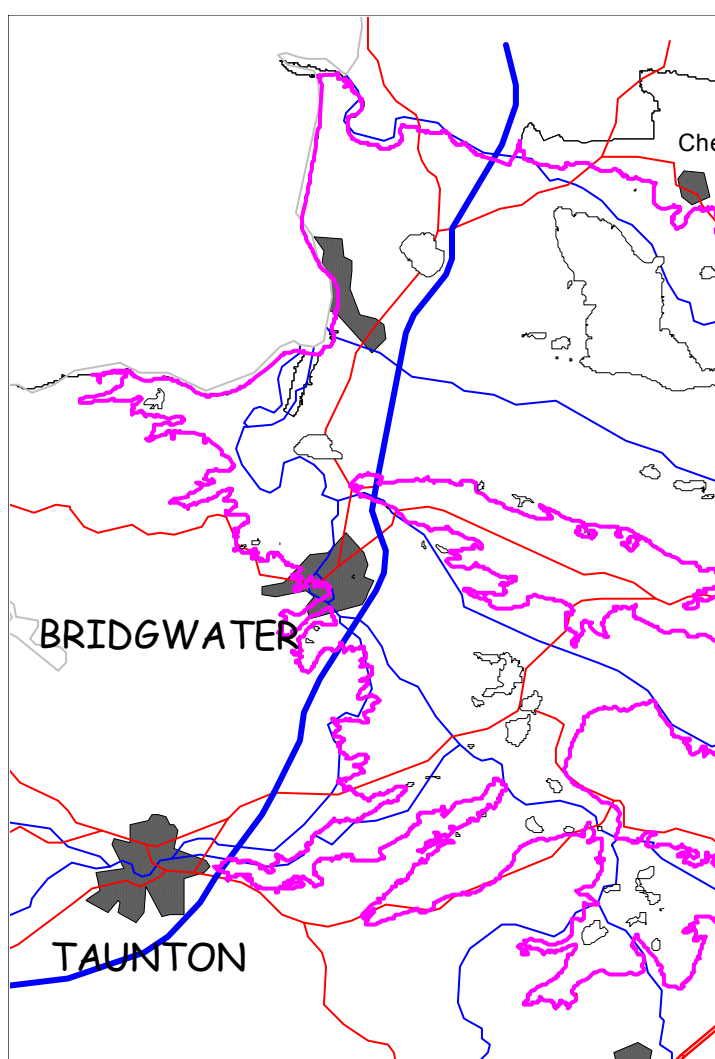
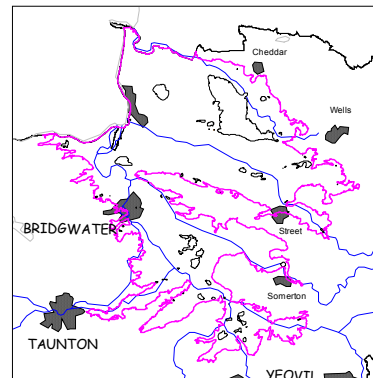


Figure 1 Boundary of Somerset Levels IHS Codes.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### GN0 Neutral grassland (BHT)

**Description:** Unimproved or semi-improved mesotrophic grassland on neutral soils (pH 4.5 - 6.5), typically enclosed and either grazed or mown or with a combination of both (as in aftermath grazing). Includes ungrazed, coarse grasslands; upland and lowland hay meadows and pastures; flood meadow and flood pasture (alluvial meadows and water meadows); inundation grassland (including silver meadows); species-poor tussocky and rushy moist grassland; permanently moist or even waterlogged grassland where the vegetation is dominated by grasses (other than *Molinia*); and tall and unmanaged grasslands. (Jackson D.L., 2000)

**Not included:** Moist or permanently waterlogged vegetation dominated by purple moor-grass *Molinia*, or rushes other than hard or soft rush *Juncus inflexus/effusus* should be included under a EM4~ purple moor grass and rush pastures category. Maritime grassland communities confined to coastal habitats are included in SS1 and SS2 categories. Continuous patches of non-dwarf-gorse scrub >0.25ha (including common gorse) should be included under WB2 Scrub woodland (SC). Continuous patches of bracken >0.25ha should be included under a BR~ Bracken category.

**Required multiplex codes:** Qualify the GN~ Neutral grassland category with a management code from the Land-use/Description Section (a GM~ Grassland management category, and a GL~ Grassland use category if applicable). Include scattered trees by cross-referencing to a TS~ category; scattered scrub by cross-referencing with SC12; patches of non-dwarf-gorse scrub species with a continuous canopy up to 0.25 ha by cross-referencing with SC11; and patches of scattered bracken and continuous bracken <0.25ha by cross-referencing with a Patchy Bracken (PA1) category and tussock rush by cross-referencing with a Tussock Rush (RU0) category. Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section. If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex. In cases where the habitat lies over limestone pavement, it should be cross-referenced with a LP1 (Limestone pavement) habitat complex. Where wind turbines are installed see GM8.

#### GN1 Lowland meadows (PHT)

**Description:** Unimproved or good semi-improved grassland below 300m managed for hay or pasture. Characteristic species include fritillary *Fritillaria meleagris*, dyer's greenweed *Genista tinctoria*, green-winged orchid *Orchis morio*, greater butterfly orchid *Plantanthera chlorantha*, pepper saxifrage *Silene silaus* and wood bitter vetch *Vicia orobus*. This habitat is also important for skylark *Alauda arvensis* and other farmland birds, notably the corncrake *Crex crex*. (UK Biodiversity Group, 1998)

**NB SWT:** In practice it is unusual to find these species; see description for GN1231 Somerset species-rich lowland meadows for a list of more commonly recorded species which are indicative of this habitat.

**Not included:** *Anthoxanthum odoratum* - *Geranium sylvaticum* grasslands which are covered in GN2 'Upland hay meadow'. See GN0.

**NB SWT 2015:** Grasslands with greater than 30% sharp-flowered rush or jointed rush AND either greater bird's-foot trefoil and/or common marsh bedstraw/ fen bedstraw are covered within EM42 *Molinia* meadow.

**Required multiplex codes:** See GN0.

#### GN11 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) (AN1)

**Description:** Species-rich hay meadows on little to moderately fertilised soils in the lowlands. These meadows occur on alluvial soils and are usually periodically flooded. (Brown *et al.*, 1997)

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

#### ~~GN123 Somerset species-rich lowland meadows (SWT)~~

~~**Description:** Species-rich lowland meadow habitats with a variety of grasses, sedges and with a high cover of herbs.~~

~~**Not included:** See GN0.~~

~~**Required multiplex codes:** See GN0.~~

~~**Relevant NVC codes:** MC5, MC8 & AgCx (a Somerset Levels and Moore variation of MC8)~~

#### GN1232 Levels wet species-rich lowland meadow (SWT) (formerly Brue)



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

**Description:** Grassy though a few rushes may be present. Herbs are also relatively well represented. Species should include:

- **Marsh marigold** *Caltha palustris*, **common mouse-ear** *Cerastium fontanum*, **daisy** *Bellis perennis*, **autumn hawkbit** *Leontodon autumnalis*, meadow buttercup *Ranunculus acris*, white clover *Trifolium repens*, meadowsweet *Filipendula ulmaria*, crested dog's-tail *Cynosurus cristatus*, red fescue *Festuca rubra*, carnation sedge *Carex panicea*, brown sedge *Carex disticha*, common spike-rush *Eleocharis palustris* and common sorrel *Rumex acetosa* (MG8); or
- Creeping bent *Agrostis capillaris*, common sedge *Carex nigra*, glaucous sedge *Carex flacca*, carnation sedge *Carex panicea*, hairy sedge *Carex hirta*, cuckoo-flower *Cardamine pratensis*, creeping buttercup *Ranunculus repens*, amphibious bistort *Persicaria amphibia*, white clover *Trifolium repens*, marsh ragwort *Senecio aquaticus*, floating sweet-grass *Glyceria fluitans*, meadow fescue *Festuca pratensis*, meadow buttercup *Ranunculus acris*, marsh foxtail *Alopecurus geniculatus* and brown sedge *Carex disticha*. Other species may include meadowsweet *Filipendula ulmaria*, ragged robin *Lychnis flos-cuculi* and tubular water-dropwort *Oenanthe fistula* (AgCx)

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** MG8 & AgCx

### GN1233 Levels dry species-rich lowland meadow (SWT) (formerly Brue)

**Description:** Herb-rich grassland often with fine-leaved grasses. Grasses include red fescue *Festuca rubra*, crested dog's-tail *Cynosurus cristatus*, cock's-foot *Dactylis glomerata* and common bent *Agrostis capillaris*. Herbs include common/greater bird's-foot trefoil *Lotus corniculatus/peduncularis*, common knapweed *Centaurea nigra*, yarrow *Achillea millefolium*, selfheal *prunella vulgaris*, common cat's-ear *Hypochaeris radicata*, bulbous buttercup *Ranunculus bulbosus*, white clover *Trifolium repens*, red clover *Trifolium pratense* and ribwort plantain *Plantago lanceolata*. Other species may include pepper saxifrage *Silene silaus*, lesser stichwort *Stellaria graminea*, meadowsweet *Filipendula ulmaria*, creeping cinqfoil *Potentilla reptans* and meadow vetchling *Lathyrus pratensis*

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** MG5

### GN3 Somerset neutral grassland (SWT)

**Description:** All unimproved and semi-improved grasslands in the uplands, and unimproved and semi-improved grasslands in the lowlands aside from meadows and pastures regarded as Lowland hay meadow. This includes ungrazed coarse false oat-grass *\*Arrhenatherum elatius\** grasslands; (very species-poor examples of upland hay meadows); good semi-improved permanent grasslands; ill-drained permanent Yorkshire fog *\*Holcus lanatus\** and wavy hair-grass *\*Deschampsia cespitosa\** pastures and soft rush *\*Juncus effusus\** rush pastures; and inundation grasslands.

**This is identical to GNZ Other neutral grassland (IC).** All Habitats retained with this code will be converted to GNZ. Should only be used if there is a strong belief that one of the codes below should be applied but there is not enough data to make the determination. Should **not** be used in the field.

**See:** GNZ Other neutral grassland (IC)

**NB SWT:** This habitat is Neutral grassland (**most often semi-improved**) which doesn't fall into UK Priority Habitat Lowland Meadow or Improved grassland categories

**NB SWT 2015:** Grasslands with greater than 30% sharp-flowered rush or jointed rush are considered to be rush pasture.

Rush pastures which have no greater bird's-foot trefoil and/or common marsh bedstraw/ fen bedstraw should be coded as either GN35 Somerset Rush pasture "Species-poor" (SWT) – new code for 2015) or GN333 Levels rush pasture "Species-poor" (SWT)

Rush pastures which do support either greater bird's-foot trefoil and/or common marsh bedstraw/ fen bedstraw should be coded as an EM42 Molinia meadow code

### GN33 Levels wet neutral grassland (SWT) (formerly Brue)

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

**Description:** Other neutral grassland with wet grassland indicators including sweet-grasses *Glyceria* spp., cuckoo-flower *cardamine pratensis*, rushes *Juncus* spp., marsh foxtail *Alopecurus geniculatus*, amphibious bistort *Persicaria amphibia*, reed canary-grass *Phalaris arundinacea*, silverweed *Potentilla anserina* and lesser spearwort *Ranunculus flammula*. Also included are herb-poor grasslands dominated by Yorkshire-fog, tufted hair-grass and creeping bent. Includes wet grasslands with a cover of less than 30% of sharp-flowered or jointed-rush and rush pastures (i.e. those with greater than 30% sharp-flowered rush or jointed rush) which have no greater bird's-foot trefoil and/or common marsh bedstraw.

**NB SWT:** This habitat is Neutral grassland (often semi-improved) which doesn't fall into UK Priority Habitat Lowland Meadow or Improved grassland categories

**Not included:** Rush pastures with greater bird's-foot trefoil and/or common marsh bedstraw (see EM421 Species-rich rush pastures (SWT))

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** MG7c, MG9, MG10 – MG13 and Habitats that do not accurately match NVC codes

#### GN331 Levels wet neutral grassland "Species-rich" (SWT) (formerly Brue)

**Description:** Wet species-rich grassland with some species indicative of GN11 – Lowland hay meadow, GN1232 **Levels wet species-rich lowland meadow (SWT)** (formerly Brue) and EM4 – Purple moor grass and rush pastures, but not enough of a correlation to be included within these categories.

Wet grassland with more than 30% cover of herbs and sedges (excluding white clover *Trifolium repens* and creeping buttercup *Ranunculus repens*). With atleast one of the following species present frequently within the sward: autumn hawkbit *Leontodon autumnalis*, common bistort *Persicaria bistorta*, common meadow-rue *Thalictrum flavum*, devil's-bit scabious *Succisa pratensis*, great burnet *Sanguisorba officinalis*, meadowsweet *Filipendula ulmaria*, narrow-leaved water-dropwort *Oenanthe salaifolia*, pepper saxifrage *Silene silaus*, common spike-rush *Eleocharis palustris*, marsh valerian *Valeriana dioica* or amphibious bistort *Persicaria amphibia*.

Other species may include agrimony *Agrimonia eupatoria*, betony *Stachys officinalis*, common bird's-foot trefoil *Lotus corniculatus*, black knapweed *Centaurea nigra*, greater bird's-foot trefoil *Lotus pedunculatus*, marsh valerian *Valeriana dioica*, meadow vetchling *Lathyrus pratensis*, sneezewort *Achillea ptarmica* and water mint *Mentha aquatica*

**Not included:** See GN33

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** See GN33

#### GN332 Levels wet neutral grassland "Species-poor" (SWT) (formerly Brue)

**Description:** Wet grassland with less than 30% cover of herbs and sedges (excluding white clover *Trifolium repens* and creeping buttercup *Ranunculus repens*). Herb-poor grasslands with frequent Yorkshire-fog *Holcus lanatus*, tufted hair-grass *Deschampsia caespitosa*, soft rush *Juncus effusus*, hard rush *Juncus inflexus*, sharp-flowered rush *Juncus acutiflorus*, compact rush *Juncus conglomeratus*, creeping buttercup and lesser spearwort *Ranunculus flammula*.

**Not included:** See GN33

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** See GN33

#### GN333 Levels Rush pasture "Species-poor" (SWT) (formerly Brue)

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

**Description:** Wet meadows with much sharp-flowered rush *Juncus acutiflorus*, jointed rush *Juncus articulatus* or soft rush *Juncus effuses* (soft rush will only ever co-dominate). Grasslands with greater than 30% sharp-flowered rush or jointed rush are considered to be rush pasture. Other species present include Yorkshire-fog *Holcus lanatus*, Meadowsweet *Filipendula ulmaria*, marsh thistle *Cirsium palustre*, water mint *Mentha aquatica* and cuckoo-flower *Cardamine pratensis*. Grasses may form a relatively dense understorey if grazed. Greater bird's-foot trefoil *Lotus pedunculatus* and/or common marsh bedstraw *Galium palustre* **must not** be present within the sward to be included within this category

**Not included:** Rush pastures with greater bird's-foot trefoil or fen bedstraw/ common marsh bedstraw (see EM421 Species-rich rush pastures (SWT))

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** See GN33

### GN34 Levels dry neutral grassland (SWT) (formerly Brue)

**Description:** Other neutral grassland without the wet grassland indicators of GN31.

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** MG6 and Habitats that do not accurately match NVC codes

### GN341 Levels dry neutral grassland "Species-rich" (SWT) (formerly Brue)

**Description:** Dry species-rich grassland with some species indicative of Lowland meadow, but not enough of a correlation to be included within these categories

Dry grassland with more than 30% cover of herbs and sedges (excluding white clover *Trifolium repens* and creeping buttercup *Ranunculus repens*). With four of the following species present (atleast occasionally) within the sward: autumn hawkbit *Leontodon autumnalis*, devil's-bit scabious *Succisa pratensis*, meadowsweet *Filipendula ulmaria*, pepper saxifrage *Silaum silaus*, agrimony *Agrimonia eupatoria*, betony *Stachys officinalis*, common bird's-foot trefoil *Lotus corniculatus*, black knapweed *Centaurea nigra*, greater bird's-foot trefoil *Lotus pedunculatus*, meadow vetchling *Lathyrus pratensis*, sneezewort *Achillea*, burnet saxifrage *Pimpinella saxifraga*, cowslip *Primula officinalis*, field scabious *Knautia arvensis*, goat's-beard *Tragopogon pratensis*, lady's bedstraw *Galium verum*, orchids, pignut *Conopodium majus*, rough hawkbit *Leontodon hispidus*, oxeye daisy *Leucanthemum vulgare*, yellow rattle *Rhinanthus minor*, bugle *Ajuga reptans*, cowslip *Primula veris*, rough hawkbit *Leontodon hispidus* or tormentil *Potentilla erecta*.

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** See GN34

### GN342 Levels dry neutral grassland "Species-poor" (SWT) (formerly Brue)

**Description:** Dry grassland with less than 30% cover of herbs and sedges (excluding white clover *Trifolium repens* and creeping buttercup *Ranunculus repens*). Herb-poor with several of the following grass species: cock's-foot *Dactylis glomerata*, common bent *Agrostis capillaries*, crested dog's-tail *Cyanosurus cristatus*, false oat-grass *Arrhenatherus elatius*, meadow fescue *Festuca pratensis*, meadow foxtail *Alopecurus pratensis*, red fescue *Festuca rubra*, sweet vernal-grass *Anthoxanthum odoratum*, Timothy *Phleum pratense* and tufted hair-grass *Deschampsia caespitosa*

**Not included:** See GN0.

**Required multiplex codes:** See GN0.

**Relevant NVC codes:** See GN32

### ~~GNZ Other neutral grassland (IC)~~

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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

~~**Description:** All unimproved and semi-improved grasslands in the uplands, and unimproved and semi-improved grasslands in the lowlands aside from meadows and pastures regarded as Lowland hay meadow. This includes ungrazed coarse false oat grass *Arrhenatherum elatius* grasslands; (very species poor examples of upland hay meadows); good semi-improved permanent grasslands; ill drained permanent Yorkshire fog *Holcus lanatus* and wavy hair grass *Deschampsia cespitosa* pastures and soft rush *Juncus effusus* rush pastures; and inundation grasslands.~~

~~**NB SWT:** SWT field surveyors please do not use this code, use GN3~ codes where possible instead~~

~~**Not included:** See GN0.~~

~~**Required multiplex codes:** See GN0.~~

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***Improved grassland****GI0 Improved grassland (BHT)**

**Description:** This habitat type is characterised by vegetation dominated by a few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of rye-grass *Lolium* spp. and white clover *Trifolium repens*. Improved grasslands are typically either managed as pasture or mown regularly for silage production or in non-agricultural contexts for recreation and amenity purposes; they are often periodically resown and are maintained by fertiliser treatment and weed control. They may also be temporary and sown as part of the rotation or arable crops but they are only included in this category if they are more than one year old. (Jackson D.L., 2000)

**Not included:** Sown grasslands which are less than one year old are included in the CR~ Arable and horticultural category.

**Required multiplex codes:** Qualify GI0 with a management code from the Land-use/Description Section (a GM~ Grassland management category, and a GL~ Grassland use category). Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section.

**Probably improved grassland****GP0 Grassland, probably improved (RC)**

**Description:** Used in aerial photo interpretation. This is a subjective interpretation based on the colour and structure of the grassland, the apparent management of it, its ease of improvement, the position in the farm-holding, and the intensity of the overall farming operation. See aerial photo interpretation guidelines.

**Possibly unimproved grassland****GU0 Grassland, possibly unimproved (RC)**

**Description:** Used in aerial photo interpretation. This is a subjective interpretation based on the colour and structure of the grassland, the apparent management of it, its difficulty of improvement, the position in the farm-holding, and the intensity of the overall farming operation. See aerial photo interpretation guidelines.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***BRACKEN****Bracken****BR0 Bracken (BHT)**

**Description:** Includes areas >0.25ha in extent dominated by continuous bracken *Pteridium aquilinum* with a canopy cover of > 95% at the height of the growing season. (Jackson D.L., 2000)

**Not included:** Scattered bracken, or patches of continuous bracken <0.25ha are not included here. They are part of the Matrix Vegetation Section categories for Patchy Bracken (i.e. a PA1~ category). Areas of bracken under forest or woodland canopy are included in either WB~ Broadleaved, mixed and yew woodland or the WC~ Coniferous woodland category.

**BR1 Continuous bracken communities with a diverse vernal flora (NVC U20a) (SC)**

**Description:** Dense stands of the *Anthoxanthum odoratum* sub-community of the *Pteridium aquilinum* - *Galium saxatile* NVC community with a diverse spring-flush flora. Herbs other than bracken *Pteridium aquilinum* include heath bedstraw *Galium saxatile*, tormentil *Potentilla erecta*, sheep's fescue *Festuca ovina*, sweet vernal-grass *Anthoxanthum odoratum* and common bent *Agrostis capillaris*. (Rodwell, J.S., 1991)

**Not included:** See BR0.

**Comments:** The source document refers to this habitat as 'Upland continuous bracken communities with a diverse vernal flora', but here it refers to all continuous bracken communities as described above, whether upland or lowland.

**BRZ Other continuous bracken (IC)**

**Description:** Areas dominated by dense bracken, and not NVC U20a, or if so then without a diverse spring-flush.

**Not included:** See BR0.



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## HEATHLAND

### Heathland

#### HE0 Dwarf shrub heath (BHT)

**Description:** This habitat type is characterised by vegetation that has a greater than 25% cover of plant species from the heath family (ericoids) or dwarf gorse *Ulex minor*. It generally occurs on well-drained, nutrient-poor, acid soils. Heaths do occur on more basic soils but these are more limited in extent and can be recognised by the presence of herbs characteristic of calcareous grassland. Dwarf shrub heath includes both dry and wet heaths types and occurs in the lowlands and the uplands. (Jackson D. L., 2000)

**Not included:** This habitat types does not include dwarf shrub dominated vegetation in which species characteristic of peat-forming vegetation such as cotton-grass *Eriophorum* spp. and peat-building *Sphagna* are abundant, or that occurs on deep peat (greater than 0.5 m) as they are included in E00~ Bog category. Heath types exclusively alpine in distribution are included in the MH~ category. Heath on sand dunes or shingle are included in the SS~ category under SS14~ Decalcified fixed dunes. Heath on maritime cliffs and slopes that are influenced by salt spray are included in the SR~ category. Heathland should also be cross-referenced with an HL1 (Lowland heathland) or HU1 (Upland heathland) Habitat Complex as appropriate. If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex. In cases where the habitat lies over limestone pavement, it should be cross-referenced with a LP1 (Limestone pavement) habitat complex. Where wind turbines are installed see GM8.

#### HE1 European dry heaths (AN1)

**Description:** Dry heaths are areas of vegetation growing on dry free-draining soils in usually lowland Britain characterised by combinations of heather *Calluna vulgaris*, bell heather *Erica cinerea*, dwarf gorse *Ulex minor* and western gorse *U. gallii*. Included are lowland dry acid heaths occurring on free-draining base-deficient, podsolised mineral soils developed on sands, gravels and clays; basic heaths containing basiphilous herbs more characteristic of calcareous situations such as wild thyme *Thymus praecox*, fairy flax *Linum catharticum*, flea sedge *Carex pulicaris*, glaucous sedge *C. flacca*, salad burnet *Sanguisorba minor*, and common rock-rose *Helianthemum nummularium*; upland dry heaths on well-drained soils characterised by heather *Calluna vulgaris*, crowberry *Empetrum nigrum*, mountain crowberry *Empetrum hermaphroditum*, bearberry *Arctostaphylos uva-ursi*, and cowberry *Vaccinium vitis-idaea*; lichen and moss heaths. (Brown *et al.*, 1997)

**Not included:** Continuous patches of non-dwarf-gorse scrub >0.25ha (including common gorse) should be included under WB2 Scrub woodland (SC). (NB The Annex 1 description includes western gorse *Ulex gallii* which is excluded from the HE0~ BHT description.) Continuous patches of bracken >0.25ha should be included under a BR~ Bracken category. Alpine and subalpine heaths should be included under MH~. Dune heaths should be included under SS~. H7a and H7b are maritime basic heaths which should be included under a 'Supralittoral rock' category. H1a and especially H1b are the characteristic NVC communities of lichen/bryophyte heath. Heath on sand dunes or shingle are included in the SS~ category under SS14~ Decalcified fixed dunes. Heath on maritime cliffs and slopes that are influenced by salt spray are included in the SR~ category.

**Required multiplex codes:** Include scattered trees by cross-referencing to a TS~ category; scattered scrub by cross-referencing with SC12; patches of non-dwarf-gorse scrub species with a continuous canopy up to 0.25 ha by cross-referencing with SC11; and patches of scattered bracken and continuous bracken <0.25ha by cross-referencing with a PA1 category.

#### HE11 Limestone heathland (SWT)

**Description:** Dry heaths with >25% cover of ericaceous species but also with herbs characteristic of calcareous situations such as wild thyme *Thymus poytrichus*, fairy flax *Linum catharticum*, glaucous sedge *Carex flacca*, salad burnet *Sanguisorba minor*, and common rock-rose *Helianthemum nummularium*.

#### HE1Z European dry heaths without Calicolous species (SWT)

**Description:** Dry heaths with >25% ericaceous species in the absence of herbs characteristic of calcareous situations.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### HE2 Wet heaths (PH1)

**Description:** Lowland wet heaths occur on damp acid and oligotrophic peats or humic mineral soils with periodic waterlogging. The water table is high, and the peat depth is shallow compared to bogs (i.e. <0.5m). There is a >25% cover of ericoids or small gorse *Ulex* species, with cross-leaved heath *Erica tetralix* becoming characteristically common, purple moor-grass *Molinia caerulea* often abundant, and with *Sphagnum compactum* or *S. tenellum* replacing the peat-building *Sphagna* which are characteristic of bogs, whilst at the drier end of wet heaths deergrass *Trichophorum cespitosum* is present. Upland wet heaths reach altitudes of 500m where the effect of altitude compensates for the drier regional climate, extending the range of this otherwise oceanic vegetation type. (JNCC, 2003)

**Not included:** See HE1.

**Required multiplex codes:** See HE1.

#### HE21 Northern Atlantic wet heaths with *Erica tetralix* (AN1)

**Description:** Wet heaths lacking the locally prominent Dorset heath *Erica ciliaris* and where purple moor-grass *Molinia caerulea* although abundant is not dominant. Within NVC M16 communities a nutrient-poor and more consistently waterlogged soil will give cross-leaved heath *Erica tetralix* a competitive advantage against *Molinia*. In drier soils within M15 communities, impoverishment favours heather *Calluna vulgaris* against *Molinia caerulea*. (Brown *et. al.*, 1997)

**Not included:** See HE1.

**Required multiplex codes:** See HE1.

#### HE22 Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix* (AN1)

**Description:** Previously called Southern Atlantic wet heaths. Confined to warm, oceanic locations, with an abundance of Dorset heath *Erica ciliaris*. (Brown *et. al.*, 1997)

**Not included:** See HE1.

**Required multiplex codes:** See HE1.

#### HE2Z Other wet heaths (IC)

**Description:** Wet heaths not classified as HE121 or HE122.

**Not included:** See HE1.

**Required multiplex codes:** See HE1.

#### HE3 Lichen/Bryophyte heath (PH1)

**Description:** Bryophyte and lichen dominated heaths of lowland situations such as the Breckland. Lichens and bryophytes must be dominant with less than 30% vascular plant cover. (JNCC, 2003)

**Not included:** For montane situations, should use MH22.

#### HEZ Other dwarf shrub heath (IC)

**Description:** Any heath not classified in any of the above categories.

### Notes on Usage: Lowland and Upland Heathland

Lowland heathland (PHT). Upland heathland (PHT). These are regarded as habitat complexes - see HL1 and HU1 in Land Use/ Management/ Descriptive codes section.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.**BARE GROUND***Bare of Vegetation****BV0 Bare of Vegetation (SWT)**

**Description:** Following the clearance of deep-shade casting scrub, the soil is substantially devoid of vegetation. Within the first year, early colonisers, ruderals and brambles are likely to become established. Map as bare ground when less than 50% of surface is vegetated, in conjunction with relevant Matrix codes e.g. Tall herb and fern, Ephemeral herb, or Open/scattered scrub & GM1~ to GM6. Cannot be used with GM0 since the management is known.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## WETLANDS

### Bog

#### EO0 Bog (BHT)

**Description:** Mire habitats on deep acid peat (>0.5 m) which are rain-fed (ombrotrophic). The vegetation of bogs which have not been modified by surface drying and aeration or heavy grazing is dominated by acidophilous species such as bog-mosses *Sphagnum* spp., cotton-grass *Eriophorum* spp. and cross-leaved heath *Erica tetralix*. The water table is at or just below the surface. Water and nutrient input is mainly from rainwater supply, rather than from the surrounding land. Bogs may be described as modified/degraded or unmodified, inactive or active. Modified bogs contain little or no *Sphagnum*. Peat depth, although somewhat arbitrary, is used as the primary criterion to separate types of modified bog vegetation from HE~ Dwarf-shrub heath category and certain types of EM~ Fen, marsh and swamp. Includes blanket bog, raised bogs, and mixed bog habitat types. Also included are pools <0.1ha associated with bogs. (Jackson D.L., 2000)

**Not included:** In lowland areas with predominantly acid substrata there are examples of valley and basin mires that receive acid surface seepage, which give rise to vegetation similar to that of bogs. These habitat types are included in EM~ Fen, marsh and swamp category.

**Required multiplex codes:** Where the habitat is part of a heathland habitat complex, it should be cross-referenced with either HL1 (Lowland heathland) or HU1 (Upland heathland) from the Habitat Complexes section as appropriate.

**NB SWT:** As of 2014, bogs may also have a peat extraction management code EP~ assigned to them

#### EO1 Blanket bog [=Blanket bogs (AN1)] (PHT)

**Description:** *Sphagnum*-rich vegetation on deep peat, forming a blanket over concave and convex surfaces on level and moderately sloping ground in the western (and northern) uplands. Peat depth is variable, with an average of 0.5-3 m being fairly typical, but depths in excess of 5 m are not unusual (UK Biodiversity Group, 1999b). Undisturbed blanket bog shows a hummock-and-hollow structure intersected by numerous runnels and small channels. Blanket bogs include watershed mires, saddle mires, terrace bog and valley-side mire, and may also include other mire types where these occur in a blanket bog complex. Typically dominated by deergrass *Trichophorum cespitosum*, with hare's-tail cotton grass *Eriophorum vaginatum* and black bog-rush *Schoenus nigricans* mixed in, and characterised also by abundant *Sphagnum papillosum*, and *S. magellanicum*. Bog depressions contain bogbean *Menyanthes trifoliata*, *Sphagnum* mosses and *Zygogonium* algae, bog runnels often contain oblong-leaved sundew *Drosera intermedia*, and shallow pools contain bulbous rush *Juncus bulbosus* and *Sphagna*. (Brown *et al.*, 1997)

#### EO2 Lowland raised bog (PHT)

**Description:** Gently sloping raised domes of peat with peat depth greatest in the centre, found on estuarine flats, river flood plains and other level areas with impeded drainage in the lowlands. The margins of the mound are more steeply sloping; drainage tends to flow around the mire, forming a lagg stream, and the drier margins may carry lagg woodland (UK Biodiversity Group, 1998a). This habitat supports specialised plants assemblages dominated by a colourful range of mosses of the genus *Sphagnum*, as well as vascular plants adapted to waterlogged conditions such as the cotton grasses *Eriophorum* spp. Lowland raised bogs also support rarer plants such as bog mosses *Sphagnum pulchrum* and *Sphagnum imbricatum* as well as a number of higher plants which have become increasingly scarce in the lowlands including bog rosemary *Andromeda polifolia*, great sundew *Drosera anglica* and cranberry *Vaccinium oxycoccos*. (UK Biodiversity Group, 1999b)

**Not included:** Lagg woodland on the drier margins of raised bog should be included as a wet woodland category (WB34~).

#### EO21 Degraded raised bogs still capable of natural regeneration (AN1)

**Description:** Raised and valley bogs which have been cut for peat or partially drained, and are dominated by dense stands of purple moor-grass *Molinia caerulea* often interspersed with heather (*Calluna vulgaris*) and young trees, and sometimes fragmentary remains of the undamaged mire, containing little or no *Sphagna*. (Brown *et al.*, 1997)

**Not included:** Extensive *Molinia*-dominated damaged bogs are usually seral and are colonised by wet birch *Betula* spp. woodland, bog myrtle *Myrica gale* scrub, and where the drying process is extreme, heather *Calluna*. Where this vegetation begins to dominate the habitat should be included under a WB34~ wet woodland category, or HE~ dwarf-shrub heath category as appropriate. *Molinia* stands on peat <0.5m are included under an EM4~ category. See EO2.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### EO22 Active raised bogs (AN1)

**Description:** Bogland sufficiently waterlogged for peat growth to continue. Included are the range from true raised bogs which are convex and are sustained predominantly by rainwater, through to acid peatlands in basins and valleys, which although kept moist by external sources of water are sufficiently extensive for the water in their central parts to be chemically most affected by rainwater. Vegetation is dominated by a mixture of sedges (Cyperaceae), heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, and *Sphagna*. Deeper and more permanent bog pools are characterised by bulbous rush *Juncus bulbosus*. Marginal lags and moats may be similar, or under the stronger groundwater influence support reed beds, and swamp vegetation. (Brown *et al.*, 1997)

**Not included:** Reedbeds >0.1ha should be included under EM11, bog pools >0.1ha containing water-lily *Nymphaea* communities and other aquatic vegetation should be included under an AS~ category, and other swamp vegetation should be included under an EM1~ category. See EO2.

#### EO2Z Other lowland raised bogs (IC)

**Description:** Bogs not included in another EO2~ category.

**Not included:** See EO2.

**Required multiplex codes:** The estuary habitat complex is unusual in that it can be assigned without any knowledge of the underlying habitat type. I.e. to any area in a riverine situation lying between the tidal reaches. If no habitat information is available the ES1 code should be associated with a UH0 (unknown habitat) code.

#### EOZ Other bogs (IC)

**Description:** Bogs not included in any other EO~ category.

### Fen, marsh and swamp

#### EM0 Fen, marsh and swamp (BHT)

**Description:** Characterised by a variety of vegetation types that are found on minerotrophic (groundwater-fed), permanently, seasonally or periodically waterlogged peat, peaty soils, or mineral soils. Fens are peatlands which receive water and nutrients from groundwater and surface run-off, as well as from rainfall. Also included are flushes, which are associated with lateral water movement, and springs with localised upwelling of water. Marsh is a general term usually used to imply waterlogged soil: it is used more specifically here to refer to fen-meadows and rush-pasture communities on mineral soils and shallow peats. Swamps are characterised by tall emergent vegetation. Reedbeds (i.e. swamps dominated by stands of common reed *Phragmites australis* are also included in this type. (Jackson D.L., 2000)

**Not included:** For wet grasslands, flood-meadows or pastures where a) grasses other than *Molinia dominate*, or where b) the dominant rushes are hard or soft rush *Juncus inflexus/effusus* with only a limited appearance by other *Juncus* spp., include under a GN~ neutral grassland category. Water-fringe vegetation which is constantly submerged and an integral part of an aquatic system should be included either under an AR~ rivers and streams category, or an AS~ open standing water and canals category. Ombrotrophic mires (blanket, raised and intermediate bogs) are included in EO~ Bog. Carr woodland patches of over 0.25ha. is included in WB~ Broadleaved, mixed and yew unless cover is less than 20%.

**Required multiplex codes:** Include scattered trees by cross-referencing the fen, marsh and swamp category (EM~) to a TS~ category; scattered scrub by cross-referencing with SC12; and patches of non-dwarf-gorse scrub species with a continuous canopy up to 0.25 ha by cross-referencing with SC11. If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex from the Habitat Complexes section. In cases where the habitat lies over limestone pavement, it should be cross-referenced with a LP1 (Limestone pavement) habitat complex.

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### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### EM1 Swamp (PH1)

**Description:** Contains tall vegetation >5m wide which is emergent from water or is frequently inundated by water and which occurs over mineral or peaty soils. The water table is distinctly above the level of the substrate for most of the year. It generally occurs in transition between open water and land. Vegetation includes mixed and single-species stands of reedmace *Typha* spp., reed canary grass *Phalaris arundinacea*, reed sweet-grass *Glyceria maxima*, greater tussock-sedge *Carex paniculata*, lesser pond-sedge *C. acutiformis*, bottle sedge *C. rostrata* or other tall sedge, and common reed *Phragmites australis*. (JNCC, 2003)

**Not included:** Swamp vegetation <5m wide should be included under EM21 Marginal vegetation (PH1). See EM0.

**Required multiplex codes:** See EM0.

#### EM11 Reedbeds (PHT)

**Description:** Here taken exclusively to refer to swamp dominated by common reed *Phragmites australis* (>60% reed component), wherein the water table is at or above ground level for most of the year. (UK Biodiversity Group, 1995)

**Not included:** Tall-herb fens (which are drier, only occasionally flooding) with abundant *Phragmites* should be included under EM33 Alkaline fens. Other swamp dominants usually included in 'reedbeds' such as reed canary grass *Phalaris arundinacea*, reed sweet-grass *Glyceria maxima*, reedmace *Typha* spp., club-rush *Schoenoplectus* spp., sea club-rush *Bolboschoenus* spp., bur-reed *Sparganium* spp., etc. should be included under another EM1~ category. See EM1.

**Required multiplex codes:** See EM0.

#### EM12 Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae* (AN1)

**Description:** Dense and frequently impenetrable stands of great fen-sedge *Cladium mariscus*, usually found in permanent shallow water, and receiving drainage water from a calcareous source. Includes swamp and sedge-beds dominated by great fen-sedge *Cladium mariscus*. (Brown *et al.*, 1997)

**Not included:** See EM1.

**Required multiplex codes:** See EM0.

#### EM1Z Other swamp vegetation (IC)

**Description:** All other swamp vegetation types, which if in strips is >5m wide (otherwise see EM21 Marginal vegetation (PH1)).

**Not included:** See EM1.

**Required multiplex codes:** See EM0.

#### EM2 Marginal and inundation vegetation (PH1)

**Description:** Vegetation of the margins of lowland watercourses, and ruderal and other vegetation subject to periodic flooding and not occurring within grasslands, pasture or meadow. (JNCC, 2003).

**Not included:** See EM0.

**Required multiplex codes:** See EM0.



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### EM21 Marginal vegetation (PH1)

**Description:** All narrow strips (<5m wide) of vegetation on the often steep margins of lowland watercourses where the water table is permanently high. Includes typically open, patchy vegetation containing plants such as sweet-grass *Glyceria* spp., water-cress *Rorippa* spp., fool's water-cress *Apium nodiflorum*, lesser water-parsnip *Berula erecta*, water-dropwort *Oenanthe* spp., common marsh bedstraw *Galium palustre*, water-cress *Nasturtium officinale*, forget-me-not *Myosotis* spp., speedwell *Veronica* spp., water-plantain *Alisma* spp., branched bur-reed *Sparganium erectum*, greater pond-sedge *Carex riparia*, soft rush *Juncus effusus*, and hard rush *J. inflexus*, and small stands of taller plants such as common reed *Phragmites australis*, reedmace *Typha* spp., and reed canary grass *Phalaris arundinacea*. (JNCC, 2003)

**Not included:** See EM0.

**Required multiplex codes:** Emergent fringe vegetation along rivers or streams or canals and ditches (where <5m wide) should be included here and qualified by cross-referencing with the appropriate LT2 River-side (LU) or LT1 Canal- and ditch-side (LU) category. See EM0.

#### EM22 Inundation vegetation (PH1)

**Description:** Includes open and innately unstable communities that are subject to periodic inundation. These may be found in the draw-down zone around pools, lakes and reservoirs, and on the silts, sands, and gravels of exposed river beds and islands. Included are a wide variety of species, such as knotgrass *Persicaria* spp. (including common bistort *P. bistorta* and water-pepper *P. hydropiper*), celery-leaved buttercup *Ranunculus sceleratus*, red goosefoot or halberd-leaved orache *Chenopodium rubrum/Atriplex hastata*, marsh cudweed *Gnaphalium uliginosum*, toadrush *Juncus bufonius*, bur-marigolds *Bidens* spp., creeping bent *Agrostis stolonifera*, and marsh foxtail *Alopecurus geniculatus*. (JNCC, 2003)

**Not included:** Creeping bent *Agrostis stolonifera*, marsh foxtail *Alopecurus geniculatus* and silverweed *Potentilla anserina* communities which are closed and associated with pasture and meadow should be included under a GN~ neutral grassland category. See EM0.

**Required multiplex codes:** See EM0.

#### EM3 Fens (PH1)

**Description:** Minerotrophic mires, usually over peat more than 0.5 metres deep. The water table is at or just below the surface. Includes soligenous and topogenous mires. (JNCC, 2003)

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

#### EM31 Fens (and flushes - lowland) (PHT)

**Description:** Fens are peatlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall: they are minerotrophic. Two types of fen can broadly be distinguished: topogenous and soligenous. Topogenous fens are those where water movements in the peat or soil are generally vertical. They include basin fens and floodplain fen. Soligenous fens, where water movements are predominantly lateral, include valley mires, springs and flushes in the lowlands, trackways and ladder fens in blanket bogs and laggs of raised bogs. In intensively farmed lowland areas fens occur less frequently, are smaller in size and more isolated than in other parts of the UK. There are, however, exceptions to this. The UK's largest continuous area of base-poor fen, the Insh Marshes in the floodplain of the River Spey in Scotland, covers an area of 300 ha, the calcareous rich fen and swamp of Broadland covers an area of 3,000 ha and Lough Erne system in Fermanagh has extensive areas of fen and swamp. In some lowland areas such as the Scottish borders and southern Northern Ireland there are concentrations of small fens of particular importance. Includes 'rich' and 'poor' fens, both topogenous and soligenous (basin, valley and floodplain mires), tall herb fens, fen-meadows, and rush pastures. (UK Biodiversity Group, 2005)

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***EM311 Calcareous fens with *Cladium mariscus* and species of the *Carex davallianae* (AN1)**

**Description:** Included here when it occurs in winter-flooded fenland, rather than under swamp. See EM12 for fuller definition. (Brown *et al.*, 1997)

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

**EM312 Springs (SC)**

**Description:** Gushing or trickling springs and especially the communities associated with them. Included are springs arising from a point source which seep at or over the surface and are not immediately channelised. Springs are point features. When the spring flow becomes channelised into a stream this linear feature should be included under headwater streams (an AR1 category cross-referenced with an AC~ category). Do not cross-reference a spring category with a stream category. Tufa streams arising from a spring source should be mapped and coded as a point EM331 feature, and once channelised as AR111 Tufa streams cross-referenced with the appropriate channel form code (AC~). Flushes, soaks and seeps which do not arise from a point source are included under EM3Z Other fens, transition mires, and flushes (IC).

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

**EM3121 Petrifying springs with tufa formation (Cratoneurion) (AN1)**

**Description:** Hard water springs with active precipitation of calcium carbonate, forming porous, sponge-textured tufa deposits. They are generally small and dominated by bryophytes. (Brown *et al.*, 1997)

**Not included:** The Annex I priority habitat refers to petrifying springs with tufa formation. Non-petrifying tufa springs are included in EM312Z Other springs (IC).

**Required multiplex codes:** See EM0.

**EM312Z Other springs (IC)**

**Description:** This includes soft water (non-calcareous springs) including bittercress springs *Cardamine* spp. springs, golden-saxifrage *Chrysosplenium* spp. springs, and softwater bryophyte springs, as well as hardwater non-petrifying calcareous springs.

**Not included:** Include non-calcareous seepages, flushes and soaks in EM3Z Other fens, transition mires, and flushes (IC), and calcareous flushes and soaks in EM313 Alkaline fens (AN1).

**Required multiplex codes:** See EM0.

**EM313 Alkaline fens (lowland) (AN1)**

**Description:** Fens fed by mineral-enriched, base-rich, and frequently calcareous waters, and usually peat-forming. May be flood-plain, basin or valley mires. *Sphagna* are often absent, being replaced by brown hypnoid mosses. Component habitats include calcareous marshes and soaks with abundant black bog-rush *Schoenus nigricans* and blunt-flowered rush *Juncus subnodulosus*; calcareous flushes and soaks with abundant small sedges (Cyperaceae). (Brown *et al.*, 1997)

**Not included:** Upland sites. See EM0.

**Required multiplex codes:** See EM0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### EM314 Transition mires and quaking bogs (lowland) (AN1)

**Description:** These are transitional peat-forming mires intermediate between bog pool communities and poor fen, and between poor-fen and rich fen, and are recognised by their floating or quaking nature - the peat mat being separate from any mineral supply in the substrate. They are dominated by medium or small Cyperaceae: lesser-tussock sedge *Carex diandra*, slender sedge *C. lasiocarpa*, bog sedge *C. limosa*, bottle sedge *C. rostrata*, common cotton-grass *Eriophorum angustifolium* and hare's-tail cotton-grass *E. vaginatum*, white beak-sedge *Rhynchospora alba* and brown beak-sedge *R. fusca*; together with marsh cinquefoil *Potentilla palustris*, bogbean *Menyanthes trifoliata*, and both brown and *Sphagnum* mosses. (Brown *et al.*, 1997)

**Not included:** Upland types. See EM0.

**Required multiplex codes:** See EM0.

#### EM315 Depressions on peat substrates (Rhynchosporion) (AN1)

**Description:** This is a rare habitat type in the UK that exhibits a narrow range of ecological variation and has a restricted geographical distribution. This habitat type has a very discontinuous distribution, being found in largest quantity on heaths in southern England. The *Rhynchosporion* communities of humid, bare or recently exposed peat found on lowland heaths, although rare, occur in three distinct situations:

- (i) in and around the edges of seasonal bog pools, particularly on patterned areas of valley mire;
- (ii) in flushes on the edges of valley mires in heathlands;
- (iii) in areas that are artificially disturbed, such as along footpaths and trackways and in old peat-cuttings and abandoned ditches.

The vegetation is typically very open, often with well developed algal mats, with white-beak sedge *Rhynchospora alba*, the bog moss *Sphagnum auriculatum*, marsh clubmoss *Lycopodiella inundata*, round-leaved sundew *Drosera rotundifolia* and in relatively base-rich sites, brown mosses such as *Drepanocladus revolvens* and *Scorpidium scorpioides*. The habitat type often occurs in complex mosaics with wet heath and valley mire vegetation, with species that may include great sundew *Drosera longifolia* and bog orchid *Hammarbya paludosa*. (Brown *et al.*, 1997)

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

#### EM31Z Other lowland fens (IC)

**Description:** Lowland fens and flushes not covered by any of the Annex 1 Habitat Type definitions.

**Not included:** See EM0

**Required multiplex codes:** See EM0

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### EM32 Upland flushes and fens (SC)

**Description:** Defined as peat or mineral-based terrestrial wetlands in upland situations which receive water and nutrients from surface and/or groundwater sources as well as rainfall. The soil, which may be peaty or mineral, is waterlogged with the water table close to or above the surface for most of the year. Includes both soligenous mires (springs, flushes, valley fens) and topogenous mires (basin, open-water transition and flood-plain fens), but excludes ombrotrophic bogs (Blanket bog priority habitat). This is a varied habitat category but is typically dominated by sedges and their allies, rushes, grasses (e.g. *Molinia*, *Phragmites*), and occasionally wetland herbs (e.g. meadowsweet *Filipendula ulmaria*), and/or a carpet of bryophytes e.g. *Sphagnum* spp., *Cratoneuron* spp. Vegetation generally short (<1m, often <30cm) but sometimes taller e.g. swamps. Supports a rich flora of vascular plants with many rare species e.g. scorched alpine-sedge *Carex atrofusca*, bristle sedge *C. microglochin*, sheathed sedge *C. vaginata*, mountain scurvygrass *Cochlearia micacea*, alpine rush *Juncus alpinoarticulatus*, two-flowered rush *J. biglumis*, chestnut rush *J. castaneus*, three-flowered rush *J. triglumis*, false sedge *Kobresia simpliciuscula*, Iceland-purslane *Koenigia islandica* and Scottish asphodel *Tofieldia pusilla*. Also exceptionally important for bryophytes with notable species including *Sphagnum lindbergii*, *S. riparium*, *Hamatocaulis vernicosus*. May be important nesting habitat for waders such as curlew *Numenius arquata*, snipe *Gallinago gallinago* and redshank *Tringa totanus*. Also supports a varied invertebrate fauna, notably taxa such as Diptera and Mollusca, which in turn provide an important food source for upland breeding birds at critical times of year. (JNCC, 2006)

**Not included:** See EM0

**Required multiplex codes:** See EM0

#### EM321 Alpine pioneer formations of *Caricion bicoloris-atrofuscae* (AN1)

**Description:** High-altitude flush mire characterised by glacial relicts colonising neutral or basic gravelly, sandy, stony or peaty substrates soaked by cold water. Includes bicoloured sedge *Carex bicolor*, bristle sedge *C. microglochin*, and scorched alpine sedge *C. atrofusca*. (Brown *et al.*, 1997)

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

#### EM322 Alkaline fens (upland) (AN1)

**Description:** Fens fed by mineral-enriched, base-rich, and frequently calcareous waters, and usually peat-forming. May be flood-plain, basin or valley mires. *Sphagna* are often absent, being replaced by brown hypnoid mosses. Component habitats include calcareous marshes and soaks with abundant black bog-rush *Schoenus nigricans* and blunt-flowered rush *Juncus subnodulosus*; calcareous flushes and soaks with abundant small sedges (Cyperaceae). (Brown *et al.*, 1997)

**Not included:** Lowland types. See EM0.

**Required multiplex codes:** See EM0.

#### EM323 Transition mires and quaking bogs (upland) (AN1)

**Description:** These are transitional peat-forming mires intermediate between bog pool communities and poor fen, and between poor-fen and rich fen, and are recognised by their floating or quaking nature - the peat mat being separate from any mineral supply in the substrate. They are dominated by medium or small Cyperaceae: lesser-tussock sedge *Carex diandra*, slender sedge *C. lasiocarpa*, bog sedge *C. limosa*, bottle sedge *C. rostrata*, common cotton-grass *Eriophorum angustifolium* and hare's-tail cotton-grass *E. vaginatum*, and white beak-sedge *Rhynchospora alba* and brown beak-sedge *R. fusca*; together with marsh cinquefoil *Potentilla palustris*, bogbean *Menyanthes trifoliata*, and both brown and *Sphagnum* mosses. (Brown *et al.*, 1997)

**Not included:** Lowland types. See EM0.

**Required multiplex codes:** See EM0.

#### EM32Z Other upland flushes and fens (IC)

**Description:** Upland fens not covered by the Annex 1 Habitat Type definitions.

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

**EM3Z Other fens, transition mires, springs and flushes (IC)**

**Description:** This includes acid poor-fen, acid flushes, soaks and marshes dominated by small Cyperaceae and often *Sphagnum*, lowland seepage lines and stream banks of shaded situations, tall herb fen stands in the lowlands or coastlands on moist circumneutral soils, and other minerotrophic mire communities (including montane) not included above.

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

**EM4 Purple moor grass and rush pastures (*Molinia-Juncus*) (PHT)**

**Description:** Includes vegetation of fen-meadow and rush-pasture on poorly-drained peats or peaty gleys which are moist for a substantial part of the year, and at least moderately base-rich, often acid, sometimes calcareous, with a pH usually above 4.5. Although purple moor-grass *Molinia caerulea* and rushes *Juncus* spp. especially sharp-flowered rush *J. acutiflorus* are usually abundant it is difficult to provide a list of diagnostic species. (UK Biodiversity Group, 1995)

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

**EM41 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) (AN1)**

**Description:** The most species-rich purple moor-grass *Molinia caerulea* grasslands. This category includes *Molinia* fen-meadow on circumneutral to calcareous soils. (Brown *et. al.*, 1997)

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

**Relevant NVC codes:** M24

#### EM42 Non-Annex 1 *Molinia* meadow and rush pasture habitats (SWT)

**Description:** Purple moor-grass *Molinia caerulea* dominated grasslands not matching EM41 above and rush pastures with dominant sharp-flowered rush *Juncus acutiflorus* or jointed rush *Juncus articulatus* with or without the presence of soft rush *Juncus effuses* (soft rush will only ever co-dominate). Rush pasture swards are those with 30% cover or greater of sharp-flowered rush or jointed rush. Purple moor-grass may/may not be present within rush pasture swards.

**Not included:** Pastures with less than 30% cover of sharp-flowered rush or jointed rush (see GN33 Levels wet neutral grassland (SWT) (formerly Brue)) or GN35 Somerset Rush pasture "Species-poor" (SWT) if surveying outside Levels)

**Required multiplex codes:** See EM0

**Relevant NVC codes:** M23 & M25

#### EM421 Species-rich rush pastures (SWT)

**Description:** Wet meadows with much sharp-flowered rush *Juncus acutiflorus*, jointed rush *Juncus articulatus* or soft rush *Juncus effuses* (soft rush will only ever co-dominate). Other species present include Yorkshire-fog *Holcus lanatus*, Meadowsweet *Filipendula ulmaria*, marsh thistle *Cirsium palustre*, water mint *Mentha aquatica* and cuckoo-flower *Cardamine pratensis*. Grasses may form a relatively dense understorey if grazed. Greater bird's-foot trefoil *Lotus pedunculatus* and/or common marsh bedstraw *Galium palustre* or fen bedstraw *Galium uliginosum* **must** be present within the sward to be included within this category

**Not included:** Rush pastures with no greater bird's-foot trefoil, common marsh bedstraw or fen bedstraw (see

GN333 Levels Rush pasture "Species-poor" (SWT) (formerly Brue)) or GN35 Somerset Rush pasture "Species-poor" (SWT) if surveying outside Levels)

**Required multiplex codes:** See EM0

**Relevant NVC codes:** M23

#### EM422 Non-Annex 1 *Molinia* meadows (SWT)

**Description:** Purple moor-grass dominated swards with tormentil. No greater bird's-foot trefoil or meadow thistle present.

**Not included:** Purple moor-grass swards with greater bird's-foot trefoil or meadow thistle (see EM41)

**Required multiplex codes:** See EM0.

**Relevant NVC codes:** M25

#### EM4Z Other purple moor grass and rush pastures (*Molinia*-*Juncus*) (IC)

**Description:** Fen-meadows and rush-pastures without abundant or dominant purple moor-grass *Molinia caerulea*, or if with abundant *Molinia* then at least moderately acid.

**Not included:** See EM0.

**Required multiplex codes:** See EM0.

#### Additional Note on Usage: Coastal and floodplain grazing marsh (PHT)

This is a landscape with a complex of habitats existing together in flat, low altitude areas by the coast or in lowland floodplains, and which overlie ground-water gleys or peaty soils. It usually contains periodically inundated pasture or meadow; a dense network of surface drainage channels (dykes, rhynes, ditches, etc) with controlled water levels; seasonal water-filled hollows; and is traditionally summer-grazed. It often contains relic communities of mire, wet woodland and saltmarsh, aquatic, swamp, fen-meadow and tall-herb fen communities, lowland wet grassland showing varying degrees of agricultural improvement, and ruderal communities. (UK Biodiversity Group, 1995). It is a complex which will be determined in analysis by using parameters based on flood/ inundation extent / height and user-defined habitats. (See CF1 under the Habitat Complexes section).



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## OPEN WATER: STANDING

### Standing open water

#### AS0 Standing open water and canals (BHT)

**Description:** Standing waters occur where the drainage is impeded, and flow is consequently still to sluggish. Includes natural systems of open water areas such as lakes, meres, pools and ponds, as well as man-made waters such as reservoirs, ponds, and gravel pits. Included also are linear features of open water such as ditches, rhynes and canals, where there is open water for at least the majority of the year. The open water zone lies beyond the limits of emergent swamp vegetation, but may contain submerged, free-floating or floating-leaved vegetation. It also includes water fringe vegetation which is constantly submerged where it is an integral part of an aquatic system. (Jackson, D.L., 2000)

**Not included:** Include bog pools in mires under an EO~ bog category. Include temporary pools on heath in a HE~ Dwarf-shrub heath category. Include fringing emergent swamp vegetation under a EM~ Fen, marsh, swamp category. Coastal saline lagoons are not included in this habitat type but are covered by the IS~ Inshore sublittoral sediment category (Jackson D. L., 2000). Swimming pools should be recorded under UR0 and cross-referenced with UA5. Slurry pits should be recorded under UR0 and cross-referenced with UA1.

**Required multiplex codes:** Qualify water-body size by applying appropriate AP~ open water size category. Qualify open area form (i.e. reservoir, gravel pit, etc), even if natural, using an AO~ category. If a standing water linear feature apply an appropriate AC~ category, even if natural. Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section.

#### AS1 Dystrophic standing water (PH1)

**Description:** Water usually peat-stained, pH very low (3.5-5.5) and alkalinity very low (up to 2mg/l CaCO<sub>3</sub>). Characterised by *Sphagnum* spp., bulbous rush *Juncus bulbosus*, bog pondweed *Potamogeton polygonifolius*, with very restricted macrophytic flora. (JNCC, 2003)

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

#### AS11 Natural dystrophic lakes and ponds (AN1)

**Description:** These are highly acidic (winter pH 3.5-5.5), nutrient-poor waters of low alkalinity (0-2 mg/l CaCO<sub>3</sub>), low oxygen content, generally occurring in peaty areas and brown-stained. Species-poor, especially in macrophytes, they are characterised by submerged *Sphagnum*, bulbous rush *Juncus bulbosus*, and less constantly bog pondweed *Potamogeton polygonifolius*. Dystrophic waters occur where water bodies receive water draining from oligotrophic mire, or amongst or on oligotrophic mire. Distribution follows that of blanket bogs, lowland raised bogs, and former peat cuttings. (Brown *et al.*, 1997)

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

#### AS1Z Other dystrophic standing water (IC)

**Description:** Highly acidic (winter pH 3.5 - 5.5) nutrient-poor waters not forming a lake.

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

#### AS2 Oligotrophic standing waters (PH1)

**Description:** Standing waters with very clear water and sparse plankton, on rocky, sandy or peaty substrates. pH usually less than 7. (JNCC, 2003)

**Not included:** Brackish oligotrophic waters should be included under a AS6~ category. See AS0.

**Required multiplex codes:** See AS0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### AS21 Oligotrophic lakes (PPHT)

**Description:** Oligotrophic lakes are water bodies >1 ha in size which are characterised by their low nutrient levels and low productivity. Their catchments usually occur on hard, acid rocks, most often in the uplands. This habitat type encompasses a wide range of size and depth, and includes the largest and deepest water bodies in the UK. Good examples may support some of the least disturbed aquatic assemblages in the UK.

Oligotrophic lakes usually have very clear water, although some examples with dystrophic characteristics have peat-stained waters. Characteristic plankton, zoobenthos, macrophyte and fish communities occur, including several BAP species and species of economic importance. Fish communities, generally dominated by salmonids, may include charr *Salvelinus alpinus* and *Coregonus* spp. A number of benthic and planktonic invertebrates, found only in oligotrophic lakes, are possibly glacial relicts. Macrophytes are typically sparse, with species such as shoreweed *Littorella uniflora* and quillwort *Isoetes* spp. Shores are typically stony, and emergent vegetation is generally restricted to sheltered bays, where species such as bottle sedge *Carex rostrata* and bulrush *Scirpus lacustris* may be found. (JNCC, 2006)

**Not included:** Brackish oligotrophic waters should be included under a AS6~ category. Oligotrophic waters of less than 1 hectare in size. See AS0.

**Required multiplex codes:** See AS0.

#### AS211 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. (AN1)

**Description:** Hard oligo-mesotrophic waters with benthic growths of stoneworts *Chara* spp. characterised by water with a high base content, most often calcium but very rarely magnesium, and is usually confined to areas of limestone and other base-rich substrates, from which the dissolved minerals are derived. (Brown *et. al.*, 1997)

**Not included:** See AS2.

**Required multiplex codes:** See AS0.

#### AS212 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorella uniflorae* and/or the *Isoeto-nanojuncetea* (AN1)

**Description:** The clear, soft water which characterises this habitat type contains low to moderate levels of plant nutrients and supports a characteristic assemblage of plant species. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora* being considered a defining component. This species often occurs in association with water lobelia *Lobelia dortmanna*, bog pondweed *Potamogeton polygonifolius*, quillwort *Isoetes lacustris*, bulbous rush *Juncus bulbosus*, needle spike-rush *Eleocharis acicularis*, alternate water-milfoil *Myriophyllum alterniflorum* and floating bur-reed *Sparganium angustifolium*. (Brown *et. al.*, 1997)

**Not included:** See AS2.

**Required multiplex codes:** See AS0.

#### AS21Z Other oligotrophic lakes (IC)

**Description:** Oligotrophic standing waters of greater than 1 hectare in size without benthic stoneworts *Chara* spp. or vegetation of the shoreweed *Littorella uniflorae* or the *Isoeto-nanojuncetea*.

**Not included:** See AS2.

**Required multiplex codes:** See AS0.

#### AS2Z Other oligotrophic standing waters (IC)

**Description:** Oligotrophic standing waters, including those of less than 1 hectare in size, falling outside of the Priority Habitat Type definition.

**Not included:** See AS0

**Required multiplex codes:** See AS0

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### AS3 Mesotrophic standing waters (PH1)

**Description:** Standing waters sometimes discoloured by planktonic algae. pH usually around or slightly below neutral. (JNCC, 2003)

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

#### AS31 Mesotrophic lakes (PHT)

**Description:** Intermediate in trophic range between oligotrophic and eutrophic waters, with moderate alkalinity of 10-30 mg/l CaCO<sub>3</sub>, with neutral or slightly lower winter pH (c. 7.0), with water sometimes discoloured by planktonic algae. They are characterised by having a narrow range of nutrients, the main indicative ones being inorganic nitrogen (N) and total phosphorus (P). Typically, mesotrophic lakes have nutrient levels of 0.3-0.65mgNl<sup>-1</sup> and 0.01-0.03mgPl<sup>-1</sup>. Over 1 hectare in size. They are often located on the fringes of upland areas where water running off acidic, nutrient-poor rocks is enriched by water from the lower-lying areas of the catchment. Typical species include various-leaved pondweed *Potamogeton gramineus*, blunt-leaved pondweed *P. obtusifolius*, perfoliate pondweed *P. perfoliatus*, annual water-starwort *Callitriche hermaphrodita*, stoneworts *Nitella* spp., yellow water-lily *Nuphar lutea*, and white water-lily *Nymphaea alba*. An increasingly rare water body type. (UK Biodiversity Group, 1995)

**Not included:** Mesotrophic waters of less than 1 hectare in size. See AS0.

**Required multiplex codes:** See AS0.

#### AS311 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. (AN1)

**Description:** Hard mesotrophic waters with benthic growths of stoneworts *Chara* spp. characterised by water with a high base content, most often calcium but very rarely magnesium, and is usually confined to areas of limestone and other base-rich substrates, from which the dissolved minerals are derived. (Brown *et. al.*, 1997)

**Not included:** See AS3.

**Required multiplex codes:** See AS0.

#### AS312 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorella uniflora* and/or the *Isoetes-nanojuncetea* (AN1)

**Description:** The clear, soft water which characterises this habitat type contains moderate levels of plant nutrients and supports a characteristic assemblage of plant species. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora* being considered a defining component. This species often occurs in association with water lobelia *Lobelia dortmanna*, bog pondweed *Potamogeton polygonifolius*, quillwort *Isoetes lacustris*, bulbous rush *Juncus bulbosus*, needle spike-rush *Eleocharis acicularis*, alternate water-milfoil *Myriophyllum alterniflorum* and floating bur-reed *Sparganium angustifolium*. (Brown *et. al.*, 1997)

**Not included:** See AS3.

**Required multiplex codes:** See AS0.

#### AS31Z Other mesotrophic lakes (IC)

**Description:** Mesotrophic lakes without benthic stoneworts *Chara* spp. or vegetation of the shoreweed *Littorella uniflora* or the *Isoetes-nanojuncetea*.

**Not included:** See AS3.

**Required multiplex codes:** See AS0.

#### AS3Z Other mesotrophic standing waters (IC)

**Description:** Mesotrophic standing waters that do not meet the Priority Habitat Type definition.

**Not included:** See AS3.

**Required multiplex codes:** See AS0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### AS4 Eutrophic standing waters (PH1)

**Description:** Standing waters with water often highly discoloured by algae. pH usually over 7. Substrate often highly organic mud. (JNCC, 2003)

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

#### AS41 Eutrophic standing waters (PHT)

**Description:** Natural or artificial still waters rich in plant nutrients, on a substrate which is often highly organic mud. The priority habitat type covers fresh waters of over 1 hectare in size, both natural and man-made, but it excludes small pools, field ponds and brackish waters. They are most typical of hard water areas of the southern and eastern lowlands, but they also occur in the north-west. With alkalinity >30 mg/l CaCO<sub>3</sub>, and base-rich with winter pH >7.0, productivity is high, both for algae and macrophytes. The water column typically contains at least 0.035 mg L<sup>-1</sup> or more total inorganic nitrogen (mainly in the form of dissolved nitrates). With a high long-term summer concentration of algae the water is often discoloured green. Biodiversity is decreased with (usually artificially added) increased levels of nutrients because planktonic and filamentous algae increase at the expense of other species. These 'blooms' can lead to large fish kills. Planktonic algae and zooplankton are abundant in the water column, submerged vegetation is diverse and numerous species of invertebrate and fish are present. Typical plant species which include duckweeds *Lemna* spp., spiked water-milfoil *Myriophyllum spicatum*, fennel pondweed *Potamogeton pectinatus*, hornworts *Ceratophyllum* spp., horned pondweed *Zannichellia palustris*, fan-leaved water-crowfoot *Ranunculus circinatus*, amphibious bistort *Polygonum amphibium*, stoneworts *Chara* spp., and yellow water-lily *Nuphar lutea*. (UK Biodiversity Group, 2005)

**Not included:** Small pools, field ponds, brackish waters, ditches, canals (Eutrophic standing waters inventory project, Environment Agency Project, 2000).

#### AS411 Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation (AN1)

**Description:** Eutrophic standing waters with free-floating vegetation including communities of duckweed (*Lemna* spp., *Spirodela*, *Wolffia*), small ferns (water fern *Azolla filiculoides*) liverworts (*Riccia*, *Ricciocarpus*), formations rich in frogbit *Hydrocharis morsus-ranae*, formations dominated by water-soldier *Stratiotes aloides*, formations of bladderworts (*Utricularia australis*, *U. vulgaris*) (represented by NVC: types A1, A2, A3, A4), or large pondweed beds (shining pondweed *Potamogeton lucens*, long-stalked pondweed *P. praelongus*, long-leaved pondweed *P. zizii*, perfoliate pondweed *P. perfoliatus*) (represented by NVC: types A11, A12, and A13). These are communities of naturally eutrophic standing waters. (Brown *et al.*, 1997)

**Not included:** The exclusion of ditch systems containing these communities is implied by the name of the habitat.

**Required multiplex codes:** See AS0.

#### AS41Z Other eutrophic standing waters (IC)

**Description:** Standing waters which fit the Priority Habitat Type definition but lack the communities associated with the Annex 1 Habitat Type.

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

#### AS4Z Other eutrophic standing waters (IC)

**Description:** Eutrophic waters containing pioneer submerged associations which colonise muddy or silty bottoms of disturbed, sheltered waters such as drainage ditches, dykes, rhynes and canals, which are usually shallow, and subject to nutrient enrichment from the surrounding land.

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***AS5 Marl standing water (PH1)**

**Description:** Confined to scattered areas of soluble limestone and chalk in the lowlands or uplands, where the precipitation of calcium carbonate takes place. The alkalinity is characteristically high (>100 mg/l CaCO<sub>3</sub>), and the waters are very clear sometimes tinted blue. The nutrient status varies from one marl water body to another, it may be eutrophic, mesotrophic or very rarely oligotrophic. The marl precipitate is a powdery yellow-brown deposit which covers the substrate. They are characterised by stoneworts *Chara* spp., spiked water-milfoil *Myriophyllum spicatum*, and shining pondweed *Potamogeton lucens*. (JNCC, 2003)

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

**AS6 Brackish standing water with no sea connection (PH1)**

**Description:** Includes saline standing open waters derived artificially, such as brackish lagoons associated with industrial activity, such as salt or mine workings; rare naturally occurring inland brackish waters derived from residues of ancient marine incursions in peaty areas; and brackish ditches associated with coastal lowlands or washlands (drained areas with residual salinity or subject to sea incursion). The habitat is characterised by high salinity, and high conductivity, usually >1500 mmhos (up to 50,000 mmhos cf. <750 for all other categories). (JNCC, 2003)

**Not included:** Saline lagoons is included in IS~ category. Also see AS0.

**Required multiplex codes:** See AS0.

**AS7 Aquifer fed naturally fluctuating water bodies (PHT)**

**Description:** Natural water bodies which have an intrinsic regime of extreme fluctuation in water level, with periods of complete or almost complete drying out as part of the natural cycle. They have no inflow or outflow streams at the surface, except at times of very high water level, when temporary outflows may develop. Instead they are directly connected to the underlying groundwater system and periodically empty and are recharged via swallow holes or smaller openings in their beds. (UK Biodiversity Group, 1998)

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

**ASZ Other standing open water and canals (IC)**

**Description:** Any standing water body not assigned to any other AS category.

**Not included:** See AS0.

**Required multiplex codes:** See AS0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## OPEN WATER: RUNNING

### Rivers and streams

#### AR0 Rivers and streams (BHT)

**Description:** Includes rivers and streams from bank top to bank top or where there are no distinctive banks, or where banks are never overtopped, it includes the extent of the mean annual flood. They may have natural, or more often than not, artificially modified channels to alleviate flooding with modifications such as impounding and channel re-routing. Also included in this category are submerged, free-floating and rooted floating-leaved plant communities in the open water zone, and water fringe vegetation which is constantly submerged and integral to the aquatic system. Exposed sediments and shingle banks are also included where these are within the mean annual flood reach. (Jackson D.L., 2000)

**Not included:** Emergent fringe vegetation along rivers or streams should be included under an EM~ Fen, marsh, and swamp category, and qualified by cross-referencing with LT2 River-side (LU). Exposed areas of sediment and shingle beyond the mean annual flood should be included under RE15 Exposed river gravels and shingles (SC).

**Required multiplex codes:** Qualify channel form (i.e. artificially modified channels, natural channels, etc) by cross-referencing with an AC~ category.

#### AR1 Headwaters (SC)

**Description:** Watercourses within 2.5km of their furthest source as marked with a blue line on Ordnance Survey (OS) Landranger maps with a scale of 1:50,000. Headwaters represent a substantial proportion of the total length of flowing watercourses in Britain, probably in excess of 70%. They are relatively fast flowing with oxygen rich water on steep gradients with high angled banks. (JNCC, 2006)

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

#### AR11 Chalk headwaters (PHT)

**Description:** Watercourses which are within 2.5 km of their furthest source, arise from groundwater aquifers and flow over chalk with beds of gravel, sand, silt and stones. Generally found in central southern England with fewer in the Southwest and Southeast and up to Yorkshire. They are base rich, normally eutrophic and clear with 'winterbourne stretches'; lengths that dry out in periods of low rainfall. They are very rarely in spate as the aquifer has a regulatory effect on flow and water temperature tends to remain constant throughout the year. Submerged, free-floating and rooted floating plants are abundant and diverse characterised by Crowfoot communities particularly pond water-crowfoot *Ranunculus peltati* and common water-crowfoot *R. aquatilis* which can both withstand the late summer drying up of many chalk streams and are often mixed with common water-starwort *Callitriche stagnalis* stands. (UK Biodiversity Group, 1995 & 2005)

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

#### AR111 Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation (headwaters on chalk) (AN1)

**Description:** Headwaters (within 2.5km of their furthest source) of chalk rivers with vegetation including; stream water-crowfoot *Ranunculus pinnatifidus* ssp. *pseudofluitans* in the middle reaches and river water-crowfoot *R. fluitans* in the downstream sections. For lower reaches see AR21. (Brown *et. al.*, 1997)

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

#### AR1111 Tufa streams (*Ranunculus fluitantis*) (SC)

**Description:** Hard water streams containing porous, sponge-textured tufa deposits (calcium carbonate precipitate) and *Ranunculus fluitantis* vegetation. See AR111.

**Not included:** Tufa springs and flushes (i.e. point tufa features rather than linear ones) should be included under a EM3~ Fen category. See AR0.

**Required multiplex codes:** See AR0.



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*Habitats Section*

All IHS code strings must include one (and only one) code from the Habitats Section.

**AR111Z Non-tufa Ranunculon fluitantis headwaters (IC)**

**Description:** Chalk headwaters with *Ranunculon fluitantis* vegetation, not containing tufa deposits. See AR111.

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

**AR112 Other tufa streams (SC)**

**Description:** Tufa depositing headwaters (within 2.5km of their furthest source) of chalk rivers without the *Ranunculon fluitantis* vegetation.

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

**AR11Z Other chalk headwaters (IC)**

**Description:** Non Tufa depositing headwaters (within 2.5km of their furthest source) of chalk rivers without the *Ranunculon fluitantis* vegetation.

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

**AR12 Active shingle rivers (headwaters) (PPHT)**

**Description:** This habitat comprises the headwaters (within 2.5km of the furthest source) of those rivers which have significant reaches composed of a gravel or pebble bed material, sometimes with discrete sandy reaches or deposits, and having characteristic suites of features generated by the processes of erosion, sediment transport, deposition, and storage. The headwaters are usually in upland areas which generate high energy discharges, typically on an annual basis. (JNCC, 2006)

**Not included:** See AR0

**Required multiplex codes:** See AR0. Also may be associated with P11 Calaminarian grassland where heavy metals form a significant component of the sediment and Calaminarian communities are found.

**AR1Z Other headwaters (IC)**

**Description:** Watercourses which are within 2.5km of their furthest source and not chalk or high energy dynamic gravel.

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

**AR2 Chalk rivers (not including chalk headwaters) (PHT)**

**Description:** Watercourses which are more than 2.5km from their furthest source, arise from groundwater aquifers and flow over chalk. Usually slower flowing than headwaters, these stretches tend to be less liable to the late-summer drying of headwater chalk streams and thus the rooted plant communities of river water-crowfoot *Ranunculus penicillatus* ssp *psuedofluitans* and the NVC community of *Potamogeton pectinus*-*Myriophyllum spicatum* become more important. (UK Biodiversity Group, 1995 & 2005)

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

**AR21 Water courses of plain to montane levels with the Ranunculon fluitantis and Callitricho-Batrachion vegetation (chalk substrate) (AN1)**

**Description:** Lower reaches (Watercourses which are more than 2.5km from their furthest source) only (for headwaters see AR111) of rivers with floating mats of water-crowfoot *Ranunculus* spp. - sub genus *Batrachium* on chalk substrates. (Brown *et al.*, 1997).

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***AR2Z Other chalk rivers (IC)**

**Description:** Watercourses which are more than 2.5km from their furthest source, with chalk substrate, not supporting *Ranunculus-fluitantis* vegetation.

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

**AR3 Active shingle rivers (non headwaters) (PPHT)**

**Description:** This habitat comprises those rivers which have significant reaches composed of a gravel or pebble bed material (with grain sizes in the range 2-256 mm), sometimes with discrete sandy reaches or deposits (0.064-2 mm diameter) in areas of lower slope, and having characteristic suites of features generated by the processes of erosion, sediment transport, deposition, and storage. Their headwaters are usually in upland areas which generate high-energy discharges, resulting in intermittent sediment movement. Average bed sediment size usually declines downstream (with the downstream reduction in underlying gradient and stream power) generating a commensurate change in habitat.

Typically, these rivers have extensive reaches of gravel, pebble and sand bed material in their middle reaches and in the piedmont zone, these shingle deposits being associated with a wandering, dynamic meandering or divided channel and active erosion and sediment deposition features. The gravel bed reaches exhibit characteristic macro-scale bed form morphology with features including point bars and eroding cliffs, side and mid channel bars, and pool-riffle sequences. These features are typically unvegetated, reflecting their dynamic nature. Sediment transport and the formation of the characteristic habitat features typically occur only at high flows, when bedload may comprise up to 50% of the total sediment load in transit. Many of the macro-scale features are exposed in the channel as shingle during low flow conditions. Sand bed reaches or deposits typically exhibit micro-scale bed form morphology with features such as ripples, dunes and plane beds. The transport and deposition of sand-sized material occurs across a wide range of discharges.

The dynamic nature of these river channel and bank habitats is critical for the species they support. Active shingle rivers have a characteristic fauna of fish and aquatic invertebrates associated with the well-oxygenated conditions, flow and substrate characteristics. Shingle and sand banks form the habitat for an important fauna of 'terrestrial' invertebrate species characteristic of exposed riverine sediments (ERS). ERS support a large assemblage of invertebrates specialised for life at the humid water margin where vegetation is absent or sparse. Dominant groups are ground beetles, rove beetles, flies and spiders. About half the species found on ERS are restricted to this habitat.

On a number of these rivers, banks of gravel rich in heavy metals support a specialist flora characteristic of Calaminarian grasslands, an Annex I habitat. Some of these gravels have washed down from old mine workings upstream.

Some rivers may meet the criteria in their upper/middle reaches but lack the dynamic characteristics and associated fauna in their lower stretches. In such cases the lower reaches, which are often heavily modified, would not be included in the definition. (JNCC, 2006)

**Not included:** See AR0.

**Required multiplex codes:** See AR0. Also may be associated with PI1 Calaminarian grassland where heavy metals form a significant component of the sediment and Calaminarian communities are found.

**ARZ Other rivers and streams (IC)**

**Description:** Watercourses which are more than 2.5km from their furthest source not having chalk substrate.

**Not included:** See AR0.

**Required multiplex codes:** See AR0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## MONTANE

### Montane habitats

#### MH0 Montane habitats (BHT)

**Description:** A wide range of vegetation types that occur exclusively in the montane zone such as prostrate dwarf shrub heath, snow-bed communities, sedge and rush heaths and moss heaths. The distinction between the montane and sub-montane is often blurred and the two usually merge through a band of transitional vegetation. Montane habitat types can be recognised by their floristic composition and their physiognomy (prostrate vegetation). Widespread arctic/alpine species such as stiff sedge *Carex bigelowii*, crowberry *Empetrum nigrum* ssp *hermaphroditum*, trailing azalea *Loiseleuria procumbens*, dwarf willow *Salix herbacea*, and alpine clubmoss *Diphasium alpinum* in association with frequent to abundant woolly fringe-moss *Racomitrium lanuginosum* or cladonia lichens *Cladonia* spp., and other macro-lichens such as *Cetraria islandica* are useful indicators of montane communities. (Jackson D. L., 2000)

**Not included:** Calcareous grassland including those dominated by mountain avens *Dryas octopetala*, fens and springs, blanket bog and rock habitats (except snow-bed scree) which can also occur in the montane zone are not included here. This type also does not include dwarf shrub heaths and grasslands that straddle the notional boundary of the former tree-line with little change in floristics and physiognomy and these should be treated as components of other Broad Habitat types.

#### MH1 Mountain heaths (PHT)

**Description:** This habitat encompasses a wide range of natural or near-natural vegetation occurring in the montane zone, lying above or beyond the former natural tree-line. It includes dwarf-shrub heaths, grass-heaths, dwarf-herb communities, willow scrub, and snowbed communities. The most abundant vegetation types are heaths dominated by heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus*, stiff sedge *Carex bigelowii* and three-leaved rush *Juncus trifidus*, typically with abundant bryophytes (e.g. *Racomitrium lanuginosum*) and/or lichens (e.g. *Cladonia* species). Rarer vegetation types include snow-bed communities with dwarf willow *Salix herbacea* and various bryophytes and lichens, and sub-arctic willow scrub.

The lower altitudinal limit of montane communities varies in different parts of GB, descending to lower altitudes in the north and west of Britain. Most communities occur on thin soils, which may be acidic or calcareous. Some communities are characteristic of very exposed ridges and summits, whereas others are restricted to sheltered situations where there is late snow-lie. A range of important rock and scree types, including tall herb ledge vegetation, often occur in close association with this habitat, along with high-altitude springs, flushes and other mire types. (JNCC, 2006)

**Not included:** See MH0. Anthropogenic grasslands derived from montane heaths.

**Required multiplex codes:** See MH0.

#### MH11 Alpine and boreal heaths (AN1)

**Description:** Alpine heaths are developed above the natural altitudinal tree-line. Subalpine heaths are developed below the tree-line in gaps among scrubby high-altitude woods or as a replacement for those subalpine woods lost owing to grazing and burning. On the slopes below, subalpine heaths may grade into floristically similar dry heaths. The dominant plants are dwarf-shrubs of heather *Calluna vulgaris* or juniper *Juniperus* spp., which are low-growing or prostrate owing to exposure to high winds or prolonged snow cover at moderately high altitudes. They occur on acid rocks on mountains, both on exposed lower summits and ridges and on sheltered slopes. The exposure or snow-lie, which suppress the growth of dwarf-shrubs, also favour the growth of characteristic lichens and bryophytes. (Brown *et al.*, 1997).

**Not included:** See MH1.

#### MH12 Siliceous Alpine and Boreal grassland (AN1)

**Description:** Grassland formation on the higher summits of Scotland, Cumbria, northern England and northern Wales, with three-leaved rush *Juncus trifidus*, stiff sedge *Carex bigelowii*, mosses and lichens. (Brown *et al.*, 1997)

**Not included:** See MH1.

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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

**MH1Z Other montane heaths (IC)**

**Description:** Montane heaths that are neither of the Annex 1 habitat types.

**Not included:** See MH1

**Required multiplex codes:** See MH1

**MHZ Other montane habitats (IC)**

**Description:** Includes all habitats which are exclusive to the montane but which are not described in a category above. Includes anthropogenic grasslands derived from montane heaths.

**Not included:** See MH0.

**Required multiplex codes:** Montane willow scrub should be included here with an associated SC111 code.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.**ARABLE***Arable and horticulture****CR0 Arable and horticulture (BHT)**

**Description:** Includes arable cropland (including perennial, woody crops, and intensively managed orchards, commercial horticultural land (such as nurseries, vegetable plots and flower beds) freshly-ploughed land, and recently reseeded grassland, annual leys, rotational set-aside and fallow land. This habitat type includes cereal field margins. (Jackson D.L., 2000)

**Not included:** Does not include domestic gardens and allotments which should be included under UR0.

**Required multiplex codes:** Qualify by cross-referencing with a CL~ cropped land description category. Where wind turbines are installed see GM8.

**CR1 Grass and grass-clover leys (SC)**

**Description:** Short-rotation species-poor mixes of high-yield grasses and herbs such as perennial rye-grass *Lolium perenne*, Italian rye-grass *Lolium multiflorum*, *Lolium* hybrids *L. x hybridum*, timothy *Phleum pratense* and its cultivars, white clover *Trifolium repens*, rough meadow-grass *Poa trivialis*, meadow foxtail *Alopecurus pratensis*, meadow fescue *Festuca pratensis*, managed usually for silage or hay.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.

**CR2 Cereal crops (SC)**

**Description:** Gramineous crops - wheat, barley, oats, maize, etc. Includes all the land and associated vegetation inside the field boundary, including the cropped area and field-margins.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.

**CR3 Non-cereal crops including woody crops (SC)**

**Description:** Non-gramineous crops, such as root crops, fruit, vegetables, herbs and biomass crops including *Miscanthus*.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.

**CR31 Intensively managed orchards (SC)**

**Description:** Orchards with a ground cover which is intensively managed (treated with herbicide, and heavily mown), usually improved grassland, and often with young tree stock and dwarf varieties. Also includes nut and hop plantations.

**Not included:** See CR0. Intensively managed vineyards are defined by CR332.

**Required multiplex codes:** See CR0.

**CR32 Withy beds (SC)**

**Description:** Also known as willow or osier beds. Areas planted with willow (*Salix* spp.) stands for annual, or occasionally biennial, harvest via short rotation coppice. Willow was traditionally cultivated in this way for commercial use such as basket making and at one time most areas had osier beds sited within river valleys. This practice is characteristic of the Somerset Levels and some other lowland wetland regions.

**CR33 Vineyards (SC)**

**Description:** Areas planted with cultivated grapevines *Vitis vinifera*.

**Required multiplex codes:** Specify management via management category CL4.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### CR34 Game crops (SC)

**Description:** Blocks/strips of land, sown with crops (e.g. maize, sorghum, millet, buckwheat, mustard, kale, quinoa etc) specifically for the provision of cover and/or feed for farmland and/or game birds such as pheasants, not in arable fields (usually grassland but can include other habitats); also whole fields known to be planted as game crops.

**Not included:** Game crops in the edges of or in blocks in arable fields which come under the 'Arable margin and uncultivated strip' definition.

#### CR35 Miscanthus (SC)

**Description:** Areas planted with *Miscanthus* ('Elephant grass'), a tall (up to 3.5m) perennial rhizomatous grass. Generally cultivated in lowland areas as a biomass energy crop (planted spring, harvested late summer).

#### CR3Z Other non-cereal crops including woody crops (IC)

**Description:** Root crops, legumes, short-rotation woody fuel crops such as willow or poplar, and other non-cereal crops. Also includes horticultural nurseries, vegetable plots, water-cress beds, game crops, soft fruit and flowers.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.

#### CR4 Freshly ploughed (SC)

**Description:** Recently ploughed or tilled land, preparatory to sowing.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.

#### CR5 Whole field fallow (SC)

**Description:** Land allowed to naturally regenerate usually on a short term basis. Fallow land is land rested up for a season (or more), sometimes to increase soil fertility, frequently in set-aside.

**Not included:** Headlands and uncultivated strips in fields that are otherwise cropped. Set-aside land that is planted for non-commercial crops. Long-term set-aside (grassland in set-aside for over 5 years) and arable land reverted to grassland under an agri-environment scheme should be recorded as its current vegetation type. (RDS, 2005)

**Required multiplex codes:** See CR0.

#### CR6 Arable headland or uncultivated strip (SC)

**Description:** Strips of land between arable land, which may be cereal crops, or other crops including woody crops, and the field boundary, and extending for a limited distance into the crop, which are managed differently than the remainder of the field. They may or may not be deliberately managed to create conditions which benefit traditional arable weed species such as pheasant's eye (*Adonis arnua*), cornflower (*Centaurea cyanus*), broadleaved spurge (*Euphorbia platyphyllos*), corn parsley (*Petroselinum segetum*), corn buttercup (*Ranunculus arvensis*, shepherd's needle (*Scandix pecten-veneris*) and narrow-fruited cornsalad (*Valerianella dentata*), and other key farmland species (game birds and passerines, polyphagous and other invertebrates). These margins are usually wildlife strips, conservation headlands, and game crops, stubble or grassland fallows lying between cropped land and a field boundary. Buffer strips alongside water courses or other habitat features are included.

**Not included:** Field Margins of Improved Grassland or Probably Improved Grassland Fields. Whole fields managed for arable weed species.

**Required multiplex codes:** See CR0.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***CR61 Arable field margins (PHT)**

**Description:** Arable field margins are herbaceous strips or blocks around arable fields that are managed specifically to provide benefits for wildlife. The arable field must be in a crop rotation which includes an arable crop, even if in certain years the field is in temporary grass, set-aside or fallow. Arable Field Margins are usually sited on the outer 2-12m margin of the arable field, although when planted as blocks they occasionally extend further into the field centre. The following margin types are included:

- a.) Cultivated, low-input margins. These are areas within arable fields that are cultivated periodically, usually annually or biennially, but are not sprayed with spring/summer insecticides and not normally sprayed with herbicides (except for the control of injurious weeds or problem grasses such as creeping thistle, black grass, sterile brome or wild oat). Cultivated, low input margins include conservation headlands and land managed specifically to create habitat for annual arable plants.
- b.) Margins sown to provide seed for wild birds. These are margins or blocks sown with plants that are allowed to set seed and which remain in place over the winter. They may be sown with cereals and/or small-seeded broad-leaved plants or grasses but areas sown with maize are excluded as they are of lower value for wild birds.
- c.) Margins sown with wild flowers or agricultural legumes and managed to allow flowering to provide pollen and nectar resources for invertebrates.
- d.) Margins providing permanent, grass strips with mixtures of tussocky and fine-leaved grasses.

Areas of grass established as cross compliance requirements are excluded from this definition, but all other strips of grassland created by sowing or natural regeneration, such as field margins or beetle banks, are included. (JNCC, 2006)

**Not included:** Margins established as cross compliance requirements under the Single Payment Scheme (in England and Scotland) or as mandatory requirements of an Entry-Level Agri-environment Scheme (in Wales and likely in Northern Ireland) are excluded. These margins, where present, would be included as part of the Priority Hedgerow Habitat, where put in place to protect the hedgerow. Also see CR6.

**Required multiplex codes:** See CR0.

**CR6Z Other arable headland or uncultivated strip (IC)**

**Description:** Arable field margins and headlands which do not meet the definition above.

**Not included:** See CR6.

**Required multiplex codes:** See CR0.

**CR7 Freshly harvested/stubble (SC)**

**Description:** Land where the crop has been harvested, leaving stubble which has not yet been ploughed in.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.

**CRZ Other arable and horticulture (IC)**

**Description:** Any other arable crop or commercial horticultural land not described by the above categories.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.



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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

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## *INLAND ROCK EXPOSURE, SCREES AND SPOIL*

### Inland rock

#### RE0 Inland rock (BHT)

**Description:** Includes both natural and artificial exposed rock surfaces which are greater than 0.25 ha, such as inland cliffs, caves, and screes and limestone pavements, as well as various forms of excavation and waste tips such as quarries and quarry waste. It includes mines and mining waste; chasmophytic vegetation (plant communities that colonise the cracks and fissures of rock faces); calaminarian grassland (a grassland type which is found on soils which have levels of heavy metals, such as lead, chromium and copper, that are toxic to most plant species); and certain types of tall herb and fern vegetation, which as a result of grazing pressure are much reduced in extent and confined to areas inaccessible to grazing animals such as cliff faces and ledges, and to a lesser extent on lightly-grazed steep rocky slopes and boulder fields. (Jackson D.L., 2000)

**Not included:** Maritime cliffs and slopes should be included under SR1~ in the Supralittoral rock category. Extended vegetation development (>20%) should be included under the appropriate habitat section category (e.g. GC~, WB~ etc.). Continuous scrub >0.25ha should be included under WB2 Scrub woodland.

**Required multiplex codes:** Include calaminarian grassland by cross-referencing the applicable RE~ rock exposure or spoil category with P11 Calaminarian grasslands (AN1). Include scattered trees by cross-referencing to a TS~ category; scattered scrub by cross-referencing with SC12; patches of non-dwarf-gorse scrub species with a continuous canopy up to 0.25 ha by cross-referencing with SC11; and patches of scattered bracken and continuous bracken <0.25ha by cross-referencing with a patchy bracken (PA1) category. Include tall herb (including tall ruderals) and ferns other than bracken by cross-referencing with an OT~ category. Include ephemeral, short perennial and short ruderal vegetation by cross-referencing with HS1. Include introduced shrub by cross-referencing with IH1. Include unvegetated areas of bare ground by cross-referencing with BG1. Limestone pavement should be qualified by cross-referencing with the LP1 (Limestone pavement) habitat complex.

#### RE1 Natural rock exposure features (PH1)

**Description:** Areas of consolidated rock, scree, boulders, gravels and shingles which occur naturally. Limestone pavement where vegetation cover <20% is included here. (JNCC, 2003)

**Not included:** See RE0.

**Required multiplex codes:** See RE0. Limestone pavement recorded here should be cross-referenced with the LP1 (Limestone pavement) habitat complex.

#### RE11 Natural rock and scree habitats (SC)

**Description:** Inland cliffs: rock surfaces over 2m high and sloping at >60°. Scree: an accumulation of weathered rock fragments usually at the foot of a cliff, or slope. Includes boulder scree. Also includes rock outcrops.

**Not included:** Vegetated natural rock and scree with >20% vascular plant cover are not included, these should be included under the appropriate habitat section category (e.g. GC~), and if applicable cross-referenced with the relevant matrix vegetation category (e.g. OT~).

**Required multiplex codes:** Include associated vegetation (e.g. Parsley fern *Cryptogramma crispa*) by cross-referencing with an OT14Z or OT1Z category. See RE0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### RE111 Upland natural rock and scree habitats (PPHT)

**Description:** Natural rock exposures support a wide range of communities. Scree slopes are typically dominated by parsley fern *Cryptogramma crispa* and other ferns, lichens and bryophytes. On cliff ledges, tall herbs such as Roseroot *Sedum rosea* and wild angelica *Angelica sylvestris* are generally abundant. Chasmophytic vegetation (in rock crevices) is usually dominated by ferns such as green spleenwort *Asplenium viride* and small herbs such as wild thyme *Thymus polytrichus* and saxifrages *Saxifraga* spp. Bryophytes and lichens also occur in crevices but are able to flourish on the open rock surfaces where there is a lack of competition from vascular plants. The inaccessibility of rock habitats to grazing animals, especially of rock ledges, provides a refuge for many vascular plants that are sensitive to grazing, including numerous local and rare species. Notable species of upland rock and scree habitats include alpine lady-fern *Athyrium distentifolium*, oblong woodsia *Woodsia ilvensis*, rock sedge *Carex rupestris*, alpine blue sow-thistle *Cicerbita alpina*, tufted saxifrage *Saxifraga cespitosa* and drooping saxifrage *S. cernua*. The botanically rich rock habitats support a number of notable invertebrate species. Several key species of birds use inland cliffs for nesting, notably the raptors peregrine and golden eagle, and raven. Habitat covers a wide range of rock types, varying from acidic to highly calcareous. The habitat occurs throughout the uplands, defined as above the limit of agricultural enclosure and is particularly characteristic of high altitudes, but is also found at low altitudes notably in northern Scotland. Many rock habitats, especially cliff faces, rock ledges and boulder fields are inaccessible to grazing animals and are unmanaged. Others are more accessible such as fine scree slopes and gently sloping rock outcrops. Where accessible grazing may keep the vegetation in check. Burning can affect the more heather-rich rock faces with fires spreading up on to rocky slopes from muirburn below.

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

#### RE1111 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) (AN1)

**Description:** Steep scree slopes in the uplands derived from fragments of acid rocks such as sandstones, shales, quartzite and granite (Brown *et. al.*, 1997).

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

#### RE1112 Calcareous and calschist scree slopes of the montane to alpine levels (*Thlaspietalia rotundifolia*) (AN1)

**Description:** Scree habitats consist of rock fragments covering the frost-shattered summits of mountains or accumulating on slopes below cliffs. Eutric scree slopes consist of calcareous or base-rich rocks and include limestone, calcareous-schists and the more basic igneous rocks, such as serpentine and basalt. The scree is colonised by a range of pioneer species and provides shelter for many species sensitive to frost or grazing. Similar species may be found in the habitat known as fell field. Scree slopes in the UK provide a habitat for various plant communities with affinities to the *Thlaspietalia rotundifolia* described from continental Europe. (Brown *et. al.*, 1997)

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

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*Habitats Section*

All IHS code strings must include one (and only one) code from the Habitats Section.

**RE1113 Calcareous rocky slopes with chasmophytic vegetation (AN1)**

**Description:** Chasmophytic vegetation consists of plant communities that colonise the cracks and fissures of rock faces. The type of plant community that develops is largely determined by the base status of the rock face. Calcareous sub-types develop on lime-rich rocks such as limestone and calcareous schist, whereas silicicolous (or siliceous) communities develop on acid rocks. The presence of calcareous bands within otherwise mainly siliceous rocks often brings the two types together on the same rock outcrop, and some sites may be listed for both types.

Although both calcareous and silicicolous types are widely distributed in the uplands of the UK, siliceous rocks predominate and calcareous chasmophytic vegetation is of more limited overall extent. Both plant communities in the UK broadly belong to the rock fissure communities described from Europe (*Asplenietea trichomanis*). (Brown *et. al.*, 1997)

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

**RE1114 Siliceous rocky slopes with chasmophytic vegetation (AN1)**

**Description:** Chasmophytic vegetation consists of plant communities that colonise the cracks and fissures of rock faces. The type of plant community that develops is largely determined by the base status of the rock face. Silicicolous (or siliceous) communities develop on acid rocks such as basalt, quartzite, granite and sandstone, and calcareous sub-types develop on lime-rich rocks. The presence of calcareous bands within otherwise mainly siliceous rocks often brings the two types together on the same rock outcrop, and some sites are therefore listed for both types. While both silicicolous and calcareous types are widely distributed in the uplands of Britain and other parts of Europe, silicicolous types predominate and calcareous chasmophytic vegetation has a much more limited distribution. Both plant communities in the UK have affinities to the rock fissure communities described from Europe (*Asplenietea trichomanis*). (Brown *et. al.*, 1997)

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

**RE111Z Other upland natural rock and scree habitats (IC)**

**Description:** Other upland natural rock and scree habitats not covered above.

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

**RE112 Lowland natural rock and scree habitats (SC)**

**Description:** Natural rock exposures in the lowlands.

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

**RE14 Caves (PH1)**

**Description:** Natural recesses, large enough to enter and with a complete ceiling. Caves will be mapped as point features (JNCC, 2003).

**Not included:** Large crevices and deep natural gullies should be included under RE1Z Other natural rock exposure (IC). See RE0.

**Required multiplex codes:** See RE0.

**RE141 Caves not open to the public (AN1)**

**Description:** Includes their water areas and flows (Brown *et. al.*, 1997).

**Not included:** See RE14.

**Required multiplex codes:** See RE0.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***RE14Z Other caves (IC)**

**Description:** Includes those caves that are open to the public (and their water areas and flows).

**Not included:** See RE14.

**Required multiplex codes:** See RE0.

**RE15 Exposed river gravels and shingles (SC)**

**Description:** Gravels and shingles in a river basin beyond the mean annual flood reach of the river. Relics of previously higher fluvial system (e.g. peri-glacial).

**Not included:** Exposed sediments and shingle banks along rivers or streams where these are within the mean annual flood reach should be included under an AR~ category.

**Required multiplex codes:** See RE0.

**RE1Z Other natural rock exposure features (IC)**

**Description:** Includes gullies, crevices, swallet holes. Will be mapped as point features.

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

**RE2 Artificial rock exposures and waste (PH1)**

**Description:** Includes quarries, spoil heaps, mines or refuse tips. (JNCC, 2003)

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

**RE21 Quarry (PH1)**

**Description:** Includes gravel, sand or chalk pits, and stone quarries, the developed vegetation (if any) of which has not succeeded to another broad habitat type. (JNCC, 2003)

**Not included:** Pits or quarries in-filled with water should be recorded under an AS~ standing open water category. See RE0.

**Required multiplex codes:** See RE0.

**RE22 Spoil heap (PH1)**

**Description:** Includes abandoned industrial areas (dominated by waste or spoil) and tips of waste materials such as coal mine spoil and slag. Spoil dumped outside the cast area should be included here. Spoil derived from a deep-mine should be included here. (JNCC, 2003)

**Not included:** Spoil heaps within quarries should be included under RE21. Mine spoil within an open-cast mine should be included under RE23. See RE0.

**Required multiplex codes:** See RE0.

**RE23 Mine (PH1)**

**Description:** Includes open-cast mines. (JNCC, 2003)

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

**RE24 Refuse tip (PH1)**

**Description:** Rubbish tips, worked landfill sites. (JNCC, 2003)

**Not included:** See RE0.

**Required multiplex codes:** See RE0.



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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

**RE2Z Other artifical rock exposure and waste (IC)**

**Description:** Any other artificial rock exposure, waste, refuse or spoil.

**Not included:** See RE0.

**Required multiplex codes:** See RE0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## BOUNDARY AND LINEAR FEATURES

### Boundary and linear features

#### LF0 Boundary and linear features (BHT)

**Description:** This habitat category covers a diverse range of linearly arranged landscape features such as hedgerows, lines of trees, walls, stone and earth banks, grass strips and dry ditches. It includes some of the built components including roads, tracks and railways and their associated narrow verges of semi-natural habitat. (Jackson D. L., 2000)

**Not included:** The open water of canals or ditches which are water-filled for the majority of the year should be included under an AS~ category. Open water of rivers and streams should be included under an AR~ category. Vegetation alongside watercourses (<5m wide) should be included under an EM2 ~ category. Any terrestrial or marginal habitat over 5m wide should be included under the appropriate broad habitat. Linear features in woodlands such as rides and fire breaks are included in either the WB~ or WC~ category. Cereal field margins managed for conservation are included in the CR~ category (Jackson D.L., 2000)

**Required multiplex codes:** The actual road, railway, or path/track should be categorised by cross-referencing LF27 Transport corridors (SC) with the appropriate Land-use/description category (a UL~ Linear built environment category). Narrow verges of semi-natural habitat associated with these linear features should be mapped as a separate linear feature to the road or railway and be qualified by cross-referencing the LF27 Transport corridors (SC) category code with an LT~ transport or water corridor verges category. Hedges should be cross-referenced with the appropriate Hedge form (LH~) and Hedge management (LM~) codes from the Land-Use/Management section.

#### LF1 Hedges / Line of trees (RC)

**Description:** A boundary line of trees and shrubs over 20m long..., provided that at one time the trees and shrubs were stock proof and more or less continuous. It includes an earth bank or wall only where such a feature occurs in association with the hedgerow. (Bickmore C.J., 2002). Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. (JNCC, 2006)

**Not included:** See LF0.

**Required multiplex codes:** See LF0.

#### LF11 Hedgerows (PHT)

**Description:** All hedgerows consisting predominantly of at least one woody native species. ('Predominantly' means more than 50% cover of native woody species in the hedgerow.) This definition would cover 99% of hedgerows in the countryside in Great Britain. The reference to woody native species includes species recorded by Preston *et al.* (2002) as native somewhere in the UK, and archeophytes (i.e. plants naturalised before AD 1500). If a species is native/archeophyte somewhere in its range in the UK, it will be treated as native everywhere. Sycamore *Acer pseudoplatanus* is a borderline case for inclusion, being present in the 16th century and possibly earlier, but it is proposed that sycamore be included. Climbers such as honeysuckle *Lonicera trichosantha* and bramble *Rubus fruticosus* are recognised as integral to many hedgerows and they provide important food resources and shelter for wildlife. However, they require other woody plants to be present to form a distinct woody boundary feature, and therefore they are not included in the definition of woody species.

**Not included:** See LF0.

**Required multiplex codes:** See LF0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### LF111 Important hedgerows (SC)

**Description:** Hedgerows meeting the criteria for 'Important' hedgerows as defined in The Hedgerow Regulations 1997. For the purposes of these regulations, a hedgerow is 'important' if it, or the hedgerow of which it is a stretch, has existed for 30 years or more; and satisfies at least one of the criteria listed below:

- 1.) The hedgerow marks the boundary, or part of the boundary, of at least one historic parish or township; and for this purpose 'historic' means existing before 1850;
- 2.) The hedgerow incorporates a recorded archaeological feature;
- 3.) The hedgerow is situated wholly or partly within an archaeological site or on land adjacent to and associated with such a site; and is associated with any monument or feature on that site;
- 4.) The hedgerow marks the boundary of or is visibly related to any building or other feature of a pre-1600 AD estate or manor;
- 5.) The hedgerow is recorded as an integral part of a field system pre-dating the Inclosure Acts;
- 6.) The hedgerow contains or has been recorded as relatively recently containing rare or protected species;
- 7.) The hedgerow includes at least 7 woody species; OR at least 6 woody species and has associated with it at least 3 of the features specified (a-i) below; OR at least 6 woody species including one of the following: black-poplar tree (*Populus nigra ssp betulifolia*), large-leaved lime (*Tilia platyphyllos*), small-leaved lime (*Tilia cordata*), wild service-tree (*Sorbus torminalis*); OR at least 5 woody species and has associated with it at least four of the features specified (a-h) below:

(Where the hedgerow in question is situated wholly or partly in the county (as constituted on 1st April 1997) of the City of Kingston upon Hull, Cumbria, Darlington, Durham, East Riding of Yorkshire, Hartlepool, Lancashire, Middlesbrough, North East Lincolnshire, North Lincolnshire, Northumberland, North Yorkshire, Redcar and Cleveland, Stockton-on-Tees, Tyne and Wear, West Yorkshire or York, the number of woody species is to be treated as reduced by one.)

- (a) a bank or wall which supports the hedgerow along at least one half of its length;
- (b) gaps which in aggregate do not exceed 10% of the length of the hedgerow;
- (c) where the length of the hedgerow does not exceed 50m, at least one standard tree;
- (d) where the length of the hedgerow exceeds 50m but does not exceed 100m, at least 2 standard trees;
- (e) where the length of the hedgerow exceeds 100m, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50m;
- (f) at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;
- (g) a ditch along at least one half of the length of the hedgerow;
- (h) connections scoring 4 points or more (A connection with another hedgerow scores one point, a connection with a pond or a woodland in which the majority of trees are broadleaved scores 2 points.)

N.B. The number of woody species in a hedgerow shall be ascertained by

- (i) where the length of the hedgerow does not exceed 30m, counting the number of woody species present in the hedgerow;
- (ii) where the length of the hedgerow exceeds 30m, but does not exceed 100m, counting the number of woody species present in the central stretch of 30m;
- (iii) where the length of the hedgerow exceeds 100m, but does not exceed 200m, counting the number of woody species present in the central stretch of 30m within each half of the hedgerow and divide the aggregate by two;
- (iv) where the length of the hedgerow exceeds 200m, counting the number of woody species present in the central stretch of 30m within each third of the hedgerow and divide the aggregate by three.

- 8.) The hedgerow is adjacent to a bridleway or footpath, within the meaning of the Highways Act 1980, a road used as a public path, within the meaning of section 54 (duty to reclassify roads used as public paths) of the Wildlife and Countryside Act 1981, or a byway open to all traffic, within the meaning of Part III of the Wildlife and Countryside Act 1981, and includes at least 4 woody species as above.

(HMSO, 1997)

**Not included:** See LF0.



### *Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

**Required multiplex codes:** See LF0.

#### **LF11Z Non-important hedgerows (IC)**

**Description:** Hedgerows not meeting the criteria for 'Important' hedgerows as defined in The Hedgerow Regulations 1997 above. (HMSO, 1997)

**Not included:** See LF0.

**Required multiplex codes:** See LF0.

#### **LF12 Line of trees (SC)**

**Description:** Lines of trees originating from hedgerow, normally only determinable in field survey.

#### **LF1Z Other hedges/line of trees (IC)**

**Description:** Hedgerows which do not meet the description above or where there has been a failure to distinguish a line of trees from priority habitat hedgerow. Examples include hedges comprising >50% non-native species, planted hedges of *Cotoneaster*. These will fall outside of the PHT definition LF11.

**Not included:** See LF0.

**Required multiplex codes:** See LF0.

#### **LF2 Other boundaries and linear features (RC)**

**Description:** Boundary and linear features that are not hedges, including lines of trees, banks, walls, dry ditches, grass strips, and fences, and linear features such as transport corridors containing roads, tracks and paths, and railways, and which also contain narrow verges, embankments and cuttings associated with them.

**Not included:** See LF0.

**Required multiplex codes:** See LF0.

**Comments:** Please note: LF21 'Line of trees (not originally intended to be stock proof)' has been deleted and replaced with a less specific category LF12 'Line of trees'.

#### **LF21 Line of trees (not originally intended to be stock proof) (SC)**

**Description:** A line of open-grown trees (native or otherwise) which have not been intended to be or are not now stock proof, the lines of which may or may not mark boundaries. Examples include lines of Lombardy Poplars, lines of (often pollarded) willows along watercourses, and windbreaks or avenues, etc.

**Not included:** See LF0.

**Required multiplex codes:** Qualify this category by cross-referencing with appropriate categories from the woodland classes in the Land-use/description section. (i.e. from WG~, WF~, WS~, or WM~ categories, as appropriate).

#### **LF22 Bank (PH1)**

**Description:** This includes sea-walls (banks), wood-banks, banks formerly supporting a hedge, banks fronted with turves, or stone (such banks whose line supports a hedgerow should be included under a hedge category), and baulks in arable situations. This also includes any ditch which appears to be dry for most of the year and which is associated with the bank (i.e. a borrow ditch). (JNCC, 2003)

**Not included:** Banks in association with a hedge should be mapped as part of the hedge under the LF1~ category. See LF0.

**Required multiplex codes:** See LF0.

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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

**LF23 Wall (PH1)**

**Description:** Vertically upright free-standing constructions of layers of stone, brick or masonry. (JNCC, 2003)

**Not included:** Walls occurring as boundaries in built-up areas should be included under UR~.

**Required multiplex codes:** See LF0.

**LF24 Dry ditch (PH1)**

**Description:** This includes ditches which appear to be dry for the majority of the year. (JNCC, 2003)

**Not included:** Ditches associated with a bank (borrow ditches) should be included under the bank category.

**Required multiplex codes:** See LF0.

**LF25 Grass strip (SC)**

**Description:** Strips of grass often forming buffers between habitats.

**Not included:** See LF0.

**Required multiplex codes:** See LF0.

**LF26 Fence (PH1)**

**Description:** Including rail, and wire fences. (JNCC, 2003)

**Not included:** See LF0.

**Required multiplex codes:** See LF0.

**LF27 Transport corridors (SC)**

**Description:** Roads, railways, canals, paths etc., and their associated verges.

**Not included:** See LF0.

**Required multiplex codes:** The actual road, railway, or path/track should be categorised by cross-referencing LF27 Transport corridors (SC) with the appropriate Land-use code from the UL~ (Linear built environment) category - e.g. LF27.UL3 to describe a path. Narrow verges of semi-natural habitat associated with these linear features should be mapped as a separate linear feature to the road or railway and be qualified by cross-referencing the LF27 Transport corridors (SC) category code with an LT~ (Transport or water corridor verges) category - e.g. LF27.LT4 to describe road-side vegetation. See LF0.

**LF271 Transport corridor without associated verges (SC)**

**Description:** Metalled roads, railways, canals, and surfaced woodland rides which are unvegetated.

**Not included:** The associated verges (See LF272).

**Required multiplex codes:** The transport corridor should be categorised by cross-referencing with the relevant UL~ code for the corresponding linear built environment.

**LF272 Transport corridor associated verges only (SC)**

**Description:** Vegetation occurring in road, rail, canals or other transport corridors and usually in a verge, embankment, or cutting.

**Not included:** The associated transport corridor itself (See LF271).

**Required multiplex codes:** The habitat should be linked to the associated corridor type by cross-referencing with a specific LT~ land-use code.

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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

**LF273 Transport corridors with natural land surface (SC)**

**Description:** Transport corridors with natural land surface where there is little or no differentiation between the corridor itself and the associated verge.

**Comments:** If using OS Mastermap, the polygon will be described as having a natural surface. For aerial photo interpretation: if <5m wide = LF27, if >5m wide = OVZ, or if additional data available should be allocated to an actual habitat type'.

**LF274 Bridge (SC)**

**Description:** A structure carrying a road, path, railway, etc. across a river, road, or other obstacle.

**Comment:** Where a bridge crosses more than one type of feature use the code with the lowest value. Eg. where water and a road are bridged use LF2741 Bridge over water.

**LF2741 Bridge over water**

**Description:** The bridge allows the crossing of a water body i.e. lake, pond, stream, river.

**LF2742 Bridge over transport corridor**

**Description:** The bridge crosses a transport corridor. See Linear built environment on page 123 for descriptions of railway, roads etc.

**LF2743 Bridge over land/other**

**Description:** A bridge that crosses features not described by LF2741 Bridge over water or LF2742 Bridge over transport corridor eg. fissure, gorge, valley.

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*Habitats Section**All IHS code strings must include one (and only one) code from the Habitats Section.***BUILT-UP AREAS AND GARDENS****Built up areas and gardens****UR0 Built-up areas and gardens (BHT)**

**Description:** Includes urban and rural settlements, domestic gardens and allotments, farm buildings and yard, caravan parks, and other man made built structures such as industrial estates, retail parks, waste and derelict ground and urban transport infrastructure. (changed from Jackson D.L., 2000)

**Not included:** Amenity grassland (in urban parks, playing fields, golf courses etc.) should be included under G10 Improved grassland (BHT) and identified with a land-use code. (NB "Urban parkland" has been omitted from the IHS UR0 description because it normally comprises amenity grassland, specifically excluded from UR0 in Jackson, 2000.) Vegetation occurring as a linear habitat alongside rivers, canals, railways or roads/tracks should be included under LF~, as should the actual roadway, railway or track. Canals should be included under AS~ (Standing water), rivers under AR~ (Running water). Encapsulated remnant semi-natural vegetation or late-succession secondary vegetation in a built environment (woodland, grassland, heathland, wetland etc.) should be included under the relevant Broad Habitat Type.

**Required multiplex codes:** Qualify UR0 with a UA~ category from the Built up areas categories of the Land-use section. Any matrix vegetation (scrub, scattered trees, patchy bracken, tall herb and fern, ephemeral/short perennial herb, and introduced shrub) in a built environment should be cross-referenced with UR0.

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*Habitats Section*

*All IHS code strings must include one (and only one) code from the Habitats Section.*

*ADDITIONAL REMOTE CLASSIFICATION*

**Unknown terrestrial vegetation**

**OV0 Unknown terrestrial vegetation (RC)**

**Description:** Code to be used only for Aerial photographic interpretation (or other remote sensing techniques).

**OV1 Unknown terrestrial vegetation, possibly wetland (RC)**

**Description:** Code to be used only for Aerial photographic interpretation (or other remote sensing techniques).

**OV2 Undetermined gorse (SC)**

**Description:** Code to be used only for aerial photographic interpretation (or other remote sensing techniques) where it is impossible to determine which species present and therefore whether should be coded as heathland or scrub.

**OV3 Undetermined young woodland (SC)**

**Description:** Code to be used only for aerial photographic interpretation (or other remote sensing techniques) where it is impossible to determine between coniferous and broadleaved tree species.

**OVZ Other unknown terrestrial vegetation (IC)**

**Description:** Code to be used only for Aerial photographic interpretation (or other remote sensing techniques).

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## MARINE

### Supralittoral rock

#### SR0 Supralittoral Rock (BHT)

**Description:** The region of rocky shore including cliffs and slopes immediately above the highest water level, and subject to wetting by spray/wave splash (also called the splash zone). Features that may be present include vertical rock, boulders, gullies, ledges and pools, depending on the wave exposure of the site and its geology. The habitat supports salt-tolerant species characterised by green algae *Enteromorpha* and *Cladophora*, yellow and grey lichens e.g. *Caloplaca marina*, *Xanthoria parietina* and *Lecanora* spp, littorinid molluscs and acarid mites. The habitat is widespread around the UK coastline. (UK Biodiversity Group, 1999a)

**Not included:** Littoral and sublittoral rock and cliffs.

#### SR1 Vegetated maritime cliff and slopes (PHT)

**Description:** The junction between land and sea where a break in slope is formed by slippage or erosion by the sea. On the seaward side, the plan extends to the limit of the supralittoral zone and so includes the splash zone lichens and other species occupying this habitat (UK Biodiversity Group, 1999). Exposure to wind and salt spray is a key determinant of vegetation type, plus the geology of the cliff or slope. Vegetated cliff species include Sea Campion (*Silene maritima*), Thrift (*Armeria maritima*), Rock Samphire (*Crithmum maritimum*), Buck's Horn Plantain (*Plantago maritima*), and high frequency of Red Fescue (*Festuca rubra* ssp *pruinosa* - the densely salt-tolerant ecotype), and Creeping Bent (*Agrostis stolonifera*). Maybe also Maidenhair Fern (*Adiantum capillus-veneris*). Lichen-dominated cliffs support yellow and grey lichens. The habitat also provides an important breeding ground for a range of seabirds. The habitat occurs on most of the British shoreline, except between the Thames and Humber Estuaries. In the North it consists of hard rock communities, in the South of hard rock communities and dry calcareous cliffs. (UK Biodiversity Group, 1999a)

**Not included:** Maritime cliff and slope where vegetation exhibits a transition to another terrestrial habitat type should be coded as that habitat type and qualified as Maritime cliff and slope (PHT) by cross-reference with the MC1 habitat complex from the Habitat Complexes section - e.g. Lowland calcareous grasslands perched on maritime slopes are coded CG1.GM12.GL21.MC1.

**Required multiplex codes:** This habitat should be cross-referenced with the MC1 (Maritime Cliff and Slope) habitat complex from the Habitat Complexes section.

**Comments:** This category was previously called 'Maritime cliff and slope (PHT)'. This BAP priority habitat type has now been designated as a habitat complex in the Habitat Complexes section, allowing it to be cross-referenced with other habitats where there may be an overlap. The replacement category still sits here in the hierarchy to code for strictly maritime influenced vegetation, which does not exhibit transitional plant communities.

#### SR11 Vegetated sea cliffs of the Atlantic and Baltic coasts (AN1)

**Description:** Sea cliff vegetation with well developed zonation of vegetation on rock types ranging from soft shales, mudstones, limestones, chalk and acid igneous formations. Exposure to the sea is a key determinant of the type of vegetation. Vegetation is determined by cliff structure, stability, underlying rock and level of exposure. The most characteristic communities occur on less extreme slopes supporting species tolerant to wind and salt spray. Less specialist communities occur on soft cliffs ranging from ruderals to woodland. There is little specific difference in composition between this category and SR1 but the Annex 1 category should only include areas which have internationally important bird interest and vegetation such as Spotted rock-rose *Tuberaria guttata*, Nottingham catchfly *Silene nutans*, Field cow-wheat *Melampyrum arvense* or Spring squill *Scilla verna*. (Brown *et. al.*, 1997)

**Not included:** See SR0.

#### SR12 Other vegetated cliffs and lichen dominated cliffs (IC)

**Description:** Maritime cliff and slopes [vegetated cliffs and lichen dominated cliffs] assessed as not meeting the Annex 1 criteria for Vegetated sea cliffs of the Atlantic and Baltic coasts.

**Not included:** See SR0.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### SR2 Boulders and rock above the high tide mark (PH1)

**Description:** Areas of boulders and rocks above the high tide mark which are only wetted by wave splash and salt spray. The habitat is important for lichens including Scrambled egg lichen *Fulgensia fulgens*, Ciliate strap lichen *Heterodermia leucomelos* and the Southern grey physcia *Physcia tribaciodes*. Vascular plants include Common scurvygrass *Cochleria officinalis* and Sea lavender *Limonium recurvum*. Can be important as a breeding ground for Common seal *Phoca vitulina* (Scotland) and Grey seal *Halichoerus grypus* (rare), and for breeding birds (Rock pipit *Anthus petrosus*) and wintering birds (Turnstone *Arenaria interpres*, Purple sandpiper *Calidris maritima*). Marine species include limpets, winkles and sandhoppers along with terrestrial Bristle-tails and woodlouse species. 6700 km of British coastline is rocky at the high tide mark, 84% of which occurs in Scotland. (JNCC, 2003)

**Not included:** See SR0.

#### SRZ Other Supralittoral rock (IC)

**Description:** Other rock beyond the tidal zone including maritime cliffs and slopes which are not vegetated or lichen dominated.

**Not included:** See SR0.

### Supralittoral sediment

#### SS0 Supralittoral Sediment (BHT)

**Description:** The region of shore immediately above the highest water level, and subject to wetting by spray/wave splash (also called the splash zone). Salt-tolerant species are the characteristic colonisers of this habitat and the biotopes present are strongly influenced by sediment size as well as degree of wave exposure of the shore. Characteristic vascular plants include the sea sandwort *Honckenya peploides*, saltwort *Salsola kali*, and sea beet *Beta maritima* (UK Biodiversity Group, 1999a). Sand covered shorelines especially on shore areas of sand created by the action of wind and often colonised and stabilised by communities of coarse maritime grasses. Shingle beaches are covered by pebbles, sometimes boulders, usually formed by wave action. (Jackson D.L., 2000)

**Required multiplex codes:** If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex. Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section. Where the habitat is part of a heathland habitat complex, it should be cross-referenced with either HL1 (Lowland heathland) or HU1 (Upland heathland) as appropriate.

#### SS1 Coastal sand dunes (PHT)

**Description:** Wind blown sand formations (stable and shifting) plus associated foreshore, slacks (dune wetland), grassland, heathland, scrub and woodland. They develop where sediment reaches up to 2mm in size. A critical factor is for a large beach which dries out at low tide and the sand grains are blown on to land by the wind, and vegetation prevents sand dispersing further. Dunes are generally floristically rich and many rare or local species favour sand/calcareous soils. This category includes: Embryonic and mobile dunes - occur mainly on the seaward side of a dune system where sand deposition is occurring and occasionally further inland in blow-outs. They support very few plant species, the most characteristic being marram grass *Ammophila arenaria*. Semi-fixed dunes - occur where the rate of sand accretion has slowed but the surface is still predominantly bare sand; marram is still common but there is an increasing number of other species. Fixed dune grassland - forms largely closed swards where accretion is no longer significant, the surface is stabilised and some soil development has taken place. Dune grassland - Marram less frequent, a shift to plant species associated with calcareous grassland. Dune slacks - wetland within a dune system, where close rabbit grazing leads to rare/scarcely plants such as Fen Orchid (*Liparis loeselii*) and Petalwort (*Petalophyllum ralfsii*). Dune heath - stable areas of acid/lime deficient dunes with Heather (*Calluna vulgaris*) almost always present, plus Bell Heather (*Erica cinerea*), Western Gorse (*Ulex gallii*), Crowberry (*Empetrum nigrum ssp nigrum*), Sheep's Fescue (*Festuca ovina*) and the characteristic Sand Sedge (*Arex arenaria*). Dune scrub - dry with Sea Buckthorn (*Hippophae rhamnoides*) or wet with Willow (*Salix repens ssp argentea*) and Birch. Above the beach is often a seaward strip of low dunes with plants tolerant of short immersion e.g. Sand Couch (*Agropyron junceiforme*), Sea Rocket (*Cakile maritima*), Prickly Saltwort (*Salsola kali ssp kali*) and Sea Sandwort (*Honckenya peploides*). (UK Biodiversity Group, 1999a)

**Not included:** Areas >MMU of other habitat within the sand dune should be mapped separately. In situations where shingle and sand occur in intimate association, the shingle (SS3~) should be given mapping priority.

**Required multiplex codes:** See SS0.



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### SS11 Embryonic shifting dunes (AN1)

**Description:** Associated with developing dunes, these are very localised, covering less than 1000 ha in the UK but with a wide geographic distribution. Vegetation exists in a highly dynamic state and is dependant on the continued operation of physical processes at the dune/beach interface. It is species-poor with Marram being common. Strandline species may be present and include Sea rocket *Cakile maritima*, Lyme grass *Leymus arenarius* (more abundant in the north and east) and Sand couch *Elytrigia juncea* (south and west). This is a transient habitat eventually either displaced by Marram-dominated vegetation or washed away by storms. (Brown *et al.*, 1997)

#### SS12 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") (AN1)

**Description:** Geographically widespread, although often restricted to a narrow strip. Marram is always prominent and usually dominant, with other vegetation composition affected by the degree of instability. Rapid sand accretion results in only Marram, whereas lower levels of sand deposition encourages first specialist dune plants, then less specialised grasses, drought-tolerant annuals and specialist bryophytes such as the moss *Tortula ruralis ssp. ruraliformis* which is important for the stabilisation of the sand surface. On the seaward edge salt-tolerant plants such as Sea sandwort *Honckenya peploides* may be prominent. In the south shifting dune plants such as Portland spurge *Euphorbia portlandica* and Sea holly *Eryngium maritimum* may be present, as may Lyme grass *Leymus arenarius* in the north. This habitat is an unstable system maintained by change. (Brown *et al.*, 1997)

#### SS13 Fixed dunes with herbaceous vegetation ("grey dunes") (AN1)

**Description:** A complex habitat type, occurring mainly on the largest dune systems, typically forming inland of the zone dominated by Marram, which is replaced as the dune stabilises. There is considerable species variation, the most common vegetation type being Atlantic dune grassland consisting of a short sward of Red fescue *Festuca rubra* and Lady's bedstraw *Galium verum* and other species typical of calcareous substrates. There are many regional variations - in the south-west and Wales Wild thyme *Thymus polytrichus* is often dominant, Bloody crane's-bill *Geranium sanguineum* is prominent in the north-east, and lichens dominate in East Anglia. (Brown *et al.*, 1997)

#### SS14 Decalcified fixed dunes (AN1)

**Description:** Stable dune systems occurring on larger sites where there is width for it to develop. Loss of calcium carbonate and increased soil acidity result from leaching of the surface layers by rainfall. The habitat is characterised by dune heath dominated by Heather *Calluna vulgaris* and Sand sedge *Carex arenaria*. Both Annex 1 categories are similar in composition and can be difficult to distinguish and may succeed one another in the same location over time. (Brown *et al.*, 1997).

#### SS141 Atlantic decalcified fixed dunes (Calluno-Ulicetea) (AN1)

**Description:** Well represented in the UK, characterised by Heather *Calluna vulgaris* and Sand sedge *Carex arenaria*. In the West Bell heather *Erica cinerea* may be abundant and in the East Grey hair-grass *Corynephorus canescens* may be prominent. In drier conditions the habitat may form transitions with acidic dune grassland characterised by Sheep's fescue *Festuca ovina* and Common bent *Agrostis capillaris*. Lichens tend to dominate on nutrient-poor sand subject to severe drought. (Brown *et al.*, 1997)

#### SS142 Decalcified fixed dunes with *Empetrum nigrum* (AN1)

**Description:** Confined to Scotland where a combination of a wetter climate and a more widespread occurrence of dune sand composed of acidic silica sand grains encourages the development of acidic dune vegetation, dominated by Heather *Calluna vulgaris* and Crowberry *Empetrum nigrum*. It tends to occur in mosaics with other habitats and forms transitions with acidic grasslands. (Brown *et al.*, 1997)

#### SS15 Dunes with *Salix repens ssp. argentea* (Salicion arenariae) (AN1)

**Description:** They are similar to Humid dune slacks, but are differentiated by Creeping willow being dominant, and tend to be associated with drier sites and with calcareous systems. (Brown *et al.*, 1997)

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### SS16 Dunes with Sea buckthorn (*Hippophae rhamnoides*) (AN1)

**Description:** Stable dunes where Sea buckthorn *Hippophae rhamnoides* is dominant or abundant. Sea buckthorn is an invasive species, non-native over most of the UK and is actively controlled where it occurs. (Brown *et. al.*, 1997)

#### SS17 Humid dune slacks (AN1)

**Description:** Low-lying areas within dune systems that are seasonally flooded and where nutrient levels are low. They are more common in the west and north. A wide range of communities can occur but Creeping willow *Salix arenaria* is frequently present, variously in association with Yorkshire fog *Holcus lanatus* and the bryophytes *Campylopus stellatus* and *Calliergon cuspidatum*. A further community is typified by Silverweed *Potentilla anserina* and Common sedge *Carex nigra*. Wetter sites at an earlier successional stage may support rare plants such as Fen orchid *Liparis loeselii* and Round-leaved wintergreen *Pyrola rotundifolia*. (Brown *et. al.*, 1997)

**Not included:** Habitats where *Salix arenaria* is dominant should be classified as SS15 Dunes with *Salix arenaria* (AN1).

#### SS18 Coastal dunes with *Juniperus* spp. (AN1)

**Description:** Stands occur in a mosaic with dune grassland and heath. Both prostrate and erect forms of juniper can be found. Stands are usually very small, occur only occasionally and are intimately mixed with other Annex 1 habitat types. There is complete range from discrete stands to more scattered and occasional individuals, which occur within habitat types defined as fixed dunes. (Brown *et. al.*, 1997)

**Comments:** Only two UK sites are known, both in NE Scotland.

#### SS1Z Other sand dunes (IC)

**Description:** Includes Annex 1 habitats Dune Juniper thickets, and Open grassland with grey hair-grass *Corynephorus* and bent-grasses *Agrostis* of continental dunes which are very rare in the UK, and sand dunes other than those which are classified as Annex 1 habitats.

#### SS3 Shingle above high tide mark (PH1)

**Description:** Widely distributed around the UK coastline, shingle beaches consist of sediment ranging in grain size from 2mm to 200mm. Shingle beaches may take the form of fringing beaches, spits, barriers, cusped forelands and barrier islands. Vegetation will establish on shingle beaches when there is a matrix of finer materials such as sand or silt and the structure is stable. Birds including Arctic tern *Sterna paradisaea* and Little tern *Sterna albitrons* use shingle areas as breeding grounds. (JNCC, 2003)

**Required multiplex codes:** See SS0.

#### SS31 Coastal vegetated shingle (PHT)

**Description:** Shingle is defined as sediment with particle sizes in the range 2-200 mm. Shingle structures take the form either of spits, barriers or barrier islands formed by longshore drift, or of cusped forelands where a series of parallel ridges piles up against the coastline. The vegetation communities of shingles features depend on the amount of finer material mixed in with the shingle, and on the hydrological regime. The classic pioneer species on the seaward edge include Sea kale, *Crambe maritima*; Sea pea, *Lathyrus japonicus*; Babington's orache, *Atriplex glabriuscula*; sea beet, *Beta vulgaris*; and sea campion, *Silene uniflora*; such species can withstand exposure to salt spray and some degree of burial or erosion. Further from the shore, where conditions are more stable, more mixed communities develop, leading to mature grassland, lowland heath, moss and lichen communities, or even scrub. Shingle structures support breeding birds including gulls, waders and terns. (UK Biodiversity Group, 1999a). Shingle with any level of vegetation cover should be included.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### SS311 Perennial vegetation of stony banks (AN1)

**Description:** Occurring mostly in North-east Scotland and South-east England, this habitat develops when a sequence of foreshore beaches are deposited at the limit of high tide. The largest and most stable structures support scrub with Broom *Cytisus scoparius* and Blackthorn *Prunus spinosa*, or heath vegetation with Heather *Calluna vulgaris* and/or Crowberry *Empetrum nigrum*. Narrow less-stable structures support Yellow-horned poppy *Glaucium flavum*, Sea kale *Crambe maritima* and Sea pea *Lathyrus japonicus*, with Thrift *Armeria maritima* and Sea campion *Silene uniflora* in more stable areas above this zone. These may exist in a matrix with abundant lichens. (Brown *et. al.*, 1997)

#### SS312 Annual vegetation of drift lines (AN1)

**Description:** A transient habitat occurring on shingle at or above mean high water spring tides. The vegetation is ephemeral and composed of annual or short-lived perennial species such as Sea beet *Beta vulgaris* ssp. *maritima*, Orache *Atriplex* spp. and Sea sandwort *Honckenya peploides*. (Brown *et. al.*, 1997)

**Not included:** Driftlines on essentially sandy beaches.

#### SS3Z Other shingle above high tide mark (IC)

**Description:** Shingle beaches including spits, barriers, cusped forelands and barrier islands which do not support vegetation.

#### SS4 Strandline vegetation (PH1)

**Description:** A transient habitat formed on accumulations of drift materials and gravels rich in nitrogenous organic matter at or near the high water mark. They support few species but include Sea sandwort *Honckenya peploides*, Saltwort *Salsola kali* and Sea rocket *Cakile maritima*. Rarer species include Shore dock *Rumex rupestris* in the south-west and Oysterplant *Mertensia maritima* in the north. Invertebrates that utilise the rotting organic matter on the strandline include specialised species such as the woodlouse *Armadillidium album* and the beetles *Nebria complanata* and *Aphodius plagiatus*. Due to its transient nature there are currently no estimates of the extent of this habitat in the UK. (JNCC, 2003)

**Required multiplex codes:** See SS0.

#### SSZ Other supralittoral sediment (IC)

**Description:** Other coastal sediments above the high tide mark.

**Required multiplex codes:** See SS0.

### Littoral rock

#### LR0 Littoral Rock (BHT)

**Description:** Littoral rock habitats are widespread around the UK. The geology and wave exposure of the shore influence the form, which can be as varied as vertical rock, shore platforms, boulder shores, or rocky reefs surrounded by areas of sediment. These two factors are also major influences on the associated marine communities. Relatively soft rock such as chalk and limestone can support boring species whereas colonisation of basalt and granite is limited to the rock surfaces. In all cases there is a distinct zonation of species down the shore which principally reflects the degree of immersion and emersion by the tide. The littoral fringe is encrusted with the lichen *Verrucaria maura*, the red alga *Porphyra umbilicalis*, or by sparsely distributed barnacles. If there are pools present these are likely to be colonised by coralline crusts and the red alga *Corallina officinalis*. The eulittoral (mid shore) zone is usually dominated by mussels *Mytilus edulis* and barnacles, while the lower shore may have a dense red algal turf. Deep pools in this zone can contain fucoids and kelps. At the sublittoral fringe, where conditions can also be severe, a typical coloniser is the kelp *Alaria esculenta* amongst a dense band of small mussels. (UK Biodiversity Group, 1999a)

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### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### LR1 Littoral chalk (PHT)

**Description:** Littoral chalk coastline habitats. Characteristic features of chalk coastlines are their geomorphological formations, such as cliffs, which create a range of microhabitats of biological importance. Littoral-fringe and supralittoral chalk cliffs support algal communities unique to the substrata which comprise members of the Chrysophyceae and Haptophyceae such as *Apistonema carterae* and *Chrysotila* spp. Their restricted presence may be due to physical characteristics of chalk, particularly its porosity and ability to remain moist. The generally soft nature of chalk results in the presence of a characteristic flora and fauna, notably rock-boring invertebrates such as the spionid worm *Polydora* spp. and piddocks. Littoral chalk also characteristically lacks species common on hard rocky shores (e.g. *Pelvetia canaliculata* and *Ascophyllum nodosum*), but supports distinct successive zones of algae and animals such as *Fucus* spp, kelps *Laminaria* spp. and red algal turfs, or barnacles and mussels on wave-exposed shores. (UK Biodiversity Group, 1999a)

**Not included:** Sublittoral chalk coasts should be classified as IR7 Sublittoral chalk (PHT).

#### LR2 Intertidal surge gullies and caves (PHT)

**Description:** This habitat occurs on exposed shores and is characterised by a faunal turf of Mussels, Anemones and Hydroids. Sponges often form a thick crust on rock. The species composition varies markedly with variation in the type of gully and degree of wave surge. (JNCC, 2006)

**Not included:** Caves and surge gullies in the sublittoral zone should be classified as IR4 Subtidal surge gullies and caves (PHT).

#### LR21 Submerged or partly submerged sea caves (AN1)

**Description:** Caves can vary in size from a few metres to more extensive systems, with vertical and overhanging rock providing the principal marine habitat. Caves are typically colonised by encrusting animal species but may also support shade-tolerant algae near their entrances. There is often considerable zonation of communities due to changing physical factors. Caves that are subject to strong wave surge are characterised by communities of Mussels *Mytilus edulis*, Barnacles *Balanus crenatus*, cushion sponges, encrusting Bryozoans and colonial sea-squirts. The cave floor generally consist of coarse sediment, cobbles and boulders. (Brown *et. al.*, 1997)

**Not included:** See LR2.

#### LR2Z Other intertidal surge gullies and caves (IC)

**Description:** Surge gullies and caves which are not submerged or partly submerged.

**Not included:** See LR2.

#### LR3 Sabellaria alveolata reefs (PHT)

**Description:** Hummocks, sheets or more massive formations attached to hard or mixed substrates formed by a species of Honeycomb worm *Sabellaria alveolata* which lives in tubes of cemented sand grains. The tubes are tightly packed and have a distinctive honeycomb appearance, the reefs being between 30-50cm thick. The reefs are mainly found on the bottom third of the shore and can stretch between the mean high water mark and the shallow subtidal. In Britain, *S. alveolata* reefs are found only on shores with strong to moderate wave action in the South and West, between Lyme Bay on the South coast of England and the Scottish coast of the Solway Firth. Barnacles, molluscs and a low abundance of algae occur in areas of eroded reef. (UK Biodiversity Group, 1999a)

**Not included:** In rare cases where overlap with IR2 (*Sabellaria spinulosa* reef) occurs, *S. alveolata* reef should be given for priority for mapping purposes.

#### LRZ Other littoral rock (IC)

**Description:** Hard substrate in the littoral zone excluding chalk, surge gullies, caves and *Sabellaria* reefs

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## Littoral sediment

### LS0 Littoral Sediment (BHT)

**Description:** Areas of littoral sediment are widespread around the UK forming features such as beaches, sand banks, and intertidal mudflats. A large proportion of this habitat occurs in estuaries and inlets where it can cover extensive areas. Significant but smaller areas of littoral sediment also occur at the head of inlets and sea lochs. Beaches, which tend to be composed of sandier material, develop in more exposed situations and are also widely distributed. Sand flats are more common in northern and western parts of the country and finer grained flats are more common in southern and eastern areas. Muddy sediments usually occur in sheltered areas, especially estuaries. The marine communities found in areas of littoral sediment vary depending on the sediment type, sediment mobility, and salinity of the overlying water. Mobile gravels and sands, for example, tend to be highly impoverished, whereas sheltered areas with mixed sediments can support very rich communities. There is also zonation of species down the shore which principally reflects the degree of immersion and emersion by the tide. In general tidal flats are low in species diversity by they often support very dense populations of invertebrates so that the overall biomass of the area can be extremely high. (UK Biodiversity Group, 1999a)

**Required multiplex codes:** Where the habitat is part of a coastal or floodplain grazing marsh complex, it should be cross-referenced with CF1 (Coastal and floodplain grazing marsh) from the Habitat Complexes section. If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex.

### LS2 Seagrass beds (*Zostera noltii*) (PHT)

**Description:** Dwarf eelgrass *Zostera noltii* is found high on the shore, often adjacent to lower saltmarsh communities. It develops in intertidal and shallow subtidal areas on sand and mud in marine inlets, bays, lagoons and channels, sheltered from significant wave action. The Eelgrass stabilises the substratum and is an important source of organic matter and shelter. Leaves may be colonised by diatoms and algae *Enteromorpha* spp., *Cladophora rectangularis*, *Rhodophyllum georgii* and *Ceramium rubrum*. Jellyfish and anemones may also be present. The stabilised substrate supports Sea potato, Nettle dog-whelk, Sand mason and Burrowing anemone. (UK Biodiversity Group, 1999a)

### LS3 Coastal saltmarsh (PHT)

**Description:** Coastal saltmarshes in the UK comprise the upper, vegetated portions of intertidal mudflats, lying approximately between mean high water neap tides and mean high water spring tides. For the purposes of this category, however, the lower limit of saltmarsh is defined as the lower limit of pioneer saltmarsh vegetation and the upper limit as one metre above the level of highest astronomical tides to take in transitional zones. Saltmarsh vegetation consists of a limited number of halophytic (salt tolerant) species adapted to regular immersion by the tides. (UK Biodiversity Group, 1999). Characteristic species include Annual sea-blite *Suaeda maritima*, Glasswort *Salicornia* spp., Common saltmarsh-grass *Puccinellia maritima*, Sea rush *Juncus maritimus*, Sea aster *Aster tripolium*, Sea purslane *Atriplex portulacoides* and Sea lavender *Limonium* spp. Many invertebrates are confined to saltmarsh, and the habitat is important also for wintering and passage birds such as Barnacle goose and Twite. (UK Biodiversity Group, 1999a)

**Not included:** Seagrass beds which are included in LS2.

### LS31 *Salicornia* and other annuals colonising mud and sand (AN1)

**Description:** Widespread in the saltmarshes of England and Wales but restricted in Scotland and Northern Ireland, occurring as an integral part of a sequence of habitats from sand/mudflats to more stable saltmarsh vegetation. Pioneer vegetation consists of a very small number of species and is dominated by open stands of Glasswort *Salicornia* spp. or Annual sea-blite *Suaeda maritima*, although density can vary. Other species may be present including Common saltmarsh-grass *Puccinellia maritima* and Common cord-grass *Spartina anglica*. Ephemeral species may also colonise open pans in upper saltmarshes such as Sea pearlwort *Sagina maritima* and Knotted pearlwort *Sagina nodosa*. (Brown *et al.*, 1997).

### LS32 *Spartina* swards (*Spartinion maritimae*) (AN1)

**Description:** Cord-grass *Spartina* spp. colonises a wide range of substrates and occurs on the seaward edge of saltmarshes and creeksides and may colonise old pans in upper saltmarsh. Only areas of Small cord-grass *Spartina maritima* and Smooth cord-grass *S. alterniflora* are of conservation value. There are only two sites in the UK where these species occur in any quantity, having been displaced by the hybrids Townsend's cord-grass *S. x townsendii* and Common cord-grass *S. anglica*. (Brown *et al.*, 1997)

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### LS33 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (AN1)

**Description:** This vegetation occupies the middle and upper reaches of saltmarshes where tidal inundation still occurs but with less frequency and duration. At the lower reaches the vegetation is often species-poor and may form an open sward of Common saltmarsh-grass *Puccinellia maritima*. Further up the saltmarsh the vegetation becomes herb-dominated and Red fescue *Festuca rubra* becomes more prominent. Communities present may include tussocks of Sea rush *Juncus maritimus* dominating a herb-rich vegetation, saltmarshes supporting patches of species-poor vegetation dominated by Saltmarsh flat-sedge *Blysmus rufus* (North only) or Slender spike-rush *Eleocharis uniglumis*. There are marked regional variation, Saltmarsh rush *Juncus gerardii* being prominent in the North-east, whereas swamp communities are more characteristic of the South-west. (Brown *et. al.*, 1997)

#### LS34 Mediterranean salt meadows (*Juncetalia maritima*) (AN1)

**Description:** This habitat has a very marked southern and western distribution in the UK especially in Wales. The vegetation is characterised by Sea rush *Juncus maritimus* which forms a prominent community at the upper levels of grazed marshes. Associated flora includes Sea arrowgrass *Triglochin maritimum*, Common sea-lavender *Limonium vulgare* and Sea aster *Aster tripolium*. In the West there is also a mesotrophic grassland component with species such as Autumn hawkbit *Leontodon autumnalis* and Parsley water-dropwort *Oenanthe lachenalii*. (Brown *et. al.*, 1997)

#### LS35 Inland salt meadows (*Sarcocornetea*) (AN1)

**Description:** Formerly known as Continental salt meadows. Continental in this context means 'non-coastal' and refers to natural or near-natural inland saltmarsh. Many sites have been destroyed by early salt production activities and there is now only one known site in the UK in the West Midlands. (Brown *et. al.*, 1997)

#### LS36 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) (AN1)

**Description:** This habitat is restricted to the South and East coasts in the UK and supports scrubby salt-tolerant species and occurs in the uppermost levels of saltmarshes. It is formed of bushes of Shrubby sea-blite *Suaeda vera* and Sea purslane *Atriplex portulacoides*, frequently occurring in association with transitions to sand dunes or shingle structures. Local variations include dense stands of Perennial glasswort *Sarcocornia perennis* with small numbers of herbaceous species, or fewer shrubs and a greater abundance of plants such as Sea lavenders *Limonium* spp. and Sea heath *Frankenia laevis* in a matrix with more common saltmarsh species such as Annual sea-blite *Suaeda maritima* or Thrift *Armeria maritima*. (Brown *et. al.*, 1997)

#### LS3Z Other saltmarsh (IC)

**Description:** Saltmarsh other than that classified under an Annex 1 category.

#### LS4 Mudflats (PHT)

**Description:** Mudflats are sedimentary intertidal habitats created by deposition in low energy coastal environments, particularly estuaries and other sheltered areas. Their sediment consists mostly of silts and clays with a high organic content. Mudflats are characterised by high biological productivity and abundance of organisms, but low diversity with few rare species. In areas of lower salinity, the macroinvertebrates fauna is predominately of the Petersen Macoma community, characteristic species being: common cockle *Cerastoderma edule*, sand-hopper *Corophium volutator*, laver spire shell *Hydrobia ulvae*, ragworm *Hediste diversicolor* and, when salinity is low, large numbers of oligochaete annelids (principally *Tubificoides* spp). With slight increase in the proportion of sand, the polychaetes catworm *Nephtys hombergi* and lugworm *Arenicola marina* occur. The surface of the sediment is often apparently devoid of vegetation, although mats of benthic microalgae (diatoms and euglenoids) are common. (UK Biodiversity Group, 1999a)



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### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### LS41 Mudflats and sandflats not covered by sea water at low tide (AN1)

**Description:** This habitat is submerged at high tide and exposed at low tide. Mudflats form a major component of estuaries and embayments but also occur on the open coast, and range physically from mobile, coarse-sand beaches of wave-exposed coasts to the stable, fine sediment mudflats of estuaries. The habitat is divided into three categories which grade into each other: Mudflats: Form in sheltered areas where the stable sediment supports *polychaete* worms and bivalve molluscs. The high biomass provides important feeding areas for wildfowl and waders. Clean sands: Due to mobility of sediment and consequent abrasion species tend to be mobile and robust and include amphipod crustaceans such as Sandhoppers *Bathyporeia* spp., some *polychaete* worms and bivalve molluscs. (Brown *et. al.*, 1997)

#### LS4Z Other mudflats (IC)

**Description:** Mudflats other than those classified under the Annex 1 category.

#### LS5 Sheltered muddy gravels (PHT)

**Description:** Occur principally in estuaries, rias and sea lochs, in areas protected from wave action and tidal streams. In fully marine conditions on the lower shore this habitat can become extremely species-rich because the complex nature of the substratum supports a high diversity of both infauna and epifauna (Brown *et. al.*, 1997). Polychaetes and bivalve molluscs are normally dominant and the most varied, but representatives of most marine phyla can be present (UK Biodiversity Group, 1999a).

#### LSZ Other littoral sediment (IC)

**Description:** Other sediments occurring in the intertidal zone.

### Inshore rock

#### IR0 Inshore sublittoral rock (BHT)

**Description:** For the purpose of this category the inshore area is defined as within six nautical miles of the shoreline. The seabed of inshore areas is dominated by soft sediment. Where sublittoral rock habitats occur they tend to be immediately adjacent to the shore, fringing islands, headlands, open coast and rocky inlets such as rias and sea lochs. Further offshore, rocky sublittoral habitats, may be present as submerged reefs, pinnacles and ledges, and are often surrounded by areas of soft sediment. The attenuation of light through the water column results in a distinct zonation of species on inshore sublittoral rock. (UK Biodiversity Group, 1999a)

#### IR1 Reefs (AN1)

**Description:** Rocky marine habitats or biological concretions that rise from the sea bed and are usually sublittoral but may extend as an unbroken transition into the intertidal zone. Rocky reefs are more common - only a few invertebrate species are able to develop biogenic reefs. Rocky reefs are very variable, structurally ranging from vertical walls, horizontal ledges, broken rock and boulder fields. Rock type, topography, wave action, temperature and turbidity all affect the type of communities supported by reefs. The species assemblage is characterised by attached algae and invertebrates, usually associated with a range of mobile animals including invertebrates and fish. Exposed reefs tend to be dominated by a robust turf of sponges, anemones and foliose red seaweed, whereas reefs in sheltered conditions support silt-tolerant filamentous algae, fan worms, ascidians and brachiopods. Where reefs extend into the intertidal zone there is a vertical zonation of communities with lichens occurring at the top of the shore, and communities of barnacles, mussels or species of fucoid (wrack) seaweeds in the littoral zone. (Brown *et. al.*, 1997)

#### IR11 Chalk reefs (AN1)

**Description:** Chalk reefs support a particular range of distinct communities, including chalk-boring algal communities. On harder chalk Kelp *Laminaria hyperborea* forests may become established. These communities have a restricted distribution in accordance with the distribution of the rock on which they grow. (Brown *et. al.*, 1997)

#### IR1Z Other subtidal reefs (IC)

**Description:** Biogenic and rocky reefs constructed from rock type other than chalk including sandstone, granite and limestone.



### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### IR2 Sabellaria spinulosa reefs (PHT)

**Description:** *Sabellaria spinulosa* reefs comprise dense subtidal aggregations of this small, tube-building polychaete worm. *S. spinulosa* is widespread around the UK, usually as individuals or small colonies, with large colonies poorly recorded. They are solid (albeit fragile), massive structures at least several centimetres thick, raised above the surrounding seabed, and persisting for many years. (UK Biodiversity Group, 1999). Under favourable conditions *S. spinulosa* forms large colonies, often in areas of moderate tidal flow and mobile sediments. These reefs form structurally stable and complex habitat allowing colonisation on and within the reef structure and significantly increasing diversity in the areas they occur. The localised shelter, hard surface and crevices created by the worm tubes are colonised by algae, bryozoans, hydroids, molluscs and anemones, with Pink shrimp and the Brittlestars *Ophiocomina nigra* and *Ophiothrix fragilis*. The depth of the reefs varies from 10 to 30m. (UK Biodiversity Group, 1999a)

**Not included:** In rare cases where overlap with LR3 (*Sabellaria alveolata* reef) occurs, LR3. *S. alveolata* reef should be given for priority for mapping purposes.

#### IR3 Sheltered sublittoral cliffs (in rias) (PHT)

**Description:** CORINE - 11.26 (undersea caves). (UK Biodiversity Group, 1998b)

#### IR4 Subtidal surge gullies and caves (PHT)

**Description:** This habitat occurs on exposed shores and is characterised by a faunal turf of Mussels, Anemones and Hydroids. Sponges often form a thick crust on rock. The species composition varies markedly with variation in the type of gully and degree of wave surge. (JNCC, 2006)

**Not included:** Caves and surge gullies in the littoral zone should be classified as LR2 Intertidal surge gullies and caves (PHT).

#### IR41 Submerged or partly submerged sea caves (AN1)

**Description:** Caves can vary in size from a few metres to more extensive systems, with vertical and overhanging rock providing the principal marine habitat. Caves are typically colonised by encrusting animal species but may also support shade-tolerant algae near their entrances. There is often considerable zonation of communities due to changing physical factors. Subtidal caves are subjected to less water movement than those in the littoral zone, and silt may accumulate on the cave floor. The sponges *Dercitus bucklandi* and *Thymosia guernei*, the soft coral *Parerythropodium coralloides*, solitary sea-squirts, bryozoans and sessile larvae of jellyfish are characteristic of deeper cave systems. Small caves in particular provide a habitat for crabs, lobsters *Homarus gammarus*, crayfish *Polinurus elephas* and fish such as the Leopard-spotted goby. (Brown *et al.*, 1997)

**Not included:** See IR4.

#### IR4Z Other subtidal surge gullies and caves (IC)

**Description:** Surge gullies and caves which are not submerged or partly submerged.

**Not included:** See IR4.

#### IR5 Tidal rapids (PHT)

**Description:** A range of high energy environments including deep tidal streams and tide-swept habitats. The marine life associated with these habitats is abundant in animals fixed on or in the seabed, and typically include soft coral, hydroids (sea fans), bryozoans (sea mats), large sponges, anemones, mussels and brittlestars in dense beds. (UK Biodiversity Group, 1999a)

#### IR6 Sublittoral chalk (PHT)

**Description:** Submerged chalk coastline habitats. Characteristic features of chalk coastlines are their geomorphological formations, such as cliffs, which create a range of microhabitats of biological importance. Sea caves support algal communities unique to the substrata which comprise members of the Chrysophyceae and Haptophyceae such as *Apistonema carterae* and *Chrysotila* spp. The generally soft nature of chalk results in the presence of a characteristic flora and fauna, notably rock-boring invertebrates such as the spionid worm *Polydora* sp and piddocks. (UK Biodiversity Group, 1999a)

**Not included:** Littoral chalk coasts should be classified as LR1 Littoral chalk (PHT).

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### IR7 *Modiolus modiolus* beds (PHT)

**Description:** The horse mussel *Modiolus modiolus* forms dense beds at depths of 5-70m in fully saline, often moderately tide swept areas of northern and western parts of the British Isles. *M. modiolus* can occur as relatively small, dense beds of epifaunal mussels carpeting steep rocky surfaces but is more frequently recessed at least partly into mixed or muddy sediments in a variety of tidal regimes. Sponges, ascidians, soft corals, anemones, hydroids, bryozoans, tubeworms, brittlestars, urchins, starfish, barnacles, crabs, spider crabs, and other decapods, whelks and other gastropods, scallops and fish all tend to be abundant as epifauna, while there may also be coralline algae and other red seaweeds in shallower areas. Infauna often includes the purple heart urchin *Spatangus purpureus* and numerous bivalves. (UK Biodiversity Group, 1999a)

#### IRZ Other sublittoral rock (IC)

**Description:** Other submerged rocky habitats.

### Inshore sediment

#### IS0 Inshore sublittoral sediment (BHT)

**Description:** For the purpose of this category the inshore area is defined as within six nautical miles of the shoreline. The seabed of inshore areas is dominated by soft sediment. These may be relatively flat featureless plains or worked into forms such as ripples, waves, furrows, and banks. The activities of infauna and epifauna add another dimension by creating smaller-scale features such as burrows, mounds, and tracks. The communities found on, and in, these areas are determined mainly by the sediment type and its mobility. In general, coarse clean sediments tend to occur off exposed coasts, and muddy sediments off sheltered coasts. (UK Biodiversity Group, 1999a)

**Required multiplex codes:** If the habitat lies within a machair system, it should be cross-referenced with the MA1 (Machair) habitat complex from the Habitat Complexes section.

#### IS1 Mud habitats in deep water (PHT)

**Description:** Occur below 20-30m, relatively stable conditions lead to the establishment of burrowing megafaunal communities of bathyal and coastal species. The burrowing megafauna species include burrowing crustaceans such as *Inephrops norvegicus* and *Callinassa subterranea*. The mud habitats in deep water can also support seapen populations and communities with *Amphiura* spp. (UK Biodiversity Group, 1999a)

#### IS2 Sublittoral sands and gravels (inshore) (PHT)

**Description:** Occurs in a wide variety of environments, from sheltered (sea lochs, enclosed bays and estuaries) to highly exposed conditions (open coast). The particle structure of these habitats ranges from mainly sand, through various combinations of sand and gravel, to mainly gravel. (UK Biodiversity Group, 1999). Mostly animal communities colonising soft sediments such as sand or gravel of the infralittoral and circalittoral zones. (UK Biodiversity Group, 1999a)

**Not included:** Offshore Sublittoral sands and gravels are included in OS~ category.

#### IS21 Sandbanks which are slightly covered by sea water all the time (AN1)

**Description:** Consists of soft sediments that are permanently covered by shallow sea water, typically at depths of less than 20m below chart datum. The communities supported depend on the type of sediment and other physical factors. Shallow sandy sediments are typically colonised by a burrowing fauna of worms, crustaceans, bivalve molluscs and echinoderms. Mobile surface fauna include shrimp, prosobranch molluscs, crabs and fish. Sand eels also live in sandy sediments, providing an important food for birds. Coarse stable materials such as shell or maerl support foliose algae, hydroids, bryozoans and ascidians. Shallow sandy sediments can be important nursery areas for fish and feeding grounds for seabirds, especially Puffins *Fratercula arctica*, Guillemots *Uria aalge*, Razorbills *Alca torda* and seaducks such as Scoter *Melanitta nigra*. (Brown *et. al.*, 1997)

#### IS2Z Other sublittoral sands and gravels (inshore) (IC)

**Description:** Sublittoral sands and gravels fitting the priority habitat description but not the Annex 1 type description.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

#### IS3 Seagrass beds (*Zostera marina* & *Z. angustifolia*) (PHT)

**Description:** Eelgrass and Narrow-leaved eelgrass develop in intertidal and shallow subtidal areas (at a depth of approximately 10m), typically on fine sand and mud in marine inlets, bays, lagoons and channels where sheltered from significant wave action. Beds may occur in more muddy conditions in some sea lochs and rias. Plants stabilise substratum and important sources of organic matter, and provide shelter and a surface for attachment by other species. Where this habitat is well developed the leaves of eelgrass plants may be colonised by diatoms and algae such as *Enteromorpha* spp, *Cladophora rectangularis*, *Rhodophyllum georgii*, *Ceramium rubrum*, stalked jellyfish and anemones. The soft sediment infauna may include amphipods, polychaete worms, bivalves and echinoderms. Adult fish frequently seen in *Zostera* beds include pollack *Pollachius pollachius*, two-spotted goby *Gobiusculus flavescens* and various wrasse. Two species of pipefish, *Entelurus aequoreus* and *Syngathus typhie* are almost totally restricted to seagrass beds. (UK Biodiversity Group, 1999a)

#### IS4 Maerl beds (PHT)

**Description:** Maerl is a collective term for several species of calcified seaweed. There are three main maerl bed-forming species in the UK which are *Phymatolithon calcareum*, *Lithothamnion glaciale* and *Lithothamnion corallioides*. It grows as unattached nodules on the seabed, and can form extensive beds in favourable conditions. Maerl is slow-growing, but over long periods its dead calcareous skeleton can accumulate into deep deposits (an important habitat in its own right), overlain by a thin layer of pink, living maerl. Maerl beds typically develop where there is some tidal flow, such as in the narrows and rapids of sea lochs, or straits and sounds between islands. Beds may also develop in more open areas where wave action is sufficient to remove fine sediments, but not strong enough to break the brittle maerl branches. Live maerl has been found at depths of 40m, but beds are typically much shallower, above 20m and extending up to the low tide level. (UK Biodiversity Group, 1999a)

#### IS5 Saline Lagoons [= Coastal lagoons (AN1)] (PHT)

**Description:** Coastal brackish open standing water areas with a restricted connection with the sea, retained behind a barrier such as a bank/ridge, an island or reef, and with salinity approaching or at sea water levels (Brown *et al.*, 1997). Lagoons can contain a variety of substrata, often soft sediments which in turn may support tasselweeds *Ruppia* spp. and stoneworts *Chara* spp. as well as filamentous green and brown algae (UK Biodiversity Group, 1999a).

**Not included:** Brackish standing water with no sea connection is included in AS~ category.

**Required multiplex codes:** Qualify water-body size by applying appropriate AP~ open water size category. Qualify open area form even if natural, using an AO~ category.

#### IS6 Serpulid reefs (PHT)

**Description:** *Serpula vermicularis* is a marine worm which makes a hard, calcareous tube 4-5mm in diameter and up to 150mm long. In most places the worms are solitary with the base of the tube attached to stones or shells, and the feeding end growing up into the water. The worms can also aggregate into clumps or 'reefs' up to 1 m across. It is a very rare biotope, highly vulnerable to physical disturbance. The rich biota associated with the habitat attach to the calcareous tubes. Associated species include: orange sponges, colonial and solitary sea squirts, hydroids, seaweeds, brittlestars, terebellid worms, small spider crabs, squat lobster, hermit crabs, starfish and a range of marine snails. The beds can vary in depth from 5 to 30m. (UK Biodiversity Group, 1999a)

#### ISZ Other inshore sediment (IC)

**Description:** Other types of sublittoral sediment.

### Offshore shelf rock

#### OR0 Offshore Shelf Rock (BHT)

**Description:** Offshore shelf rock habitat represents naturally occurring hard substrata in the area of sea beyond the inshore six nautical mile zone and the start of the continental shelf slope at around 200m depth. It includes isolated rocks, which are entirely dominated by marine influences and that support no terrestrial habitats of any significance, and the overlying water column. (UK Biodiversity Group, 1999a)

**Not included:** Man-made structures such as oil rigs and wrecks.

### Habitats Section

All IHS code strings must include one (and only one) code from the Habitats Section.

## Offshore shelf sediment

### OS0 Offshore Shelf Sediment (BHT)

**Description:** The offshore sediment habitat comprises unconsolidated benthic material and the overlying water column beyond the inshore six nautical mile zone out to the continental shelf-break at a depth of about 200m. It represents a common habitat type, covering most of the seabed of the UK waters with the exception of a few areas of rocky bottom (UK Biodiversity Group, 1999). The strength of wave action on the seabed (in depths to 30-40m), the residual currents, eddies and gyres, and the sediment supply collectively determine the seabed sediment type which, in turn, strongly influences the composition of the burrowing (infaunal) community. The species present are mainly polychaete worms, echinoderms, bivalve molluscs and crustacea. (Jackson D.L., 2000)

### OS1 Sublittoral sands and gravels (Offshore) (PHT)

**Description:** For the purpose of this category Offshore is defined as six nautical miles to the limit of UK waters. Occurs in a wide variety of environments, from sheltered (sea lochs, enclosed bays and estuaries) to highly exposed conditions (open coast). The particle structure of these habitats ranges from mainly sand, through various combinations of sand and gravel, to mainly gravel. (UK Biodiversity Group, 1999a). Mostly animal communities colonising soft sediments such as sand or gravel of the infralittoral and circalittoral zones.

**Not included:** Inshore Sublittoral sands and gravels are included in IS~ category.

### OSZ Other offshore Shelf Sediment (IC)

**Description:** Offshore shelf sediment other than the priority habitat type, OS1.

## Continental shelf slope

### CS0 Continental Shelf Slope (BHT)

**Description:** Shelf slope is the band of seabed that slopes steeply down from the edge of the continental shelf (the shelf break), at about 200m depth, to the deep ocean floor at between 1000m and 2000m depth. The habitat includes both the seabed and the overlying water (UK Biodiversity Group, 1999). Occurs to the West of Britain and Ireland, generally at a depth of about 200m, where the sea floor suddenly drops steeply away into the deep ocean. As the tide impinges on the continental margin, resonances are set up in the water which can result in high growth of phytoplankton during the summer, creating a region of high productivity. This area is identifiable by concentrations of seabirds, shoals of fish and cetaceans. The habitat also supports pelagic fishes and macroplankton. The shelf break is a migration route for whales and the spawning grounds for several commercial fish stocks. (Jackson D.L., 2000)

### CS1 Lophelia pertusa reefs (PHT)

**Description:** *Lophelia pertusa* is a colonial bank-forming species of ahermatypic coral, found in deep, dark, cold waters. *L. pertusa* grows in oceanic water of 4-12°C and is typically found offshore, on the continental shelf and shelf break, most commonly between 200-400 m depth. It is found in current-swept areas, where the local topography or hydrography accelerates the current flow or encourages the development of internal waves in the water column, and where sediment accumulation is low. (UK Biodiversity Group, 1999a)

### CSZ Other Continental Shelf Slope (IC)

**Description:** Continental shelf slope other than *Lophelia pertusaria* reefs.

## Oceanic seas

### OC0 Oceanic Seas (BHT)

**Description:** The area of oceanic seas beyond the continental slope within the UK Waters is restricted to the region to the North and West of Scotland (UK Biodiversity Group, 1999). The habitat is characterised by planktonic communities of nektonic or surface-feeding faunas. They provide a food source for cephalopods, fish, sea mammals and seabirds such as the internationally important Storm petrel 'Hydrobates pelagicus' and Manx shearwater 'Puffinus puffinus'. (Jackson D.L., 2000)

### *Matrix Vegetation Section*

All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.

## Matrix Vegetation

### SCRUB

#### Scrub

#### For Scrub in Reserves Monitoring see SP0 – Woodland Section

#### SC0 Scrub (PH1)

**Description:** Differentiated from scrub woodland by including patches of broadleaved and juniper scrub with a continuous closed canopy of <0.25ha, or with an open/scattered canopy. (JNCC, 2003)

**Not included:** Patches of dwarf-gorse scrub (*Ulex minor*, *U. gallii*) should be included in a HE~ Dwarf-shrub heath category ONLY if their coverage is >25%. Grey willow *Salix cinerea* carr or stands of bog myrtle *Myrica gale* more than 1.5m tall should be included under a WB34 (Wet woodland) category (if >0.25ha in area); or under a WB34, EM~ or EO~ category (if <0.25ha), depending on the associated habitat. Stands of creeping willow *S. repens* on dunes should be included under a dune/coastal/supralittoral category. Low or patchy bog myrtle *Myrica gale* should be included under an EO~ or EM~ category. Hedges should be included under an LH~ category. Young trees or stump regrowth less than 5m high should be included under the appropriate WB~ category for their species mix and habitat type. Large dense stands (>0.25ha) are included under WB2 Scrub woodland (SC). Dense stands of bramble *Rubus fruticosus* should be included under the habitat code of the underlying vegetation type cross-referenced with an OT~ Other tall herb and fern category.

**Required multiplex codes:** Patches of scattered scrub or dense scrub of <0.25ha associated with any of the following habitat types are implicitly included in their category codes but for clarity still require cross-referencing with a SC~ category: GN~ categories (neutral grassland); GC~ categories (calcareous grassland); GA~ categories (acid grassland); HE~ categories (dwarf-shrub heath); and EM~ categories (fen, marsh, and swamp).

#### SC1 Dense/continuous scrub (PH1)

**Description:** All patches of continuous (>90% cover) scrub <0.25ha. (JNCC, 2003)

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC11 Dense/continuous scrub: native shrubs (SC)

**Description:** All patches of continuous (>90% cover) scrub <0.25ha predominantly composed (>50%) of native species.

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC111 Sub-arctic *Salix* spp scrub (AN1)

**Description:** All patches of continuous (>90% cover) scrub <0.25ha. In the UK the habitat type is confined to the higher mountains of the Scottish Highlands, where it is found on ungrazed ledges

and, more rarely, on lightly-grazed, steep, rocky slopes or boulder fields. This is the UK's highest altitude shrubby vegetation on moist, base-rich soils, and is a natural habitat maintained by the harsh climate at high altitude. The habitat type consists of a mixture of willows with arctic-alpine and arctic-sub arctic distributions in Europe, occurring in the far north of Scandinavia or on the mountains there and more rarely in the Alps. In Scotland it is a relict of post-glacial vegetation. Sub-Arctic species include downy willow *Salix lapponum*, whortle-leaved willow *S. myrsinites*, mountain willow *S. arbuscula* and woolly willow *S. lanata*, for which the sites are primarily selected. The associated arctic-alpine and northern species, such as net-leaved willow *S. reticulata*, dark-leaved willow *S. myrsinifolia* and tea-leaved willow *S. phylicifolia*, have also been represented in the site series. The willows grow among a rich mixture of grasses, rushes and broad-leaved herbs. (Brown *et al.*, 1997)

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

### Matrix Vegetation Section

All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.

#### SC112 *Juniperus communis* formations on heaths or calcareous grasslands (AN1)

**Description:** All patches of continuous (>90% cover) *Juniperus communis* scrub <0.25ha occurring on heaths or calcareous grassland (Brown *et. al.*, 1997).

**Not included:** See SC1.

**Required multiplex codes:** Must be associated with an HE~ or GC~ code. See SC1.

#### SC11Z Other dense / continuous scrub: native shrubs (IC)

**Description:** All patches of continuous (>90% cover) native species scrub <0.25ha not of either of the Annex 1 habitat types described above.

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC12 Dense/continuous scrub: introduced shrubs (SC)

**Description:** All patches of continuous (>90% cover) scrub <0.25ha predominantly composed (>50%) of introduced species - e.g naturalised *Rhododendron*, cherry laurel (*Prunus laurocerasus*). Also includes areas of planted garden shrubs.

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC2 Open/scattered scrub (PH1)

**Description:** All areas including patches of open/scattered (<90% cover) scrub. (JNCC, 2003)

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC21 Open/scattered scrub: native shrubs (SC)

**Description:** All areas including patches of open/scattered (<90% cover) scrub predominantly composed of native species.

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC211 Sub-arctic *Salix* spp scrub (AN1)

**Description:** All areas including patches of open/scattered (<90% cover) scrub. In the UK the habitat type is confined to the higher mountains of the Scottish Highlands, where it is found on ungrazed ledges and, more rarely, on lightly-grazed, steep, rocky slopes or boulder fields. This is the UK's highest altitude shrubby vegetation on moist, base-rich soils, and is a natural habitat maintained by the harsh climate at high altitude. The habitat type consists of a mixture of willows with Arctic-alpine and Arctic-sub-Arctic distributions in Europe, occurring in the far North of Scandinavia or on the mountains there and more rarely in the Alps. In Scotland it is a relict of post-glacial vegetation. Sub-Arctic species include downy willow *Salix lapponum*, whortle-leaved willow *S. myrsinites*, mountain willow *S. arbuscula* and woolly willow *S. lanata*, for which the sites are primarily selected. The associated Arctic-alpine and northern species, such as net-leaved willow *S. reticulata*, dark-leaved willow *S. myrsinifolia* and tea-leaved willow *S. phylicifolia*, have also been represented in the site series. The willows grow among a rich mixture of grasses, rushes and broad-leaved herbs. (Brown *et. al.*, 1997)

**Not included:** See SC1.

**Required multiplex codes:** See SC1.



### Matrix Vegetation Section

All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.

#### SC212 *Juniperus communis* formations on heaths or calcareous grasslands (AN1)

**Description:** All areas including patches of open/scattered (<90% cover) juniper *Juniperus communis* scrub occurring on heaths or calcareous grassland. (Brown *et. al.*, 1997)

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC213 Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (Berberidion pp) (AN1)

**Description:** Semi-natural or natural box scrub occurring as a stable i.e. persistent community. At the only UK site natural erosion maintains the open conditions required for the survival of this habitat type. (Brown *et. al.*, 1997)

**Not included:** Box scrub as a seral stage reverting to woodland.

#### SC21Z Other open / scattered scrub: native shrubs (IC)

**Description:** All areas including patches of open/scattered (<90% cover) native species scrub <0.25ha not of either of the Annex 1 habitat types described above.

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

#### SC22 Open/scattered scrub: introduced shrubs (SC)

**Description:** All areas including patches of open/scattered (<90% cover) scrub predominantly composed of introduced species.

**Not included:** See SC1.

**Required multiplex codes:** See SC1.

## WOODLAND FLORA

### Woodland Ground Flora

#### WV0 Woodland ground flora (SWT)

**Description:** These may all be found under broadleaf, conifer or mixed woodland. However in Somerset the species rich floras will have originated under broadleaf woodland but may persist under conifers.

#### WV1 Abundant vernal ground flora and ancient woodland characteristics (SWT)

**Description:** Woodland with flower rich vernal flora which must have 4 or more of the following Somerset ancient woodland indicator species:

Wood Anemone, Alternate-leaved Golden Saxifrage, Meadow saffron (Autumn crocus), Wood spurge, Snowdrop, Sweet Woodruff, Tutsan, Yellow Archangel, Toothwort, Hairy Woodrush, Great Woodrush, Wood Mellick, Wood Millet, Bird's-nest Orchid, Herb Paris, Common Solomon's Seal, Hard-shield Fern, Wild Cherry, Sessile Oak, Goldilocks Buttercup, Red Currant, Wild Service Tree, Yew, Wych Elm, Early Dog Violet.

**Abundant** vernal ground flora may include such species as primrose, wood sorrel, sanicle, bluebell, dogs mercury and ramsons.

#### WV2: Sparse vernal ground flora with ancient woodland characteristics (SWT)

**Description:** Woodland with sparse vernal flora – possibly suppressed by shade, which must have 4 or more of the following Somerset ancient woodland indicator species:

Wood Anemone, Alternate-leaved Golden Saxifrage, Meadow saffron (Autumn crocus), Wood spurge, Snowdrop, Sweet Woodruff, Tutsan, Yellow Archangel, Toothwort, Hairy Woodrush, Great Woodrush, Wood Mellick, Wood Millet, Bird's-nest Orchid, Herb Paris, Common Solomon's Seal, Hard-shield Fern, Wild Cherry, Sessile Oak, Goldilocks Buttercup, Red Currant, Wild Service Tree, Yew, Wych Elm, Early Dog Violet.



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*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

**Sparse** vernal flora may consist of either largely bare ground or a scattering of vernal ground flora which may include such species as primrose, wood sorrel, sanicle, bluebell, dogs mercury and ramsons.

**WV3: Abundant vernal ground flora without ancient woodland characteristics (SWT)**

**Description:** Woodland with flower rich vernal flora but with fewer than 4 ancient woodland indicator species (listed above).

**WV4: Sparse vernal ground flora (SWT)**

**Description:** Woodland with sparse vernal flora and with fewer than 4 ancient woodland indicator species (listed above) although possibly with extensive non vernal species such as ivy or ground ivy.

*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

*SCATTERED TREES***Scattered trees****TS0 Scattered trees (SC)**

**Description:** Usually native trees growing at low density, with canopy cover <20%. They generally occur as a relic of a former landscape, or as planted specimen trees, or as early stage self-sown secondary woodland.

**Required multiplex codes:** It is no longer necessary to qualify the species mix by cross-referencing with a WS~ tree species type category.

**TS1 Scattered trees some veteran (SC)**

**Description:** At least some scattered trees must be veteran, i.e. trees >3.7m in girth (or >1.2m in diameter), or if less then displaying characteristics of old age such as hollowing-out, dead or fallen limbs, and sap-runs.

**Required multiplex codes:** See TS1.

**TS11 Broadleaved (SC)**

**Description:** Predominantly broadleaved (<20% coniferous trees).

**TS12 Mixed (SC)**

**Description:** Comprising both coniferous and broadleaved species (20 - 80% of either broadleaves or conifers).

**TS13 Coniferous (SC)**

**Description:** Predominantly coniferous species (<20% broadleaved trees).

**TS2 Scattered trees none veteran (SC)**

**Description:** None of the trees display any of the signs of advanced age.

**Required multiplex codes:** See TS1.

**TS21 Broadleaved (SC)**

**Description:** Predominantly broadleaved (<20% coniferous trees).

**TS22 Mixed (SC)**

**Description:** Comprising both coniferous and broadleaved species (20 - 80% of either broadleaves or conifers).

**TS23 Coniferous (SC)**

**Description:** Predominantly coniferous species (<20% broadleaved trees).

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*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

*PATCHY BRACKEN***Patchy bracken****PA0 Patchy bracken (SC)**

**Description:** Areas with scattered patches of bracken *Pteridium aquilinum*, or dominated by it (>50% cover).

**PA1 Patchy bracken communities with a diverse vernal flora (NVC U20a) (SC)**

**Description:** Areas with scattered patches of bracken *Pteridium aquilinum*, or patches <0.25ha of continuous bracken (>50% cover), with a diverse vernal ground layer including frequent common dog-violet *Viola riviniana*, and harebell *Campanula rotundifolia*. (Rodwell, J.S., 1991)

**Comments:** The source document refers to this habitat as 'Upland patchy bracken communities with a diverse vernal flora', but here it refers to all patchy bracken communities as described above, whether upland or lowland.

**PA2 Small continuous bracken stands (SC)**

**Description:** Areas dominated by bracken *Pteridium aquilinum* other than upland bracken communities with a diverse vernal flora.

**PA3 Scattered bracken (PH1)**

**Description:** Patches of bracken *Pteridium aquilinum* covering <50% of an area. (JNCC, 2003)

*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

***RUSH TUSOCKS***

**Rush Tussocks**

**RU0 Rush Tussocks (SWT)**

**Description:** Pastures and meadows with tussock forming rushes (including soft rush *Juncus effuses*, hard rush *Juncus inflexus* and compact rush *Juncus conglomeratus*)

NB SWT: This was originally a Brue LL code

**RU1 Dense rush tussocks (SWT)**

**Description:** Areas with dense cover of rush tuccoks (greater than 50% cover)

**RU2 Scattered rush tussocks (SWT)**

**Description:** Areas with scattered cover of rush tuccoks (between 10% and <50% cover)

**RU3 Sparse rush tussocks (SWT)**

**Description:** Areas with sparse cover of rush tuccoks (less than 10% cover)

### Matrix Vegetation Section

All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.

## OTHER TALL HERB AND FERN

### Other tall herb and fern

#### OT0 Tall herb and fern (excluding bracken) (SC)

**Description:** Wooded and non-wooded stands of tall perennial or biennial herbs and ferns.

#### OT1 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (AN1)

**Description:** In the UK this is a very rare habitat, and its total extent is less than 1000ha. It occurs most frequently and is most widespread in the Scottish Highlands. It becomes more fragmentary on the Scottish islands and further south in the UK. It is typically found on ungrazed upland cliff ledges, occasionally extending on to open ground, and is restricted to base-rich substrates. This is one of the few near-natural communities remaining in Britain and frequently occurs in intimate mosaics with other Annex 1 habitat types in these ungrazed situations. The community is characterised by the abundance of a species-rich mix of tall, broad-leaved herbs, most of which are otherwise rare in the uplands owing to grazing. These include great wood-rush *Luzula sylvatica*, roseroot *Sedum rosea*, wood crane's-bill *Geranium sylvaticum*, and globeflower *Trollius europaeus*. Variation within the habitat type is chiefly related to geographical position, altitude, soil conditions and rock type. In the Highlands stands at high-altitude are enriched by scarce arctic-alpine plants such as holly fern *Polystichum lonchitis* and alpine cinquefoil *Potentilla crantzii*. (Synonymous with 'Eutrophic tall herbs' in Brown *et. al.*, 1997)

#### OT2 Upland species-rich ledges (PH1)

**Description:** Ledge vegetation containing species such as wild angelica *Angelica sylvestris*, meadowsweet *Filipendula ulmaria*, goldenrod *Solidago virgaurea*, lady fern *Athyrium filix-femina*, globeflower *Trollius europaeus*, and marsh hawk's-beard *Crepis paludosa*. These will usually be point features. (JNCC, 2003)

#### OT3 Tall ruderal (PH1)

**Description:** Stands of tall perennial or biennial dicotyledons, usually taller than 25cm, such as rosebay willowherb *Chamerion angustifolium*, common nettle *Urtica dioica*, and Japanese knotweed *Reynoutria japonica*. (JNCC, 2003)

#### OT4 Non-ruderal (PH1)

**Description:** Non-wooded stands of species such as Lemon-Scented Fern *Oreopteris limbosperma*, lady fern *Athyrium filix-femina*, Buckler/male ferns *Dryopteris* spp., or great wood-rush *Luzula sylvatica* are included in this category. (JNCC, 2003)

#### OT41 Lemon-scented fern and Hard-fern vegetation (NVC U19) (SC)

**Description:** Comprises sometimes quite dense stands of Lemon-Scented Fern *Oreopteris limbosperma* with a variety of herbaceous associates (hard fern *Blechnum spicant*, heath bedstraw *Galium saxatile*, wood sorrel *Oxalis acetosella*, and tormentil *Potentilla erecta*) and a patchy ground cover of bryophytes, on moist base-poor peaty soils on steep, sheltered banks at low to moderate altitudes in the wetter West. (Rodwell, J.S., 1991)

#### OT4Z Other non-ruderal tall herb and fern (IC)

**Description:** Non-wooded stands of non-ruderal species and associates other than Lemon-Scented Fern *Oreopteris limbosperma*.

#### OTZ Other tall herb and fern (IC)

**Description:** Other tall herb and fern vegetation that does not fit into any of the above categories.

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*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

*EPHEMERAL/SHORT PERENNIAL***Ephemeral / short perennial herb****HS0 Ephemeral/short perennial herb (PH1)**

**Description:** Includes short patchy plant associations typical of derelict urban sites, quarries and railway ballast. The vegetation usually lacks a clear dominant species, but consists of a mixture of low-growing (usually <25cm) plants such as greater plantain *Plantago major*, creeping buttercup *Ranunculus repens* white clover *Trifolium repens*, black medick *Medicago lupulina*, colt's-foot *Tussilago farfara*, oxeye daisy *Leucanthemum vulgare* and groundsels/ragworts *Senecio* spp., or of taller species such as hedge mustard *Sisymbrium* or melilot *Melilotus* species. (JNCC, 2003)

**Required multiplex codes:** Must be cross-referenced to a habitat section category of which it is part (e.g. a CR~, GI0, GN~, etc. category).

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*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

*INTRODUCED SHRUB*

**Introduced shrub**

**IH0 Introduced shrub (PH1)**

**Description:** Vegetation dominated by shrub species that are not locally native, whether planted or self-sown. Common introduced shrubs include species of box *Buxus*, dogwood *Cornus*, bay *Laurus*, privet *Ligustrum*, *Rhododendron*, and snowberry *Symphoricarpos*. Formal beds of shrubs such as of rose-of-sharon *Hypericum calycinum*, *Cotoneaster*, heaths and dwarf conifers should be included here. (JNCC, 2003)

**Required multiplex codes:** Must be cross-referenced to a habitat section category of which it is part (e.g. a WB~, RE~, UR0, etc. category).



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*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

***BARE GROUND***

**Bare ground**

**BG1 Bare ground (RC)**

**Description:** Any type of bare soil or other substrate, and including bare peat (but not rock). Note: when recording on reserves use BV0 Bare of Vegetation (SWT)

**Not included:** Does not include recently ploughed arable land which should be included under CR~. Rock habitats will be included under RE~.

**Required multiplex codes:** Must be cross-referenced to a habitat section category of which it is part e.g. a CR~, GI~, HE~, RE~, etc. category.

*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

**AQUATIC VEGETATION****Aquatic Vegetation****NOT to be used except on SWT Reserve Monitoring Surveys**

NB: This habitat has NO minimum mappable unit (MMU) so that reserves can be monitored at an appropriate level of detail.

**AV0 Open Water Vegetation (SERC)**

**Definition:** Open water standing water with emergent vegetation in eutrophic open water or open areas in late successional open water i.e. Swamps

**Required multiplex codes:** Must be cross-referenced to a habitat section category of which it is part e.g. a AS4~,EM1~.

**AV1 Reedbed pools (SWT)**

**Description:** Small patches of open water or open water with occasional emergent reed or rush. These are visible from the air but too indistinct to be mapped as open water features. Such open water features provide structural diversity and form valuable feeding / resting areas in otherwise closed reedbeds.

**Required multiplex codes:** Must be cross-referenced to EM11.

**AV2 Early terrestrial succession (SWT)**

**Description:** Reed / rush emerging infrequently from otherwise open water or open water with surface growing or submerged macrophytes. From the air the vegetation will appear substantially as open water, while viewed horizontally feeding duck will easily swim between stems and remain substantially visible. Emergent reed / rush in open water may indicate early signs of a change of status between open water and reedbed.

**Required multiplex codes:** Must be cross-referenced to a habitat section category of which it is part e.g. a AS4~.

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*Matrix Vegetation Section*

*All Matrix Vegetation Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

*ROCK OUTCROPS*

**Rock outcrops**

**RO0 Rock outcrops (SWT)**

**Description:** Areas of rock outcrops

**Not included:** Does not include large areas of Rock habitats which will be included under RE~.

**Required multiplex codes:** Must be cross-referenced to a habitat section category of which it is part e.g. a GC~, GN~, etc. category.

### *Origin Codes Section*

All Origin Codes Section categories must be cross-referenced with the Habitats Section category with which they are associated.

## Origin Codes

### WOODLAND ORIGIN

These categories describe the origin of the woodland (formally called "formation"), and its species mix. Only one code from this group may be used per habitat patch.

### Woodland formation

#### **WF0 Unidentified woodland formation (RC)**

**Description:** Applies only to woodlands where formation cannot be identified by remote means (e.g. API).

#### **WF1 Semi-natural (LU)**

**Description:** The wooded area is composed of trees which are usually uneven-aged, of mixed density and forms, and which occur in natural groupings. Also included are woods with planted standards in semi-natural coppice; mature plantations (>120 years old) of native species with semi-natural ground-flora and shrubs; self-sown secondary stands of exotic species; long-established (>25 years old) sweet-chestnut coppice; and woods underplanted with exotics which do not yet contribute to the canopy.

#### **WF11 Native semi-natural (LU)**

**Description:** Semi-natural woodland comprising predominantly native trees, either broadleaved or broadleaved mixed with larch *Latix decidua* or yew *Taxus baccata*.

Canopy cover is an estimate of the overall percentage of the area with vegetative cover of trees; mature and veteran stages.

#### **WF111 Canopy Cover >90% (LU) (SWT)**

#### **WF112 Canopy Cover 75 - 90% (LU) (SWT)**

#### **WF113 Canopy Cover 50 - 75% (LU) (SWT)**

#### **WF114 Canopy Cover 20 - 50% (LU) (SWT)**

#### **WF12 Non-native semi-natural (LU)**

**Description:** Semi-natural woodland predominantly comprising self-sown exotic trees such as sycamore *Acer pseudoplatanus*, holm oak *Quercus ilex*, or *Pinus* spp.

#### **WF121 Canopy Cover >90% (LU) (SWT)**

#### **WF122 Canopy Cover 75 - 90% (LU) (SWT)**

#### **WF123 Canopy Cover 50 - 75% (LU) (SWT)**

#### **WF124 Canopy Cover 20 - 50% (LU) (SWT)**

#### **WF2 Plantation (LU)**

**Description:** The wooded area is composed of obviously planted trees which are predominantly even-aged, of uniform density and similar forms, and which occur in rows, except for those types mentioned above. Wooded ornamental gardens and arboretum collections are included here.

#### **WF21 Native species plantation (LU)**

**Description:** Plantations comprising predominantly native species, either broadleaved or larch *Latix decidua*.

#### **WF22 Non-native species plantation (LU)**

**Description:** Plantations comprising predominantly non-native species usually for commercial exploitation such as white poplar *Populus alba*, grey alder *Alnus incana*, firs, spruces, and non-native larches *Latix* spp.

*Origin Codes Section*

*All Origin Codes Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

**WF3 Mixed plantation and semi-natural (LU)**

**Description:** The wooded area comprises of a mixture of obviously planted trees (even-aged, uniform density) with established semi-natural vegetation (uneven aged, mixed density trees and shrubs).

**WF31 Mixed native species semi-natural with native species plantation (LU)**

**Description:** The wooded area comprises a combination of native species plantation with semi-natural woodland consisting of predominantly native trees.

**WF311 Mixed native species semi-natural with native species plantation (SWT)**

**Description:** 20–40% conifer and 60–80% broadleaf

**WF312 Mixed native species semi-natural with native species plantation (SWT)**

**Description:** 40–60% conifer and 40–60% broadleaf

**WF313 Mixed native species semi-natural with native species plantation (SWT)**

**Description:** 60 – 80% conifer and 20–40% broadleaf

**WF32 Mixed native species semi-natural with non-native species plantation (LU)**

**Description:** The wooded area comprises a combination of non-native species plantation with semi-natural woodland consisting of predominantly native trees.

**WF321 Mixed native species semi-natural with non-native species plantation (SWT)**

**Description:** 20–40% conifer and 60–80% broadleaf

**WF322 Mixed native species semi-natural with non-native species plantation (SWT)**

**Description:** 40–60% conifer and 40–60% broadleaf

**WF323 Mixed native species semi-natural with non-native species plantation (SWT)**

**Description:** 60 – 80% conifer and 20–40% broadleaf

**WF33 Mixed non-native species semi-natural with native species plantation (LU)**

**Description:** The wooded area comprises a combination of native species plantation with semi-natural woodland consisting of predominantly non-native trees.

**WF331 Mixed native species semi-natural with native species plantation (SWT)**

**Description:** 20–40% conifer and 60–80% broadleaf

**WF332 Mixed native species semi-natural with native species plantation (SWT)**

**Description:** 40–60% conifer and 40–60% broadleaf

**WF333 Mixed native species semi-natural with native species plantation (SWT)**

**Description:** 60 – 80% conifer and 20–40% broadleaf

**WF34 Mixed non-native species semi-natural with non-native species plantation (LU)**

**Description:** The wooded area comprises a combination of non-native species plantation with semi-natural woodland consisting of predominantly non-native trees.

**WF341 Mixed non-native species semi-natural with non-native species plantation (SWT)**

**Description:** 20–40% conifer and 60–80% broadleaf

**WF342 Mixed non-native species semi-natural with non-native species plantation (SWT)**

**Description:** 40–60% conifer and 40–60% broadleaf

**WF343 Mixed non-native species semi-natural with non-native species plantation (SWT)**

**Description:** 60 – 80% conifer and 20–40% broadleaf

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*Origin Codes Section*

*All Origin Codes Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

*OPEN WATER: Linear features*

Required multiplex codes: Must be cross-referenced with a Habitat Section category e.g. a AS~ standing open water and canals (where open standing water for most of year), or EM~ fens, marsh, and swamp (where non-open standing water with swampy emergents), or a AR~ rivers and streams category (where open running water).

**Channel form****AC0 Channel of unknown origin (LU)**

**Description:** To be used in aerial photograph interpretation or wherever it is not possible to determine whether a watercourse is natural or manmade.

**AC1 Artificial channels (LU)**

**Description:** Artificially modified or newly created channels.

**AC11 Drains, rhynes and ditches (LU)**

**Description:** Usually straight channels carrying sluggish waters, with managed water levels, in lowland floodplain or coastal areas.

**AC111 Species-rich drains, rhynes and ditches (SC)**

**Description:** Ditches etc. with 10 or more submerged/floating, emergent or wet bank species per 20m length.

**AC11Z Other drains, rhynes and ditches (IC)**

**Description:** Ditches with <10 or more submerged/floating, emergent or wet bank species per 20m length.

**AC12 Artificially modified channels (LU)**

**Description:** A river channel or a stretch of river channel which has been modified in situ by regrading, resectioning/reprofiling (including dams, weirs, and fords), alteration of its longitudinal profile, open culverting, bank reinforcement or protection (revetment, piling, gabions, rip-rap, etc.), canalisation, embankment, or by other river-engineering work which permanently or quasi-permanently alters the profile of the channel. These modifications affect the cross-sectional and longitudinal profile of the channel but do not significantly affect the plan view profile of the channel.

**AC13 New artificial channels (LU)**

**Description:** A new channel which has resulted either from realignment of an old channel, or by by-passing an old channel, or is newly created where there is no old channel. Includes berms of artificial two-stage channels excavated laterally into the floodplain. These engineerings affect the plan view of the land in which the channel is created.

**AC14 Canals (LU)**

**Description:** An artificial watercourse for inland navigation or irrigation.

**AC1Z Other artificial channels (LU)**

**Description:** Pipes, and closed culverts, and other artificial channels not covered above.

**AC2 Natural/naturalistic channels (LU)**

**Description:** Natural or apparently natural channels, including channels engineered for natural habitat restoration.

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*Origin Codes Section*

*All Origin Codes Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

*OPEN WATER: Area features*

Required multiplex codes: Must be cross-referenced with an AS~ standing open water and canals category.

**Open area water form****AO0 Open water of unknown origin (LU)**

**Description:** To be used in aerial photograph interpretation or wherever it is not possible to determine whether a waterbody is natural or manmade.

**AO1 Artificial open water (LU)**

**Description:** Open water bodies created and/or maintained artificially.

**Not included:** Slurry pits should be recorded under UR0 (Built-up areas and gardens) and cross-referenced with an UA1 (Agricultural) land-use code. Swimming pools should be recorded under UR0 and cross-referenced with the appropriate UA~ (Built-up area) land-use code.

**AO11 Reservoir (LU)**

**Description:** A dammed area of water created and/or used for public water supply or recreation.

**AO12 Gravel pits, quarry pools, mine pools and marl pits (LU)**

**Description:** Any open water area formed by flooding of old mineral extraction sites.

**AO13 Industrial lagoon (LU)**

**Description:** An open water area created for or used for industrial purposes, and usually high in salts.

**AO14 Scrape (LU)**

**Description:** An artificially created shallow water area, often scraped out with a digger bucket, often for nature conservation management.

**AO15 Moat (LU)**

**Description:** Water-filled ditch around or alongside a building or built-up area.

**AO16 Ornamental (LU)**

**Description:** Ornamental ponds and small lakes, usually part of a designed garden, landscape garden, or park.

**AO1Z Other artificial open water (LU)**

**Description:** Open water bodies created and/or maintained artificially other than those given above, e.g. 'village ponds'.

**AO2 Natural open water (LU)**

**Description:** Natural, or apparently natural, open water areas. Includes ponds, meres and lakes in natural hollows: field-ponds, heath ponds, bog pools and dubh lochans, dune-slack pools, oxbow lakes and ponds, pingo-pools, tarns, kettle lakes, marl ponds and lakes, freshwater fjord and shallow lochs and lochans, turloughs and fluctuating meres.



### Origin Codes Section

All Origin Codes Section categories must be cross-referenced with the Habitats Section category with which they are associated.

## Open water size

### AP1 Pond (SC)

**Description:** This habitat includes a broad range of small water bodies, generally between 25 m<sup>2</sup> and 1 ha in area, covering a wide trophic spectrum from eutrophic to dystrophic, and encompassing both permanent and temporary (seasonal) types. The associated flora and fauna is very rich, with at least 40 BAP priority species. Examples of several Annex I types are also included within this habitat. (JNCC, 2001)

**Not included:** Bog pools should be recorded under an EO~ and should not be cross-referenced here as their Priority status is conferred by reason of being a component of the bog system.

**Required multiplex codes:** Should always be associated with an AS~ standing water code.

### AP11 Ponds of high ecological quality (PPHT) *now PHT and definition different TP12/15*

**Description:** Ponds of high ecological quality are defined as permanent and seasonal standing water bodies up to 2 ha in extent which meet one or more of the following criteria:

1. Ponds of high conservation importance: Ponds that meet criteria under Annex I of the Habitat Directive;
2. Species of high conservation importance: Ponds supporting Red Data Book, BAP, W&C Act Schedule 5 and 8 or Habitats Directive Annex II species;
3. Exceptional assemblages of key biotic groups: Ponds supporting exceptional populations or numbers of key species. Based on (i) criteria specified in guidelines for the selection of biological SSSIs (currently amphibians and dragonflies only), and (ii) exceptionally rich sites for plants or invertebrates (i.e. supporting ≥40 wetland plant species or ≥50 aquatic macroinvertebrate species);
4. Potential additional criteria for discussion: Recognising the landscape level importance of certain ponds. Some landscapes (e.g. New Forest, southern Cheshire, Western Ross) are characterised by exceptional densities or networks of ponds/lochans for natural or cultural reasons, and this could be a supporting criterion for identification of ponds as Ponds of High Ecological Quality. In other cases, (such as Anglesey Fens SAC), protected sites could be sustained and strengthened by active creation of Ponds of High Ecological Quality around the designated kernel. Also through consultation, certain types of ponds have been identified as of special rarity or importance. Examples proposed include oxbows, pingos, dune and heathland ponds, some brackish coastal ponds, turloughs and fluctuating meres. High quality ponds occur in a variety of terrestrial Priority Habitats (e.g. Lowland Heathland, Lowland Dry Acid Grassland, Coastal Sand Dunes, Wood Pasture and Parkland, Native Pine Woodlands).

Data from the Lowland Pond Survey suggest that about 2-5% of ponds would fall into the category of 'high ecological quality' based on these criteria. It should be noted that the criteria are intended to take account of natural regional variations in species richness (e.g. naturally species-poor acid upland ponds). Thus examples of various trophic types would be included, although bog pools are more appropriately dealt with through the two bog HAPs. Temporary or seasonal ponds and pools, which may be very important for their specialist flora and fauna, are also included. (JNCC, 2006)

**Comments:** The title is not yet finalised and is also referred to in the reference document as 'Ponds of High Conservation Value' or simply 'Ponds'. Note that a new criterion has been added 'Ponds of high conservation importance' to conform with Habitats Directive requirements. The original RDB and BAP criterion has been similarly modified to a single criterion 'Species of high conservation importance'. The first four criteria in previous versions of IHS have been rationalised into a single criterion 'Exceptional assemblages of key biotic groups'.

### AP1Z Other pond (IC)

**Description:** All ponds not fitting the proposed priority habitat type description.

### AP2 Small lake (SC)

**Description:** A body of water between 1ha and 5ha.

### AP3 Large lake (SC)

**Description:** A body of water >5ha.

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*Land-use / Management Codes*

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*All Land-use / Management Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

## Land Use/ Management Codes

### WOODLAND MANAGEMENT AND USE

The land-use / management code relates to the habitat patch itself and not necessarily to the woodland it is part of.

Required multiplex codes: All woodland habitat section codes should be cross-referenced with a woodland management (WM~) category. Wood pasture & parkland are mosaic habitats with many associated open habitat codes (e.g. GA~, GC~, GN~, GI0, GP0, GU0, BR~, HE~ or CR~). Wood pasture must be cross-referenced to wood pasture management codes beginning WM5 (see notes under Wood pasture and parkland).

#### Woodland management

These categories describe the ways in which the wooded area is managed, or not. Only one code from may be used per habitat patch.

#### **WM0 Undetermined woodland management (LU)**

**Description:** To be used in aerial photographic interpretation when it is not certain how a wooded area is managed, or in translation from external data where the information is inadequate to tell.

#### **WM1 High forest (LU)**

**Description:** Wooded areas which are predominantly, actively, managed for high-forest, i.e. not managed for coppice. This often involves leaving trees to develop naturally, or singling any existing coppice stools so that a high-forest structure forms. High-forest can be managed for timber, for recreation or amenity, for nature conservation, or for a combination of uses. This also includes stands of (low) young trees managed in this way.

#### **WM2 Coppice with standards (LU)**

**Description:** Active coppice management with some standard trees.

#### **WM3 Pure coppice (LU)**

**Description:** Active coppice management with no standard trees.

#### **WM4 Abandoned coppice (LU)**

**Description:** Neglected coppice management. Wooded areas with coppice stools with poles obviously older than the normal rotation period for the species, and/or with obvious secondary development.

*Land-use / Management Codes*

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**WM5 Wood-pasture and parkland (PHT)**

**Description:** Wood-pasture and parkland are mosaic habitats valued for their trees, especially veteran and ancient trees, and the plants and animals that they support. Grazing animals are fundamental to the existence of this habitat. Specialised and varied habitats within wood-pasture and parkland provide a home for a wide range of species, many of which occur only in these habitats, particularly insects, lichens and fungi which depend on dead and decaying wood. Individual trees, some of which may be of great size and age, are key elements of the habitat and many sites are also important historic landscapes (UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.[2011]).

Wood-pasture and parkland habitats display **at least some** of the following characteristics:

- Open grown trees, some of which are ancient or veteran and may be hollow and support significant amounts of dead and decaying timber. If managed, the ancient or veteran trees have generally been pollarded (cut high so re-growth is not in reach of browsing animals), although wood-pastures may incorporate other forms of tree management. The trees often exhibit a browse line at the maximum height that browsing animals can reach.
- Origins in medieval hunting forests (which may not have been completely treed) and emparkments, wooded commons, or pastures with trees in them. Many of these sites were later developed as landscaped parks creating a rich legacy of layers of designed landscapes and archaeological features also of historic importance. A range of native species usually predominates amongst the oldest trees but there may be non-native trees which have been planted or regenerated naturally.
- Designed landscapes not originating from medieval parkland, but with veteran trees, including 19th century or later parklands with their origins in earlier agricultural landscapes.
- Scrub as individual plants or clumps, in some instances providing tree protection or opportunities for tree regeneration. A vital source of nectar for invertebrates.
- Evidence of past land use for extensive agriculture and transhumance systems (where livestock are moved between lowland in winter and upland or mountain grazing in the summer). Abandoned wood-pastures in the uplands, complete with associated archaeology, are remnants of a lost land-use system which is still extant in many parts of continental Europe. These wood-pastures contain open grown veteran trees (often pollards) which may in some instances now be within a matrix of secondary woodland or scrub that has developed by regeneration and/or planting in the absence of grazing animals.
- Wood-pasture or parkland that has been converted to other land uses such as arable fields, forestry and amenity land, but where surviving veteran trees are of nature conservation interest. Some of the characteristic wood-pasture and parkland species may be surviving this change in state in the short term while the veteran trees remain alive. Sites may contain ancient pollards (e.g. Hatfield Forest) and other less usual tree forms, which result from trees being managed for timber, fodder and other products in the presence of grazing animals.

**Not included:** Upland sheep-grazed closed canopy oak woodland or Caledonian pine forest, or recent parklands with no veteran trees (UK Biodiversity Group, 1998a)

**WM51 Currently managed wood pasture/parkland (LU)**

**Description:** Active management includes grazing or mowing to maintain the open-ground, pollarding or other limb surgery to rejuvenate the trees, and young plantings.

**WM52 Relic wood pasture/parkland (LU)**

**Description:** Areas of former wood pasture or parkland that is not managed as such. In neglect natural regeneration occurs, closing over the former open ground. In a change of land use the scattered trees exist as (unmanaged) relics, often in an arable or amenity-use setting.

**WM6 Pollarded woodland (LU)**

**Description:** Extended areas or lines of trees which are pollarded. Includes trees which are staggled (an uncommon and fairly localised practice of low pollarding).

**Not included:** Trees which are pollarded and which form part of a wood pasture or parkland landscape should be included under a WM5~ category.

**WM7 Unmanaged woodland (LU)**

**Description:** Woodland not obviously actively managed.

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*Land-use / Management Codes*

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**WMZ Other woodland management (IC)**

**Description:** Woodland management not covered by the above.

**Woodland clearings and openings**

Matrix vegetation: These may be cross-referenced to a matrix vegetation category as well as to the associated woodland habitat section category, except where the vegetation is typical woodland ground-flora.

Required multiplex codes: Woodland habitat section codes can be cross-referenced with a Woodland clearings and openings (WG~) category. In the case of WG4 (Recently planted trees), the code may also be attached to open habitats as appropriate (e.g. GA~, GC~, GN~, GI0, GP0, GU0, BR~, HE~ or SS~).

**WG0 Unidentified woodland clearing (LU)**

**Description:** Used in aerial photograph interpretation to describe woodland clearings where the nature of the vegetation cannot be identified.

**WG1 Herbaceous woodland clearing (LU)**

**Description:** Treeless openings with herbaceous woodland ground flora.

**WG2 Recently felled/coppiced woodland clearing (LU)**

**Description:** This includes newly cleared or coppiced woodland which results in an extended opening in the canopy, with undeveloped or sparse woodland ground flora.

**WG3 Woodland ride (LU)**

**Description:** A linear break in the woodland canopy used for access within the wood, and containing herbaceous vegetation.

**WG4 Recently planted trees (LU)**

**Description:** Any area of recently planted woodland. Uniquely, this may be applied to both woodland and open habitats as appropriate.

**WGZ Other woodland clearings/openings (IC)**

**Description:** Other woodland clearings or openings.

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*Land-use / Management Codes*

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### **GRASSLAND ETC. MANAGEMENT AND USE**

Required multiplex codes: Must be cross-referenced with a grassland or other open (non-woodland) terrestrial main habitat.

#### **Grassland management**

Required multiplex codes: Must be cross-referenced to a GI0, GN~ neutral grassland category, GC~ calcareous grassland category, or a GA~ acid grassland category.

##### **GM0 Undetermined grassland etc. management (LU)**

**Description:** Use where it is not possible to define the management regime. This group of codes can be used with any open habitat such as grassland, heath, wetland, where relevant.

##### **GM1 Grazed (LU)**

**Description:** Either managed deliberately by farm stock, or naturally by wild animals, on a sufficient scale and regularly enough to maintain a closed grassland sward.

##### **GM11 Cattle grazed (LU)**

**Description:** Grazed by cattle.

##### **GM12 Sheep grazed (LU)**

**Description:** Grazed by sheep.

##### **GM13 Horse grazed (LU)**

**Description:** Grazed by horses.

##### **GM14 Mixed grazing (LU)**

**Description:** Grazed by several stock species, either together at the same time, or at different times of the year, but on the same piece of land. This form of grazing is most commonly by sheep and cattle, but any other combination of stock is included.

##### **GM1Z Other grazing (IC)**

**Description:** Grazing by wild animals such as rabbits, wild deer, wild-geese, etc., and by other domestic stock such as geese, and deer, and exotic domestic species such as llamas.

##### **GM2 Mown (LU)**

**Description:** Managed by regularly cutting the grassland mechanically. This may be in conjunction with stock grazing, or not.

##### **GM21 Silage (LU)**

**Description:** Heavily improved grasslands managed for silage. This preserves grass (and other forage crops) under acid conditions in a succulent state (moisture content 70-75%). In silage making the grass is cut several times usually from late spring and early summer onwards, before the grasses flower, and often left to partially desiccate or wilt before gathering up and sealing in an airtight environment in clamps or silo towers or in big bales where the crop is shrink-wrapped in polythene sheeting or enclosed in bags, to be used for winter feed.

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*Land-use / Management Codes*

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**GM22 Hay (LU)**

**Description:** This includes traditional hay management and hay made from improved grassland swards. The forage crop is managed so that when cut the moisture content is reduced to about 20-25%. The grassland is usually cut later for traditionally managed swards than for improved grassland managed for hay but both require weather conditions suitable to allow the crop to dry naturally. The grass is generally cut and laid into bands on the ground which are usually then turned, and/or tedded, to increase aeration to speed drying. At least three days are normally required to dry out the crop suitably so that fungal and bacterial growth is prevented so that the hay can be stored without spoiling. In addition the crop may be bruised or lacerated to help condition the hay. The hay is then gathered and stored, usually in bales, or big-bales, sometimes in ricks, and used as winter feed.

**GM23 Frequent mowing (LU)**

**Description:** Mowing often enough to produce a tight low sward usually for recreation or amenity purposes, such as in urban parks, golf courses, playing and sports fields, and urban road verges.

**GM2Z Other mowing regime (IC)**

**Description:** Grass crops cut and harvested for ensilement which has a moisture content of 45-55% (haylage), or which is a would-be haycrop which is eventually made into big-bale silage due to adverse weather conditions, or any other form of grassland mowing management not covered above.

**GM3 Hay and aftermath grazing (LU)**

**Description:** A combination of management which involves keeping stock off the grassland for a period to allow the crop to develop sufficiently to be harvested for hay, and also allows grazing either before the hay cut, before and after the hay-cut or only after the hay-cut. The common regimes are summer-mowing and aftermath grazing usually practised in the lowlands, and spring-grazing, mowing and late aftermath-grazing usually practised in the uplands.

**GM4 Unmanaged (LU)**

**Description:** Areas which are still dominated by grasses and which are unmanaged. They may be reverting/succeeding to another habitat type. This will usually happen when there is agricultural run-down.

**Not included:** Grassland which is not being actively managed but which is being sustained by wild animals should be included under GM1Z Other grazing (LU).

**GM5 Burning/Swaling (LU)**

**Description:** The controlled periodic burning of vegetation (heather, grass, bracken, gorse etc.) for agricultural benefit and/or habitat management.

**GM6 Scrub clearance (LU)**

**Description:** Areas of grassland which have recently been cleared of scrub, often resulting in an area of bare ground. Clearance must have been within the past year. Little or no regrowth or soft growth on woody species can be found. Indications such as second season regrowth or doubt should negate use of this code.

**GM7 Solar panels (LU) (SWT)**

**Description:** an area of land in which a large number of solar panels are set up in order to generate electricity.

**GM8 Wind turbines (LU) (SWT)**

**Description:** an area of land with a group of energy-producing windmills or wind turbines.

**GM81 Wind turbine below 20 metres tower height (LU) (SWT)****GM82 Wind turbine 21 metres to 50 metres tower height (LU) (SWT)****GM83 Wind turbine over 50 metres tower height (LU) (SWT)**

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*Land-use / Management Codes*

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**GM9 Grassland native plant species introduction (LU) (SWT)**

**Description:** Grassland restoration work where introductions or reintroductions are carried out to restore or create grassland. This could include green hay restoration, wildflower seed sowing, and plug planting for example.

**GM91 Wildlife Trust restoration (LU) (SWT)**

**Description:** Grassland restoration initiated or guided by Wildlife Trust staff.

**GM9Z Other restoration (IC) (SWT)**

**Description:** Grassland restoration by initiated or guided by independent ecologist or owner.

**GMZ Other grassland etc. management (IC)**

**Description:** Burning and grazing, sporadic management by grazing and/or mowing, and any other grassland management regime not covered above.

## Grassland use

**GL1 Amenity grassland (LU)**

**Description:** This comprises intensively managed and regularly mown grasslands, typical of lawns, playing fields, golf course fairways and many urban 'savannah' parks in which rye-grass *Lolium perenne*, with or without white clover *Trifolium repens*, often predominates. Herbs such as daisy *Bellis perennis*, greater plantain *Plantago major* and dandelion *Taraxacum officinale* may be present. (JNCC, 2003)

**GL11 Golf course (LU)**

**Description:** Grassland managed for fairways, greens, and rough within a golf course.

**GL12 Urban parks, playing and sports fields (LU)**

**Description:** Amenity grassland enclosure in an urban area managed for public recreation or sport.

**GL1Z Other amenity grassland (IC)**

**Description:** Amenity grassland not covered above - e.g. small patches of communal grassland in cul-de-sacs, events showgrounds etc.

**GL2 Non-amenity grassland (LU)**

**Description:** This includes agricultural grassland, both permanent pasture and short-term leys. It also includes grassland fields near settlements with no clear amenity or agricultural use.

**GL21 Permanent agricultural grassland (LU)**

**Description:** Grassland managed as, or which is intended to become, permanent pasture be it improved, semi-improved or unimproved.

**GL211 Arable reversion grassland (LU)**

**Description:** Grassland seeded on former arable sites, normally more than 1 year old or known to be under a long-term management agreement (e.g. Stewardship etc.)

**GL2111 Species-rich conservation grassland (LU)**

**Description:** Arable reversion grassland seeded using a herb-rich conservation seed mix.



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*Land-use / Management Codes*

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**GL211Z Other arable reversion grassland (IC)**

**Description:** Arable reversion grassland not using a conservation seed mix.

**GL21Z Other permanent agricultural grassland (IC)**

**Description:** Permanent grassland not meeting the description of arable reversion.

**GL2Z Other grassland use (IC)**

**Description:** Short-term leys and grassland that has been reseeded for more than one year, and other grassland uses not covered above.

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*Land-use / Management Codes*

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## WETLANDS

### Bog management

These categories describe whether the bog is currently managed for peat extraction or not. Only one code may be used per habitat patch.

Required multiplex codes: Must be cross-referenced with EO~ except for *EP2 Peat extraction ceased* (LU) (SWT) which should be recorded with the current main habitat, e.g. grasslands, open water, reedbed or wet woodland if no longer bog. Exceptions could occur where peat extraction has not resulted in the destruction of the bog.

#### **EP0 Undetermined bog management (LU) (SWT)**

Description: To be used in aerial photographic interpretation when it is not certain how an area of bog is managed, or in translation from external data where the information is inadequate to tell.

##### **EP1 Active peat extraction (LU) (SWT)**

Description: Bogs which are currently managed for peat extraction

##### **EP2 Peat extraction ceased (LU) (SWT)**

Description: Bogs which were once managed for peat extraction but operations have now ceased. Covers a range from bare ground through to where earthworks indicating where excavations once took place. Where possible, landowners should confirm that peat extraction has ceased.

Required multiplex codes: Usually cross-referenced with a main habitat other than EO (e.g. grasslands, open water, reedbed, wet woodland), though can include degraded bog.

##### **EP3 No history of peat extraction (LU) (SWT)**

Description: Bogs with no history of peat extraction

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*Land-use / Management Codes*

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*All Land-use / Management Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

**INLAND ROCK****Quarry management**

These categories describe the ways in which the quarry is currently managed, or not. Only one code from may be used per habitat patch.

These may be cross-referenced to a P10 Post-industrial habitat management code where appropriate

Required multiplex codes: All quarry habitat section codes should be cross-referenced with a quarry management (RM~) category.

Not included: Any water bodies which have formed within disused quarries should be included under an AO1 Artificial open water category and associated management codes.

Correlates with: Phase 1: Quarry, Spoil, Mine, Ephemeral/short perennial, Bare Ground.

NVC: Various?? OV open ground communities

**RM0 Undetermined quarry management (LU) (SWT)**

Description: To be used in aerial photographic interpretation when it is not certain how a quarry area is managed, or in translation from external data where the information is inadequate to tell.

**RM1 Currently active quarry (LU) (SWT)**

Description: Quarries which are currently active (usually with very little or no vegetation present on the quarry floor)

**RM2 Currently disused quarry (LU) (SWT)**

Description: Quarries which are currently disused (usually with ephemeral herb/ tall ruderals present on quarry floor, but with too much bare ground to be classed as grassland).

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*Land-use / Management Codes*

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**BOUNDARY AND LINEAR FEATURES**

Required multiplex codes: Must be cross-referenced with a habitat section category e.g. UR~, GU~.

**Hedge form**

Required multiplex codes: A hedge form category must be cross-referenced with an LF1~ hedge category.

**LH1 Intact hedge (LU)**

**Description:** A mature hedge which is entire and more-or-less stock proof. Stock-proofness should be thought of in terms of the animals within the enclosed field. Where there is no evidence of animals kept here, or the field is arable, decisions may be based on whether the hedge would be stock-proof to adult sheep.

**LH2 Defunct hedge (LU)**

**Description:** A mature hedge which is clearly not entire or stock-proof.

**LH3 Recently planted hedge (LU)**

**Description:** A young hedge.

**Hedge management**

Required multiplex codes: A hedge management category must be cross-referenced with an LF1~ hedge category.

**LM1 Cut hedge (LU)**

**Description:** A hedge which has been cut or layed within the past 12 months approx. Applies to cut hedgerows where sides and tops are clearly trimmed and straight (Barr *et. al.*, 2005).

**LM11 Cut hedge with standards (LU)**

**Description:** A cut or layed hedge with at least one standard tree for every 50m length of hedgerow (or explicitly: where the length of hedge <50m, at least one standard; where the length of hedge 50<100m, at least two standards; and where the length of hedge <100m, the number of standard trees must average out to at least one per 50m.) Standards are defined for multi-stemmed trees as those having at least 2 stems whose diameters are >15cm when measured 1.3m from natural ground level; single-stemmed trees must have a stem whose diameter is >20cm when measured 1.3m from natural ground level. (Standard trees as defined by HMSO, 1997)

**LM12 Cut hedge without standards (LU)**

**Description:** A cut hedge with no standard trees along its length (Standard trees as defined by HMSO, 1997).

**LM2 Uncut hedge (LU)**

**Description:** A hedge which has not been cut for up to 5 years. Includes hedgerows where sides are trimmed but individual shrubs can begin to be discerned in the hedge top (Barr *et. al.*, 2005).

**LM21 Uncut hedge with standards (LU)**

**Description:** An uncut hedge with at least one standard tree for every 50m length of hedgerow (or explicitly: where the length of hedge <50m, at least one standard; where the length of hedge 50<100m, at least two standards; and where the length of hedge <100m, the number of standard trees must average out to at least one per 50m.) Standards are defined for multi-stemmed trees as those having at least 2 stems whose diameters are >15cm when measured 1.3m from natural ground level; single-stemmed trees must have a stem whose diameter is >20cm when measured 1.3m from natural ground level. (Standard trees as defined by HMSO, 1997)

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*Land-use / Management Codes*


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*All Land-use / Management Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

**LM22 Uncut hedge without standards (LU)**

**Description:** An uncut hedge without standard trees along its length (Standard trees as defined by HMSO, 1997).

**LM3 Overgrown hedge (LU)**

**Description:** A hedge which has developed into individual bushes and trees due to a lack of management. This includes any hedgerow where the individual trees and shrubs are clearly visible and the canopies extend laterally, untrimmed. This category is described by Barr *et al.* (2005) as 'Remnant', but this should not be confused with the Hedge form category: LH2 Defunct.

**LM31 Overgrown hedge with standards (LU)**

**Description:** An overgrown hedge with at least one standard tree for every 50m length of hedgerow (or explicitly: where the length of hedge <50m, at least one standard; where the length of hedge 50<100m, at least two standards; and where the length of hedge <100m, the number of standard trees must average out to at least one per 50m.) Standards are defined for multi-stemmed trees as those having at least 2 stems whose diameters are >15cm when measured 1.3m from natural ground level; single-stemmed trees must have a stem whose diameter is >20cm when measured 1.3m from natural ground level (Standard trees as defined by HMSO, 1997)

**LM32 Overgrown hedge without standards (LU)**

**Description:** An overgrown hedge without standard trees along its length (Standard trees as defined by HMSO, 1997).

**Transport corridor verges, embankments and cutting**

Vegetation occurring in road, rail, or other transport corridors, or in water corridors along rivers, streams, ditches, or canals, and usually in a verge, embankment, or cutting.

Required multiplex codes: Must be cross-referenced with either an LF~ boundary and linear features category, an AR~ rivers and streams category, or an AS~ standing open water and canals category.

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Required multiplex codes: Must be cross-referenced with either an LF~ boundary and linear features category, an AR~ rivers and streams category, or an AS~ standing open water and canals category.

**LT1 Canal-side (LU)**

**Description:** Vegetation along canal, rhyne, drain or ditch corridors.

**LT11 Canal-side with woodland (LU) (SWT)****LT12 Canal-side with scrub or hedgerow and standard trees (LU) (SWT)****LT13 Canal-side with scrub or hedgerow (LU) (SWT)****LT14 Canal-side with layered vegetation (LU) (SWT)**

**Description:** Layered vegetation includes longer grass, ruderals alongside a river bank without substantial scrub or hedgerow, although individual specimens may be present, but with a sward height above that associated with grazed or mown grasslands. Potentially arable margins

**LT15 Canal-side with grassland (LU) (SWT)****LT16 Canal-side with damaged banks (LU) (SWT)**

**Description:** Banks are considered damaged where they have been poached by cattle or other activity

**LT17 Canal-side with constructed banks (LU) (SWT)**

**Description:** Constructed banks are those which have been reinforced, for example walls, gabions, etc.

**LT18 Other canal-side type (LU) (SWT)**

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*Land-use / Management Codes*

*All Land-use / Management Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

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**LT2 River-side (LU) (SWT)**

**Description:** Vegetation along river corridors.

**LT21 River-side with woodland (LU) (SWT)****LT22 River-side with scrub or hedgerow and standard trees (LU) (SWT)****LT23 River-side with scrub or hedgerow (LU) (SWT)****LT24 River-side with layered vegetation (LU) (SWT)**

**Description:** Layered vegetation includes longer grass, ruderals alongside a river bank without substantial scrub or hedgerow, although individual specimens may be present, but with a sward height above that associated with grazed or mown grasslands. Potentially arable margins.

**LT25 River-side with grassland (LU) (SWT)****LT26 River-side with vertical banks (LU) (SWT)****LT27 River-side with damaged banks (LU) (SWT)**

**Description:** Banks are considered damaged where they have been poached by cattle or other activity.

**LT28 River-side with constructed banks (LU) (SWT)**

**Description:** Constructed banks are those which have been reinforced, for example walls, gabions, etc.

**LT29 Other river-side type****LT3 Rail-side (LU)**

**Description:** Vegetation along railways.

**LT4 Road-side (LU)**

**Description:** Vegetation along roads, and motorways.

**LT5 Path- and track-side (LU)**

**Description:** Vegetation along paths, tracks, rides, and green lanes.

**LTZ Other transport corridor verges, embankments and cuttings (IC)**

**Description:** Vegetation along transport or water corridors not covered above.

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*Land-use / Management Codes*


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## *BUILT ENVIRONMENT*

### Linear built environment

Required multiplex codes: Must be cross referenced to a LF~ boundary and linear features category.

#### **UL1 Railway (LU)**

**Description:** The rails, points, ballast, sleepers and other artificial structures associated with a rail track.

#### **UL2 Roadway (LU)**

**Description:** The compacted, aggregate-based surfaces of built roads (e.g. tarmac, concrete, gravel, slag, etc.), and drainage, kerb, and other associated built features of motor carriageways (includes lanes, single and multiple carriageway roads and motorways, etc.).

Knowing the state of lighting for linear features provides a level of detail that facilitates data use in network analysis in particular when considering bats.

#### **UL21 Road lighting (LU) (SWT)**

**Description:** Road has lighting of any type

**Required multiplex codes:** Must be cross-referenced with an LF~ boundary and linear features category. LF0 & LF2 should only be used for remote assessment for all others use LF27~.

##### **UL211 LED lighting (LU) (SWT)**

**Description:** Globe light is predominant

##### **UL212 Sodium globe lighting (LU) (SWT)**

**Description:** Mostly sodium

##### **UL213 Mercury vapour globe lighting (LU) (SWT)**

**Description:** Mostly mercury vapour

##### **UL21Z Other lighting (LU) (SWT)**

**Description:** Other lighting may include facia, shop, signs, buildings etc. Only needed if codes above do not apply.

##### **UL21Z Other lighting (LU) (SWT)**

**Description:** Other lighting may include facia, shop, signs, buildings etc

#### **UL22 No road lighting (LU) (SWT)**

**Description:** Unlit sections of road

#### **UL3 Path and trackway (LU)**

**Description:** Thoroughfares generally and regularly used for travel or access on foot, by people and/or stock, and which are not normally used by motor vehicle traffic, or if so then the track surface is not built and surfaced for motor traffic (includes public footpaths, tracks, rides, green lanes, tow-paths, drove roads, etc.).



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*Land-use / Management Codes*

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**UL31 Path/track lighting (LU) (SWT)**

**Description:** Path/track has lighting of any type

**UL32 No path/track lighting (LU) (SWT)**

**Description:** Unlit sections of path/track

**ULZ Other transport corridor verges, embankments and cuttings (IC)**

**Description:** Built normally linear transport features which are not covered above.

**Built up areas**

Required multiplex codes: Should be cross-referenced with UR0 Built up areas and gardens (BHT) except where there is substantial semi-natural habitat, in which case cross-reference with another habitat section category. (E.g. graveyards containing unimproved neutral grassland should be coded as GNZ. UA41).

**UA1 Agricultural (LU)**

**Description:** Built features associated with farming, including farmhouses, yards, barns, pits and storage housings, stock shelters, slurry pits etc.

**UA2 Industrial/commercial (LU)**

**Description:** Built features associated with non-agricultural industry and commerce, such as factories, warehouses, shopping and service centres, public houses, workyards, utility works (built features associated with the provision of water, gas, electricity, light, sewage, etc.).

**UA3 Domestic (LU)**

**Description:** Built features associated with non-agricultural human dwellings, in isolation, in hamlets, villages, towns, or cities.

**UA31 Housing/domestic outbuildings (LU)**

**Description:** Houses and outbuildings (sheds, garages, etc.) associated with housing.

**UA32 Gardens (LU)**

**Description:** Pieces of land usually physically associated with individual dwellings, and managed by one household.

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*Land-use / Management Codes*

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**UA321 Wildlife Garden (LU)**

**Description:** Wildlife gardens must provide food, shelter and water for wildlife. They must also be managed in a way that is sympathetic to the needs of wildlife.

To be recorded as a wildlife garden, the garden must meet 6 or more of these criteria, with at least one criterion satisfied from each category. These criteria are based on the Somerset Wildlife Trust Wildlife Garden Award Scheme.

**Food**

- Appropriate food is provided for birds.
- Nectar rich plants including herbaceous plants, flowering shrubs or trees are grown in the garden.
- Shrubs and trees that produce nuts and berries are grown in the garden.

**Shelter**

- Climbing plants such as ivy or honeysuckle are allowed to grow on vertical surfaces.
- Hedges and shrubs providing dense, permanent cover are grown in the garden.
- Undisturbed log piles (not used for fuel) are included in the garden.
- Undisturbed piles of dead leaves and garden cuttings are included in the garden.
- Nest boxes are provided for birds, mammals or amphibians.
- The garden includes a bug hotel or solitary bee nest box.
- The garden contains at least 1 mature tree.

**Water**

- The garden contains a wildlife pond which has no fish
- A bog garden or permanently wet area is included in the garden.
- A bird bath is provided.
- The garden includes or borders a stream or other large water body.

**Wildlife friendly management**

- An area of long grass or herbaceous plants which have died back are left standing until the spring
- An area of the lawn is allowed to grow long every year and cut back at the end of the summer like a meadow.
- Chemicals are not used to kill garden pests and weeds.
- There are gaps at the base of garden boundaries that will allow hedgehogs and other small animals to pass through easily.
- Rain water is collected in a water butt and used to water the garden.
- The garden contains a compost heap and any other compost used is peat-free.

**UA322 Other Garden (LU)**

**Description:** Gardens that have been assessed against the criteria for

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*Land-use / Management Codes*

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UA321 Wildlife Garden (LU) and found not to meet them. If this assessment has not been carried out then UA32 Gardens (LU) must be used.

**UA33 Allotments (LU)**

**Description:** Land not associated with any one particular dwelling and with many plots managed by many people.

**UA34 Caravan park (LU)**

**Description:** Areas with permanently sited caravan homes.

**UA3Z Other domestic (IC)**

**Description:** Other built features associated with non-agricultural human dwellings not covered above - e.g. driveways not large enough to be coded as paths.

**UA4 Public amenity (LU)**

**Description:** Built features used for non-commercial public amenity.

**Not included:** Areas which are substantially grassland other than churchyards and cemeteries (which may or may not be substantially grassland) such as parks, golf-courses etc. should be included under a GL~ category.

**UA41 Churchyards and cemeteries (LU)**

**Description:** Churches, church yards, graveyards, and cemeteries.

**UA4Z Other public amenity (IC)**

**Description:** Other built features used for non-commercial public amenity not covered above, e.g. schools, car parks not attached to a commercial/industrial feature, sports centres, etc.

**UA5 Historical built environment (LU)**

**Description:** Unoccupied castles, monuments, follies, heritage properties and historical ruins etc.

**UAZ Other extended built environment (IC)**

**Description:** Extended built features other than those covered above.

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*Land-use / Management Codes*

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**ARABLE AND HORTICULTURAL**

Required multiplex codes: Must be cross-referenced with a CL~ code.

Orchards on unimproved grassland sites (= unintensively managed orchards) should be coded as a GN ~ neutral grassland, or a GC~ calcareous grassland category, cross-referenced with CL3 Unintensively managed orchards (LU).

**Cropped land description****CL1 Agriculture (LU)**

**Description:** Forming part of an agricultural enterprise - e.g. arable cropland (including perennial, woody crops, and intensively managed, commercial orchards), freshly-ploughed land, annual leys, rotational set-aside and fallow. It also includes cereal field margins. (Jackson D.L., 2000)

**CL11 Organic agriculture (LU)**

**Description:** Agriculture under organic management. Often mixed farmland (arable and pasture) utilising some form of crop rotation. Since 'organic agriculture' is legally defined any product marketed as organic must comply with strict conditions (standards) set at UK, European and international levels. In order for a producer to be recognised as having organic status they are required to hold a licence from a UK Organic Certification Body (e.g. Soil Association Certification Ltd, Organic Food Federation, Organic Farmers & Growers, etc). Include within this category land that is 'in conversion' - i.e. undergoing conversion towards achieving organic status.

**CL12 Non-organic agriculture (LU)**

**Description:** Agriculture not under organic management. Often intensive high-yield non-mixed farmland (either arable or pasture) with a high dependence upon pesticides and artificial fertilisers.

**CL2 Market garden and horticulture (LU)**

**Description:** Forming part of a market garden or horticultural enterprise - e.g. nurseries, commercial vegetable plots and commercial flower growing areas. (Jackson D.L., 2000)

**CL21 Organic market garden and horticulture (LU)**

**Description:** Horticulture under organic management (see CL11).

**CL22 Non-organic market garden and horticulture (LU)**

**Description:** Horticulture not under organic management.

**CL3 Unintensively managed orchards (LU)**

**Description:** Species composition is of trees primarily in the family Rosaceae. Orchards also include plantings for nuts, principally hazel nuts, but also walnuts. Included are orchards which are not intensively managed - i.e. not subjected to intensive herbicide treatment or cultivation of the ground-layer vegetation, or intensive fertiliser application of the orchard crop.

**CL31 Traditional orchards (LU)**

**Description:** Traditional orchards are managed in a low intensity way, in contrast with orchards managed intensively by the input of chemicals such as pesticides and inorganic fertilisers, frequent mowing of the orchard floor rather than grazing or cutting for hay, and planting of short-lived, high-density, dwarf or bush fruit trees (JNCC, 2006). However, half-standard trees, large 'coppice' forms and newly planted orchards should be included if the intent is to manage in a traditional way (Just Ecology, 2005a). Spacing of trees can vary quite widely from around 3m between trees, for example in some plum orchards and traditional cobnut (hazel) plots, to over 20m between trees of orchards of large perry pears and cherries (Robertson, 2006).

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*Land-use / Management Codes*

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**CL32 Defunct orchards (SC)**

**Description:** Unintensively managed orchards where there are fewer than 5 trees per site (or per hectare), or remnant orchards where the trees are >20m apart.

**CL3Z Other unintensively managed orchards (IC)**

**Description:** Other non-intensively managed orchards (in current useage) where there are <3m between trees. Short-lived, high density, dwarf or bush fruit trees grown without pesticides or inorganic fertilisers would fall into this category.

**CL4 Intensively managed vineyards (SC)**

**Description:** Vineyards usually cleared of their herb layer, intensively treated (Devillers *et. al.*, 2001).

**CL4Z Unintensively managed (traditional) vineyards (IC)**

**Description:** Vineyards that have preserved their characteristic accompanying flora, generally lightly treated (Devillers *et. al.*, 2001).

**CL5 Cereal crops managed for wildlife (LU)**

**Description:** Whole field crops (as opposed to field margins or headlands) managed for wildlife such as traditional arable weed species such as pheasant's eye (*Adonis amua*), cornflower (*Centaurea cyanus*), broadleaved spurge (*Euphorbia platyphyllos*), corn parsley (*Petroselinum segetum*), corn buttercup (*Ranunculus arvensis*), shepherd's needle (*Scandix pecten-veneris*) and narrow-fruited cornsalad (*Valerianella dentata*), and other key farmland species (game birds and passerines, polyphagous and other invertebrates). Examples include fields with skylark patches and undersown crops or those which are not treated with herbicide.

**Not included:** See CR0. Distinct field margins managed for arable weeds should be recorded under CR6~ (Arable headland or uncultivated strip).

**Required multiplex codes:** See CR0.

**CL5Z Cereal crops not managed for wildlife (IC)**

**Description:** Cereal crops which are not specifically managed to be beneficial to arable wildlife.

**Not included:** See CR0.

**Required multiplex codes:** See CR0.

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*Land-use / Management Codes*

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### ***HABITAT COMPLEXES***

These items are used to describe those complex habitats which have been given Priority status, but which cannot be definitively placed in one particular broad habitat, or require other types of information to identify. In all cases they should be associated with a primary habitat code.

#### **Cereal field margins**

Arable field margins are herbaceous strips or blocks around arable fields that are managed specifically to provide benefits for wildlife. The arable field must be in a crop rotation which includes an arable crop, even if in certain years the field is in temporary grass, set-aside or fallow. Arable field margins are usually sited on the outer 2-12m margin of the arable field, although when planted as blocks they occasionally extend further into the field centre.

### *Land-use / Management Codes*

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#### **AF1 Cereal field margins (PHT)**

**Description:** In general terms, the physical limits of the arable field margin priority habitat are defined by the extent of any management undertaken specifically to benefit wildlife. Single payment cross-compliance margins are considered as part of the boundary habitat and are not part of the arable field margin habitat.

The outer edge refers to the edge closest to the field boundary. Where there is a living field boundary (hedgerow or line of trees), any herbaceous vegetation within 2m from the centre of the living boundary is considered to be part of the living boundary habitat. The arable field margin outer boundary starts at the edge of this boundary habitat. Where the boundary is a ditch or other water body, any herbaceous vegetation within 2m from the centre of the water body (or one metre from the edge of the water body if this extends further into the field) is considered to be part of the boundary habitat. The arable field margin outer boundary starts at the edge of this boundary habitat. Where the boundary is non-living (e.g. a fence or wall), the outer edge is defined by the extent of any management undertaken specifically to benefit wildlife. Where the habitat comprises a block of, for example, wild bird seed mixture, it has only an outer edge.

The inner edge refers to the edge closest to the centre of the field. In all cases, the inner edge is defined by the extent of any management undertaken specifically to benefit wildlife.

**Includes:** Cultivated, low-input margins. Margins sown to provide seed for wild birds. Margins sown with wild flowers or agricultural legumes and managed to allow flowering to provide pollen and nectar resources for invertebrates. Margins providing permanent, grass strips with mixtures of tussocky and fine-leaved grasses. BRIG (ed. Ant Maddock) 2008.

**Not included:** Set-aside, biomass and organic crops not managed specifically for wildlife. Margins established as cross compliance requirements under the Single Payment Scheme (in England and Scotland) or as mandatory requirements of an Entry-Level Agri-environment Scheme (in Wales and likely in Northern Ireland). Whole-field options such as over-wintered stubbles (with or without a fallow) and in-field options such as skylark plots

### **Lowland heathland**

#### **HL1 Lowland Heathland (PHT)**

**Description:** Lowland heathland is characterised by the presence of plants such as heather, dwarf gorses, and cross-leaved heath and is generally found below 300 metres in altitude. Ericoid and Ulex minor / gallii cover is the defining factor for heathlands; they are characterised by the presence of dwarf shrubs at a cover of at least 25%. (English Nature, 2002). Areas of good quality heathland should consist of an ericaceous layer of varying heights and structures, plus some or all of the following additional features: scattered trees and scrub; areas of bare ground; areas of acid grassland; on rare occasions calcareous grassland with limestone or chalk heath; gorse; wet heaths, bogs and/or open water. The presence and numbers of characteristic birds, reptiles, invertebrates, vascular plants, bryophytes and lichens are important indicators of habitat quality (JNCC, 2006). Note that these additional features should only be recorded as Lowland heathland if they are less than 0.25ha in size.

This definition includes coastal heathland and dune heathland. Lowland Heathland will lie below a certain defined altitude, which will be set by expert judgement for each Natural Area. In general it should be noted that a typical parcel of lowland heathland would contain within it a variety of different habitats that may include small (<0.25ha) areas of bare ground, patches of bracken, grassland, fen and secondary woodland. If these other features are largely surrounded by 'true' heathland vegetation then they should be included as an integral part of the heathland polygon as long as no feature is >0.25ha. (English Nature, 2002)

**Not included:** Heath type vegetation occurring on >50cm depth of peat is blanket bog and cannot be cross-referenced with Lowland heathland.

**Comments:** The definition quoted here from the UK BAP implies that the Lowland Heathland Priority type overlaps several Broad Habitat types including Heathland, Woodland, Bog and Standing Open Water and Canals. This is the primary reason that the category is treated here as a habitat complex. Lowland heathland is, however, retained as a Habitat Complex to allow cross referencing with both wet and dry heath main habitats.



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*Land-use / Management Codes*


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## Upland heathland

### HU1 Upland Heathland (PHT)

**Description:** Heathland vegetation that occurs widely on mineral soils and thin peats (< 0.5 m deep) throughout the uplands and moorlands of the UK. It is characterised by the presence of dwarf shrubs at a cover of at least 25%. It is defined as lying below the alpine or montane zone (at about 600-750 m) and usually above the upper edge of enclosed agricultural land (generally at around 250-400m, but descending to near sea level in Northern Scotland) (UK Biodiversity Group, 1999b). Upland heath occurs on mineral soils and thin peats above the limit of agricultural enclosure. It is characterised by at least 25% cover of dwarf shrubs such as heather, bilberry, crowberry and western gorse. It can be described as 'dry' or 'wet' upland heath, according to vegetation hydrology and associated plant community. Areas of other semi-natural habitat less than the minimum mappable unit (MMU) contained within an area of upland heath will in general be mapped as Upland heath. (English Nature, 2002)

**Not included:** Heath type vegetation occurring on >50cm depth of peat is blanket bog and cannot be cross-referenced with Upland heathland.

## Coastal and floodplain grazing marsh

### CF1 Coastal and floodplain grazing marsh (PHT)

**Description:** Grazing marsh is defined as periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of tall fen species like reeds *Phragmites* spp.; although they may abut fen and reedswamp communities. This habitat complex is unusual in that it can only be derived by analysis of the overlap of suitable grazed habitats with areas likely to be inundated. (UK Biodiversity Group, 1995) Land within either the 1 in 100 year fluvial flooding or 1 in 100 year coastal flooding Environment Agency mapped areas that is at least occasionally grazed (SERC 2003).

**Not included:** Urban (IHS UR~), arable (IHS CR~) and woodland (IHS WB~ or WC~). Some overlaps with other PHTs permitted (see overlaps matrix for details).

**Required multiplex codes:** Must be associated with an appropriate woodland, grassland, heathland or marine code. Use a suitable habitat code from one of the grassland, heathland, open water or coastal categories (e.g. GA~, GC~, GN~, GI0, GP0, GU0, AS~, OV~, SS~ or LS~) along with appropriate Grassland management (GM1 or GM3) and the land use code for Coastal and floodplain grazing marsh CF1. E.g. GNZ.GM11.CF1 (=Other neutral grassland (IC).Cattle grazed (LU).Coastal and floodplain grazing marsh (PHT).

## Estuary

### ES1 Estuary (SC)

**Description:** An estuary is a partially enclosed area of water and soft tidal shore, open to saline water from the sea and receiving fresh water from rivers, land run-off or seepage. The core parts of an estuary are the intertidal and subtidal areas. These core areas are associated with a number of important related habitats such as saltmarsh, sand dunes, shingle, lagoons and coastal grazing marsh. (UK Biodiversity Group, 1995)

**Required multiplex codes:** Must be associated with an appropriate habitat code. The estuary habitat complex is unusual in that it can be assigned without any knowledge of the underlying habitat type. i.e. to any area in a riverine situation lying between the tidal reaches. If no habitat information is available the ES1 code should be associated with a UH0 (unknown habitat) code.

### *Land-use / Management Codes*

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## Limestone pavement

### LP1 Limestone pavement (PHT)

**Description:** This habitat complex has been created to replace the RE13 (Limestone pavement) habitat category, allowing Limestone pavement to be cross-referenced to the overlying habitat type. It is a near horizontal surface, usually of Carboniferous limestone, which was exposed by the scouring action of ice sheets during the last ice age. Since then water action has widened the cracks in the pavements to form a complex pattern of crevices known as 'grikes' between which are massive blocks of worn limestone called 'clints'. The vegetation is rich in vascular plants, bryophytes and lichens and varies according to geographical location, altitude, rock type and the presence or absence of grazing animals. It may also contain unusual combinations of plants, with woodland and wood-edge species well-represented in the sheltered grikes. The clints support plants of rocky habitats or are often unvegetated. In the absence of grazing scrub may develop. In oceanic areas scrub over limestone pavement is important for epiphytes. (UK Biodiversity Group, 2005)

**Required multiplex codes:** Must be associated with an appropriate woodland, grassland, heathland, fen, marsh or swamp, bracken or inland rock habitat category (e.g. WB~, GA~, GC~, GN~, HE~, or RE~). Appropriate matrix codes may also be applied. Cross-reference the main habitat type with formation and management codes as appropriate.

## Maritime cliff and slope

### MC1 Maritime cliff and slopes (PHT)

**Description:** The junction between land and sea where a break in slope is formed by slippage or erosion by the sea. There appears to be no generally accepted definition of the minimum height or angle of slope which constitutes a cliff, but the zone defined as cliff-top (also covered in this plan) should extend landward to at least the limit of maritime influence (ie limit of salt spray deposition), which in some exposed situations may continue for up to 500 m inland. On the seaward side, the plan extends to the limit of the supralittoral zone and so includes the splash zone lichens and other species occupying this habitat (UK Biodiversity Group, 1999). Exposure to wind and salt spray is a key determinant of vegetation type, plus the geology of the cliff or slope. Vegetation is a transition from maritime species to terrestrial communities further inland, and varies according to steepness of slope (gravitational instability), as affects degree of plant cover and depth of soil. Vegetated cliff species include Sea Campion *Silene maritima*, Thrift *Armeria maritima*, Rock Samphire *Crithmum maritimum*, Buck's Horn Plantain *Plantago maritima*, and high frequency of Red Fescue *Festuca rubra* ssp. *pruinosa* - the densely salt-tolerant ecotype, and Creeping Bent *Agrostis stolonifera*, Maybe also Maidenhair Fern *Adiantum capillus-veneris*. Lichen-dominated cliffs support yellow and grey lichens. The habitat also provides an important breeding ground for a range of seabirds. The habitat occurs on most of the British shoreline, except between the Thames and Humber Estuaries. In the north it consists of hard rock communities, in the south of hard rock communities and dry calcareous cliffs. (UK Biodiversity Group, 1999a)

**Not included:** Only climbing sand dunes may only be qualified as Maritime cliff and slope; dunes below MHW are excluded. Similarly, perched saltmarsh may be qualified as Maritime cliff and slope but saltmarsh below MHW is excluded. Chalk cliffs which grade into Littoral chalk (PHT) should also be separated at MHW.

**Required multiplex codes:** Must be associated with an SR~ (Supralittoral rock) main habitat type if vegetation is strictly maritime in influence. Transitional vegetation such as woodland, grassland, wetland, heathland can also be qualified with MC1 if their communities exhibit some influence of salt spray deposition.

### Land-use / Management Codes

All Land-use / Management Section categories must be cross-referenced with the Habitats Section category with which they are associated.

## Machair

### MA1 Machair [= Machair (AN1)] (PHT)

**Description:** This habitat complex has been created to replace the SS2 (Machair) habitat category, allowing Machair to be cross-referenced to the underlying habitat type. It is a distinctive type of coastal grassland found in north and west Scotland, and in western Ireland. It is associated with calcareous sand, blown inland by very strong prevailing winds from beaches and mobile dunes. Machair habitats refers to relatively flat and low lying sand plain formed by dry and wet (seasonally waterlogged) short-turf grasslands above impermeable bedrock. It can also include beach zone, mobile and semi-fixed foredunes, dune slacks, fens, swamps, lochs, saltmarsh, and sand blanketing adjacent hillslopes, together forming the 'machair system'. The vegetation is typical of calcareous to neutral sandy grassland. The most extensive and floristically rich formations occur as a mosaic of driftline, foredune, machair plain and transitions to other habitats such as fens, heaths and bogs. Rare plants restricted to machair include slender naiad *Najas flexilis*. The habitat is also important for breeding waders such as corncrake *Crex crex* and has a rich invertebrate fauna. (Brown *et al.*, 1997)

**Required multiplex codes:** Must be associated with an appropriate grassland, heathland, fen, marsh or swamp, bracken or marine category (e.g. GC~, GN~, HE~, EM~, SS~, LS~ or IS~). Appropriate matrix codes may also be applied. Cross-reference the main habitat type with formation and management codes as appropriate.

## Post industrial habitats

### PI0 Post-industrial habitats (PPHT) Replaced by Open Mosaic Habitats on Previously Developed Land TP 2015

**Description:** Includes a range of semi-natural and anthropogenic sparsely vegetated habitats on substrates characterised by high levels of heavy metals such as lead, chromium and copper, or other unusual minerals. The vegetation is typically sparse and open due to the toxicity and low nutrient status of the substrate. Rock outcrops, screes and mine spoil rich in heavy metals and other unusual minerals provide an important habitat for Calaminarian grasslands and related vegetation. These are associated with outcrops of serpentine and river gravels rich in heavy metals, as well as with artificial mine workings and spoil heaps. Seral succession is slowed or arrested by the toxicity of the substrate. Open-structured plant communities, sometimes known as 'Calaminarian grasslands', typically occur, composed of ruderal/metallophyte species of lichens, bryophytes and vascular plants, such as spring sandwort *Minuartia verna*, alpine pennycress *Thlaspi arvense*, and genetically adapted races of species such as thrift *Armeria maritima* and bladder campion *Silene maritima*. Notable species include Young's helleborine *Epipactis youngiana*, forked spleenwort *Asplenium septentrionale* and lead-moss *Ditrichum plumbicola*. In northern parts of the UK there are local populations of boreal species which characterise these habitat conditions in Scandinavia, such as Scottish sandwort *Arenaria norvegica* and the endemic Shetland mouse-ear *Cerastium nigrescens*. Vegetation on metalliferous substrates is found in three distinct settings in the UK: i.) Near-natural substrates; ii.) Mine spoil, in situations where naturally occurring metalliferous outcrops have been quarried away; iii.) Metalliferous river gravels, sometimes derived from washed-out mine workings. In many localities the metalliferous outcrops which would have been the natural habitat for the species referred to above have been quarried away but the mine spoil still provides suitable habitat. (JNCC, 2006)

### PI1 Calaminarian grasslands of the Violetalia Calaminariae (AN1)

**Description:** Calaminarian grasslands occur on substrates that have levels of heavy metals particularly lead, chromium, and zinc, that are toxic to most plants. The vegetation is generally open and species-poor, but contains a number of specialist species principally found in this habitat, notably spring sandwort *Minuartia verna*, and alpine pennycress *Thlaspi caerulescens*, as well as metallophytic sub-species and ecotypes of other species such as bladder campion *Silene vulgaris*, and thrift *Armeria maritima*. The vegetation develops on serpentine rock outcrops; on river gravels and shingles rich in heavy metals; and on artificial mine workings and spoil heaps, mainly on limestone. (Brown *et al.*, 1997)

**Required multiplex codes:** Must be cross-referenced with an RE~ category or with either AR3 or AR12 as appropriate.

### PIZ Other rock outcrops and mine spoil rich in heavy metals (IC)

**Description:** Rock outcrops and mine spoil rich in heavy metals that does not fall within the Annex 1 type description.

**Required multiplex codes:** Must be cross referenced with a Grassland (GA, GN, GC~ etc but not GI0 or GP0), Heathland (HE~) or with an Inland Rock (RE~ spoil types) or shingle AR3 or AR12 category.

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*Land-use / Management Codes*


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## Post industrial sites

### PC0 Post-industrial sites (LU)

**Description:** The habitat of post-industrial sites is best defined in terms of structure and growth forms, rather than through specific vegetation communities. Typically they comprise mosaics of bare ground with very early pioneer communities on skeletal substrates, more established open grasslands usually dominated by fine-leaved grasses with many herbs, areas of bare ground, scrub and patches of other habitats such as heathland, swamp, ephemeral pools and inundation grasslands. Edaphic conditions include substrates with extreme pH, whether alkaline (e.g., chemical wastes) or acid (e.g., colliery spoils); deficiencies of nitrogen (PFAs) or available phosphate (highly calcareous Leblanc waste, blast furnace slag and calcareous quarry spoil); or water (dry gravel and sand pits).

The vegetation can have similarities to early/pioneer communities (particularly grasslands) on more 'natural' substrates but, due to the severity of the edaphic conditions, the habitat can often persist (remaining relatively stable) for decades without active management (intervention).

### PC1 Post-industrial sites of high nature conservation value (LU)

**Description:** Examples of post-industrial habitat of high nature conservation value may be characterised as "unmanaged flower-rich grasslands with sparsely vegetated areas developed over many years on [edaphically-] poor substrates." The habitat supports a range of notable vascular plant, moss and lichen species. These often include species declining in the wider countryside such as bee orchid *Ophrys apifera*, fragrant orchid *Gymnadenia conopsea* (alkaline wastes), Young's helleborine *Epipactis youngiana* (acid waste), royal fern *Osmunda regalis* (acid sandstone quarries), the fungus *Peltigera rufescens* (lime waste, PFA), lichens *Cladonia pocillum* (calcareous wastes) and *Diploschistes muscorum* (PFA) and a BAP Priority liverwort, *Petalophyllum ralfsii* (PFA). Exotic species such as red valerian *Centranthus ruber*, mugwort *Artemisia vulgaris*, Oxford ragwort *Senecio squalidus*, which are well adapted to the prevailing environmental conditions often form part of plant assemblages in this habitat, extending the flowering season and, with the floristic and structural diversity of the habitat mosaic, contribute to the value of the habitat for invertebrates. The main criteria for selecting post-industrial sites of high nature conservation value are:

- 1.) Rich and/or large examples of habitats typical of the substrate/edaphic conditions, which demonstrate the characteristic mosaic of bare ground, pioneer communities, flower rich grassland and other habitat patches;
- 2.) Presence of UK BAP priority species;
- 3.) Presence of a significant population of any Red Data Book or Red Data List species and/or important populations of any UK BAP Species of Conservation Concern (SoCC);
- 4.) Sites which have retained areas of bare ground and pioneer communities over an extended period, demonstrating arrested succession;
- 5.) Sites which are the last remaining examples in former industrial or urban areas where the habitat was formerly widespread or extensive;
- 6.) Sites with a high scientific interest because of historical records or the nature of particular substrates or properties which may be especially rare.

**Not included:** This habitat has some close correspondence with PI0 (Rock outcrops, river shingle and mine spoil rich in heavy metals. However, PC0 (Post-industrial sites of high nature conservation value) is associated with substrates and edaphic conditions that directly result from industrial processes.

### PC2 Post-industrial sites of low nature conservation value (LU)

**Description:** Post-industrial sites which do not meet the criteria for high nature conservation value above.

---

*Land-use / Management Codes*

*All Land-use / Management Section categories must be cross-referenced with the Habitats Section category with which they are associated.*

---

## *UNKNOWN*

### **Unknown/untranslatable primary habitat**

#### **UH0 Unidentified habitat (TR)**

**Description:** This code is used as a marker when auto-translating from another classification where there is a category best represented in IHS using a matrix code (e.g. scrub). Also used as a placeholder when there is some other ambiguity about the translation.

**Required multiplex codes:** Used in association with codes such as SC~, TS~, PA~, OT~, BG~, HS~ or IH~

#### **UH1 Untranslatable habitat (data deficient) (TR)**

**Description:** Data receiving this code in translation is either sourced from an inherently untranslatable category in another classification, or insufficient additional data has been available to complete the translation process satisfactorily.

#### **UH2 Untranslatable habitat (unrecognised source) (TR)**

**Description:** Data receiving this code in translation has a source classification code which is not recognised by the translation software.

## APPENDIX 1

Map of Levels IHS Area

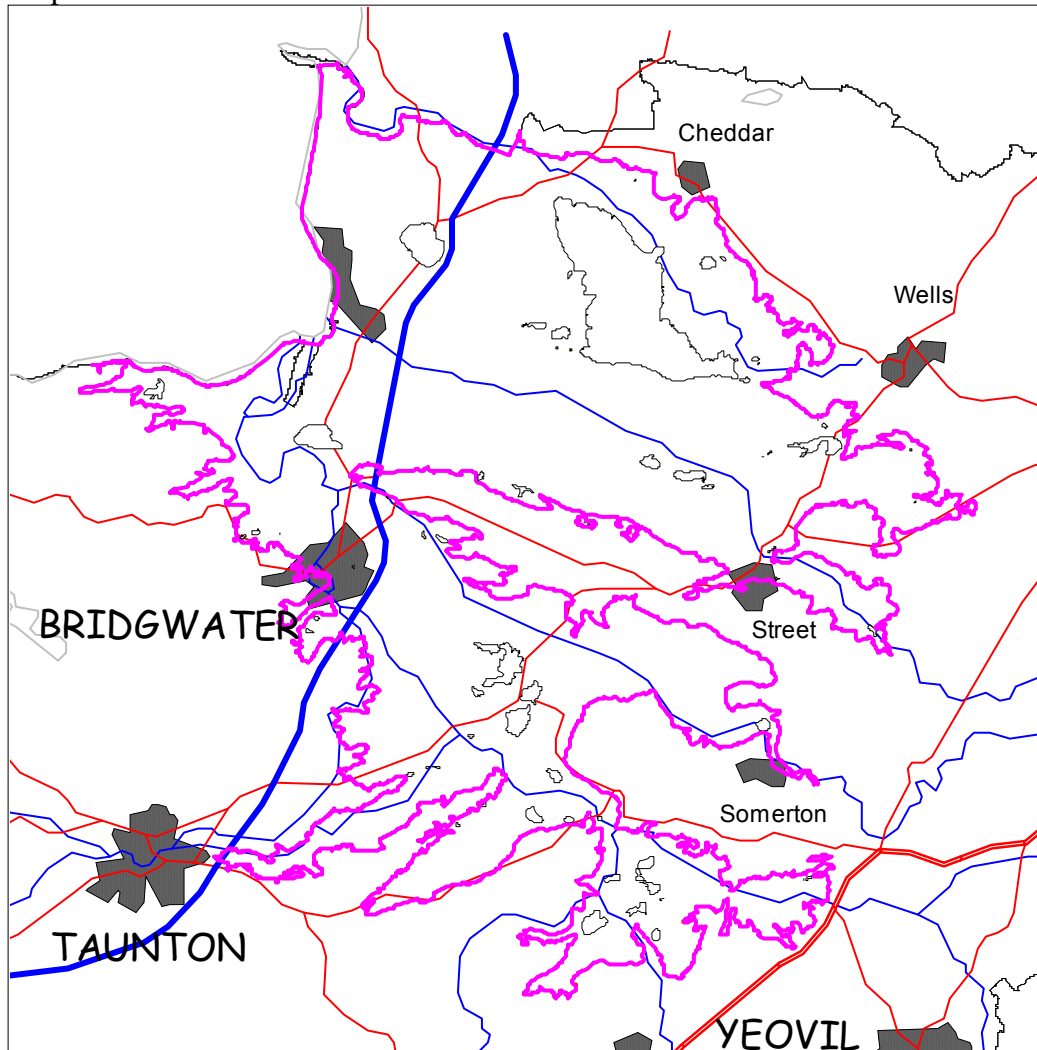
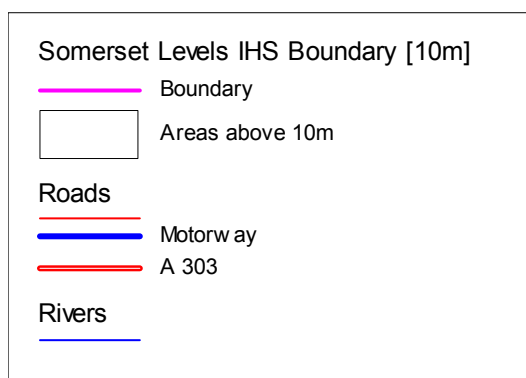


Figure 1 Boundary of Somerset Levels IHS Codes.



*APPENDIX 2*

# **UK Biodiversity Action Plan Priority Habitat Descriptions**

## **Lowland Meadows**

**From:**

UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.

This document is available from:

<http://jncc.defra.gov.uk/page-5706>

For more information about the UK Biodiversity Action Plan (UK BAP) visit

<http://www.jncc.defra.gov.uk/page-5155>

Please note: this document was uploaded in June 2015, and replaces an earlier version, in order to correct a broken web-link, but no other changes have been made. The earlier version can be viewed and downloaded from The National Archives:

<http://webarchive.nationalarchives.gov.uk/20150302161254/http://jncc.defra.gov.uk/page-5706>



## Lowland Meadows

The definition of this habitat remains unchanged from the pre-existing Habitat Action Plan (<http://tna.europarchive.org/20110303145238/http://www.ukbap.org.uk/UKPlans.aspx?ID=10>), a summary of which appears below. Following the 2007 review, occurrences of this habitat on roadside verges are also covered by the definition.

A wide-ranging approach is adopted in this plan to lowland grasslands treated as lowland meadows. They are taken to include most forms of unimproved neutral grassland across the enclosed lowland landscapes of the UK. In terms of National Vegetation Classification plant communities, they primarily embrace each type of *Cynosurus cristatus*-*Centaurea nigra* grassland, *Alopecurus pratensis*-*Sanguisorba officinalis* floodplain meadow and *Cynosurus cristatus*-*Caltha palustris* flood-pasture. The plan is not restricted to grasslands cut for hay, but also takes into account unimproved neutral pastures where livestock grazing is the main land use. On many farms in different parts of the UK, use of particular fields for grazing pasture and hay cropping changes over time, but the characteristic plant community may persist with subtle changes in floristic composition.

In non-agricultural settings, such grasslands are less frequent but additional examples may be found in recreational sites, church-yards, roadside verges and a variety of other localities. Excluded from this plan are maritime grassland communities confined to coastal habitats (which will be covered in maritime cliff and machair action plans), *Anthoxanthum odoratum*-*Geranium sylvaticum* grasslands (which are treated in a companion action plan for upland hay meadows) and *Molinia-Juncus* pastures (which are covered in the purple moor grass and rush pasture (*Molinia-Juncus*) plan).

As indicated in the Habitat Statement included in *Biodiversity: the UK Steering Group Report, Vol 2* (1995), unimproved neutral grassland habitat has undergone a remarkable decline in the 20th century, almost entirely due to changing agricultural practice. It is estimated that by 1984 in lowland England and Wales, semi-natural grassland had declined by 97% over the previous 50 years to approximately 0.2 million hectares. Losses have continued during the 1980s and 1990s, and have been recorded at 2–10% per annum in some parts of England. Extensive agricultural modification of unimproved grasslands has also been recorded in Scotland between the 1940s and 1970s. Recent conservation survey findings in Britain and Northern Ireland reveal that the impact has been pervasive, and an estimated extent of less than 15,000ha of species-rich neutral grassland surviving today in the UK is given in the Habitat Statement.

The plan concentrates on meadows and pastures associated with low-input nutrient regimes, and covers the major forms of neutral grassland which have a specialist group of scarce and declining plant species. Among flowering plants, these include fritillary *Fritillaria meleagris*, Dyer's greenweed *Genista tinctoria*, green-winged orchid *Orchis morio*, greater butterfly orchid *Platanthera chlorantha*, pepper saxifrage *Silene silaus* and wood bitter vetch *Vicia orobus*. Lowland meadows and pastures are important habitats for skylark and a number of other farmland birds, notably corncrake which has experienced a major range contraction across the UK.

The overall outcome of habitat change in the lowland agricultural zone is that *Cynosurus* - *Centaurea* grassland, the mainstream community of unimproved hay meadows and pastures over much of Britain, is now highly localised, fragmented and in small stands. Recent estimates for cover in England and Wales indicate that there is between 5,000–10,000ha of this community in total. There is an especially important concentration in Worcestershire and other particularly important areas include south-west England (Somerset, Dorset and Wiltshire), the East Midlands & East Anglia (Leicestershire, Northamptonshire,

Cambridgeshire and Suffolk), in various parts of Wales and in West Fermanagh and Erne Lakeland in Northern Ireland. In certain areas, such as in the old district of Brecknock in Powys, remnant examples are locally aggregated. Scotland is estimated to have between 2,000–3,000ha of this community, with particular concentrations in the crofting areas of Lochaber, Skye and the Western Isles. Local data for Northern Ireland are less complete, but the West Fermanagh and Erne Lakeland ESA in Northern Ireland contains an important concentration of the resource.

Unimproved seasonally-flooded grasslands are less widely distributed. They have lower overall cover, but there are still a few quite large stands. *Alopecurus-Sanguisorba* flood-meadow has a total cover of <1,500ha and is found in scattered sites from the Thames valley through the Midlands and Welsh borders to the Ouse catchment in Yorkshire. These include well-known but now very rare Lammas meadows, such as North Meadow, Cricklade, and Pixey and Yarnton Meads near Oxford, which are shut up for hay in early spring, cropped in July, with aftermath grazing from early August; nutrients are supplied by flooding episodes in winter. *Cynosurus-Caltha* flood-pasture is also now scarce and localised, with probably <1,000ha cover in England and Wales. Scotland is estimated to have 600–800ha of this community.

It will be important to ensure that such periodically flooded grasslands are taken into account during implementation of the action plan for coastal and floodplain grazing marshes; actions in the two plans need to be closely integrated.

Agricultural intensification has led to the extensive development of nutrient-demanding, productive *Lolium perenne* grasslands. These are managed for grazing and also silage production which has widely replaced traditional hay-making. Where fertiliser input is relaxed or in swards which have only been partially improved, *Lolium-Cynosurus* grassland is common; in many respects this is intermediate between improved and unimproved lowland neutral grasslands but has few uncommon species and is generally of low botanical value.

## **Lowland Calcareous Grassland**

**From:**

UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.

This document is available from:

<http://jncc.defra.gov.uk/page-5706>

For more information about the UK Biodiversity Action Plan (UK BAP) visit

<http://www.jncc.defra.gov.uk/page-5155>

Please note: this document was uploaded in June 2015, and replaces an earlier version, in order to correct a broken web-link, but no other changes have been made. The earlier version can be viewed and downloaded from The National Archives:

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## Lowland Calcareous Grassland

Lowland calcareous grasslands are developed on shallow lime-rich soils generally overlying limestone rocks, including chalk. These grasslands are now largely found on distinct topographic features such as escarpments or dry valley slopes and sometimes on ancient earthworks in landscapes strongly influenced by the underlying limestone geology. More rarely, remnant examples occur on flatter topography such as in Breckland and on Salisbury Plain. They are typically managed as components of pastoral or mixed farming systems, supporting sheep, cattle or sometimes horses; a few examples are cut for hay.

The definition of calcareous grasslands covers a range of plant communities in which lime-loving plants are characteristic. In the context of this Action Plan, lowland types are defined as the first nine calcareous grassland National Vegetation Classification communities, CG1 to CG9. With the exception of CG9, *Sesleria albicans* - *Galium sternerii* grassland, which straddles both lowlands and uplands, these communities are largely restricted to the warmer and drier climates of the southern and eastern areas of the United Kingdom. Lowland sub-communities of CG9 occur in the more clement conditions around Morecambe Bay in Cumbria, while upland sub-communities occupy colder and wetter localities in the Pennines. Lowland calcareous grassland sites occur in both enclosed and unenclosed situations but typically below the upper level of agricultural enclosure in any particular district; calcareous grasslands situated in the unenclosed uplands are covered by a separate Action Plan. As defined here, lowland calcareous grassland only occurs in England and Wales. None of the communities CG1 to 9 has been recorded from Scotland. While limestone grassland in Northern Ireland has affinities to CG9, it is largely confined to open upland localities and around their margins; some CG6 has also been recorded, but only in very small and scattered stands around the coast.

The definition of the habitat as given in the pre-existing Habitat Action Plan (<http://tna.europarchive.org/20110303145238/http://www.ukbap.org.uk/UKPlans.aspx?ID=12>) has been amended to:

- include examples of NVC CG10 *Festuca ovina*-*Agrostis capillaris*-*Thymus praecox* grassland where they clearly occur below the upper limits of agricultural enclosure; and
- exclude examples of CG1 *Festuca ovina*-*Carlina vulgaris* grassland and CG2 *Festuca ovina*-*Avenula pratensis* grassland where these clearly occur above the upper limits of enclosure.
- In Northern Ireland, enclosed calcareous grassland (mainly CG9 and CG10) is very limited and similar floristically to unenclosed grassland. For practical purposes all calcareous grassland in Northern Ireland is treated as Upland Calcareous Grassland.

Following the 2007 review, occurrences of this habitat on roadside verges are also covered by the definition.

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