

Ecological Sub-area Statement of Biodiversity Priorities – Technical Appendix

Sub-area name	Smestow Valley & Tettenhall Ridge	Sub-area ref.	CL01
Natural Character Area	Mid Severn Sandstone Plateau	NCA ref.	66
Local Authority Area	Wolverhampton	Area km²	4.97

Ecological Sub-area Description

Overview

The ecological sub-area comprises a connected network of open spaces in the north-west of Wolverhampton, close to the Black Country's boundary with rural Staffordshire. With the exception of a number of direct connections to Staffordshire via watercourses and canals, suburban settlement surrounds the ecological sub-area including the historic villages of Tettenhall, Tettenhall Wood and Compton (formerly in the Staffordshire parishes of Tettenhall and Bushbury). The ecological sub-area is dominated by open spaces that follow the valley of the Smestow Brook and the canal network of western Wolverhampton, along with the mature woodlands and historic greens of the sandstone Tettenhall Ridge.

Land Use

The valley of the Smestow Brook is dominated by Smestow Valley Local Nature Reserve (LNR) which follows the former Wolverhampton & Kingswinford Railway line for 4.5 kilometres from Aldersley in the north to Wightwick in the south. Covering an area of approximately 51 hectares, the site comprises the dismantled railway line and a number of areas of former farmland with retained field-boundary hedgerows, grassland and recent secondary and plantation woodland. The Staffordshire & Worcestershire Canal follows the valley and forms the boundary to the LNR for much of its length. There are also short lengths of the Birmingham Main Line and Shropshire Union canals. Other areas of open space in the valley include public open space, playing fields, sports grounds, a golf course, a racecourse and a sewage treatment works. The only agricultural land lies in the very south of the ecological sub-area on the boundary with the South Staffordshire countryside and comprises pastures to the north and south of the Smestow Brook.

The south-east facing slopes of Tettenhall Ridge are occupied by mature broad-leaved woodland, parts of which are designated as ancient, whereas others were planted in the 19th century. Tettenhall Upper Green occupies land to the north of Tettenhall village and comprises public open space, with to the north of this Danescourt Cemetery and South Staffordshire Golf Course.

Topography

The Smestow valley lies at an elevation of 100 m in the north, falling away to 90 m in the south, with the surrounding level land at an elevation of 110 to 120 m. The Tettenhall Ridge runs on a north-east – south-west axis with a south-east aspect and is approximately 30 to 40 metres in height, with the villages of Tettenhall and Tettenhall Wood lying to the west at an elevation of 140 – 150 metres.

Geology

The entire ecological sub-area is located on bedrock of sedimentary sandstone and conglomerate, interbedded, formed approximately 200 to 251 million years ago in the Triassic Period. This is partially overlain with superficial deposits of diamicton till formed up to 3 million years ago in the Quaternary Period; undifferentiated river terrace deposits of sand and gravel formed up to 3 million years ago in the Quaternary Period; and in the valley of the Smestow brook, clay, silt and sand alluvium formed up to 2 million years ago in the Quaternary Period.

Geopark Sites

- Compton and Tettenhall Ridge (GR SJ88900013)
- Wightwick Wedge and Smestow Valley Local Nature reserve (GR SO887994)

Soils

The valley of the Smestow Brook is dominated by naturally wet very acid sandy and loamy soils, whilst in the north there are areas of slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils, loamy soils with naturally high groundwater, and freely draining slightly acid loamy soils. The Tettenhall Ridge is comprised of slightly acid loamy and clayey soils with impeded drainage, and freely draining slightly acid loamy soils.

Scale 1:25,000

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Historic Landscape Character Areas			
Reference	WV02	Name	Wolverhampton Outer Western Suburbs
<p>The ecological sub-area is dominated by WV02 Wolverhampton Outer Western Suburbs, which is predominately comprised of 20th century residential development. The Character Area contains the site of the medieval settlements of Tettenhall (first mentioned AD 910), Wightwick, Compton, Wergs and Aldersley. During the medieval period these settlements were likely to have been surrounded by open fields. The settlement of Tettenhall was fairly large, centred around two large greens. The heathland that existed at Tettenhall Wood until the early 19th century had probably been there since the medieval period. Once the heath was enclosed the development of houses soon took over.</p>			
Reference	WV10	Name	Pendeford, Fordhouses & Moseley
<p>The northern part of the ecological sub-area lies within WV10 Pendeford, Fordhouses & Moseley. The modern landscape is characterised by late 20th century residential development, industrial sites, public services and recreational facilities (public parks and nature reserves), which also date to the period after 1938. Prior to the 19th century, this area was mainly agricultural with some fields being medieval in origin and with some early settlements located in the west of the Character Area at Pendeford Farm, Pendeford Hall and Barnhurst Farm. Pendeford Aerodrome was opened in 1938 and later became a 1980s housing estate. The Staffordshire and Worcestershire Canal is one of the earliest features in this landscape, constructed in 1770.</p>			

Historic Environment Area Designations ^[1]			
Reference	APA 28	Name	Land adjacent to Smestow Brook
<p>The APA contains part of the route of the Smestow Brook, there is considered to be potential for previously unknown prehistoric activity (including Bronze Age burnt mounds) and environmental evidence present associated with the former water course.</p>			
Reference	AHHLV 22	Name	Upper Green Tettenhall
<p>The AHHLV contains Upper Green, an area of surviving common ground associated with the settlement at Tettenhall. Contains an old millpond (now a paddling pool) and a 20th C clock tower. Possible shallow ridge and furrow earthworks to the N of the pool.</p>			
Reference	AHHLV 24	Name	Wightwick Wedge and Smestow Valley
<p>The AHHLV contains an area of earthwork ridge and furrow, the remains of a medieval holloway and Wightwick Mill. It is situated within the Smestow Valley which is a major geomorphological feature of the Black Country on its western margin.</p>			
Reference	AHHLV 59	Name	Tettenhall Wood
<p>The AHHLV is an area of semi-natural ancient woodland. It has the potential to contain well preserved archaeological remains and features associated with medieval and post-medieval woodland management.</p>			
Reference	APA 83	Name	Graveyard of St Michael's and All Angels Church
<p>The APA contains the late 19th century extent of the grave yard associated with the Grade II listed St Michael's and All Angels Church. It has the potential to contain burials and mortuary monuments dating back to the medieval period.</p>			
Reference	AHHTV 129	Name	Mount Street, Tettenhall
<p>The AHHTV contains the south side of Mount Street, Tettenhall. The settlement at Tettenhall Wood expanded along Mount Street during the 19th century and the AHHTV contains a range of 19th century buildings associated with this expansion.</p>			
Reference	APA 82	Name	Tettenhall Historic Settlement
<p>The APA covers the historic core of Tettenhall as shown on the 1816 Ordnance Surveyors Drawings.</p>			

Waterbody Catchments			
River Basin District	Severn	Management Catchment	Severn Middle Worcestershire
Waterbody Catchment	Overall Classification	Ecological	Chemical
Smestow Brook - source to conf Wom-Penn Brook	Moderate (2021)	Moderate (2021)	Fail (2021)
River Basin District	Humber	Management Catchment	Trent Valley Staffordshire
Waterbody Catchment	Overall Classification	Ecological	Chemical
Penk from Source to Saredon Brook	Poor (2019)	Poor (2019)	Fail (2019)

Key Habitats [2]			
Broad Habitat Type	Boundary & Linear Features	Priority Habitat	Hedgerows
Remnant field boundary hedgerows exist in many of the areas of open space and, less frequently, along roadsides. These are typically Hawthorn-dominated with varying diversity of woody component and field-layer, with some containing mature standards of species including Pedunculate Oak.			
Broad Habitat Type	Standing Open Water and Canals	Priority Habitat	Eutrophic Standing Waters
The Staffordshire & Worcestershire Canal runs north-south through the entire ecological sub-area, following the valley of the Smestow Brook for much of its length and linking directly with the Staffordshire countryside at each end. Towards the north of the sub-area are junctions with the Shropshire Union and Birmingham Mainline Canal, the former running west and into the Staffordshire countryside, the latter west into the urban Black Country and on to Birmingham city centre. The canals comprise a significant network of wildlife corridors and are an important component of the ecological network. A variety of habitat types and a number of species of note including Otter and Water Vole are present.			
Broad Habitat Type	Standing Open Water and Canals	Priority Habitat	Ponds
In the north of the ecological sub-area within the track of Dunstall Racecourse is a large artificial flood alleviation pond (c. 1.4 ha) associated with the Smestow Brook. This is steep sided and supports little aquatic flora but is well-recorded and notable for a broad-range of passage migrant water and wetland birds. In the south of Smestow Valley LNR there is a former field pond and nearby a recently created pond that support a breeding population of Great Crested Newt.			
Broad Habitat Type	Rivers and Streams	Priority Habitat	Rivers
The Pendeford Brook and a tributary of this rise within the north of the ecological sub-area but are entirely within culvert. The Smestow Brook rises to the east of the ecological sub-area but lies within a > 4 kilometre culvert from which it emerges at a notable aqueduct over the Staffordshire & Worcestershire Canal to the south of the racecourse. From here the watercourse flows south within a highly modified channel for several hundred metres, from which point the channel is more natural, though still modified and over-widened. There are two small tributaries of the Smestow Brook: the Graisle Brook which is culverted for its entire length with the exception of a short section (c. 240m) of artificial channel that flows alongside and the canal, and the Finchfield Brook, which emerges from a culvert into a mostly unmodified channel for approximately 450 m before again entering a culvert.			
Broad Habitat Type	Neutral Grassland	Priority Habitat	
Periodically cut rank neutral grassland dominates much of the Smestow valley. Species diversification and the implementation of annual management has been undertaken within areas of the LNR, however, to date this has had only limited success in increasing floral diversity. In the very south of the ecological sub-area there are areas of rank neutral grassland to the north and south of the Smestow Brook which are occasionally grazed.			

There are numerous areas of regularly mown amenity grassland throughout, including areas of public open space, golf courses, Dunstall Racecourse, school grounds, sports fields and at the National Trust's Wightwick Manor site in the south of the ecological sub-area.

Broad Habitat Type	Broadleaved, Mixed and Yew Woodland	Priority Habitat	
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There are numerous blocks of planted trees within the valley of the Smestow Brook and in areas of open space adjoining the canal corridors. These are predominantly comprised of native broadleaved species and date to the latter part of the 20th century. Most of the blocks are typically structurally poor and support a field-layer flora comprised of ubiquitous species, however, in recent years a number of projects have been undertaken to enhance these areas and both these structural and species diversity is increasing.

Recent secondary woodland has colonised a number of formerly developed sites including the 4.5 km length of the dismantled Wolverhampton & Kingswinford Railway line, a former tennis court close to the Tettenhall Road and former railway sidings at Oxley in the north of the ecological sub-area.

There are a number of mature plantation woodlands associated with large 18th and 19th century houses along the Tettenhall Ridge including at the National Trust's Wightwick Manor site in the south of the ecological sub-area. These are typically dominated by UK-native species including Beech and Pedunculate Oak.

Broad Habitat Type	Broadleaved, Mixed and Yew Woodland	Priority Habitat	Lowland Mixed Deciduous Woodland
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The south-east facing scarp slope of the Tettenhall Ridge is dominated by mature woodland and is a significant feature of the local landscape. Woodland is depicted in this area on maps dating back to 1613 and most of this is recorded on Natural England's ancient woodland inventory as ancient semi-natural woodland. There is a significant planted component to the woodlands and an abundance of introduced ornamental plants, however, and the true extent of ancient semi-natural woodland is not clear.

Key Species [3]

Bird indicators

Farmland	Goldfinch, Greenfinch, Jackdaw, Kestrel, Linnet, Rook, Starling, Stock Dove, Whitethroat, Woodpigeon
Woodland	Blackbird, Chiffchaff, Coal Tit, Common Chaffinch, Dunnock, Eurasian Blackcap, Eurasian Blue Tit, Eurasian Bullfinch, Eurasian Nuthatch, Eurasian Wren, European Green Woodpecker, Goldcrest, Great Spotted Woodpecker, Great Tit, Jay, Long-tailed Tit, Robin, Song Thrush, Sparrowhawk, Tawny Owl, Treecreeper, Willow Warbler.
Water & Wetland	Eurasian Coot, Grey Heron, Grey Wagtail, Kingfisher, Little Grebe, Mallard, Moorhen, Mute Swan.
Other	Buzzard, Carrion Crow, Collared Dove, Common House Martin, Eurasian Magpie, House Sparrow, Mistle Thrush, Northern Raven, Swift.

Amphibians & Reptiles

Amphibians	Common Frog, Common Toad, Great Crested Newt, Smooth Newt.
Reptiles	none

Mammals

Bats	Brown Long-eared Bat, Common Pipistrelle, Daubenton's Bat, Lesser Horseshoe Bat, Lesser Noctule, Natterer's Bat, Noctule Bat, Soprano Pipistrelle, Whiskered Bat.
Other	Eurasian Badger, European Otter, European Water Vole, West European Hedgehog.

Fish

Bony Fish	none
Jawless Fish	none

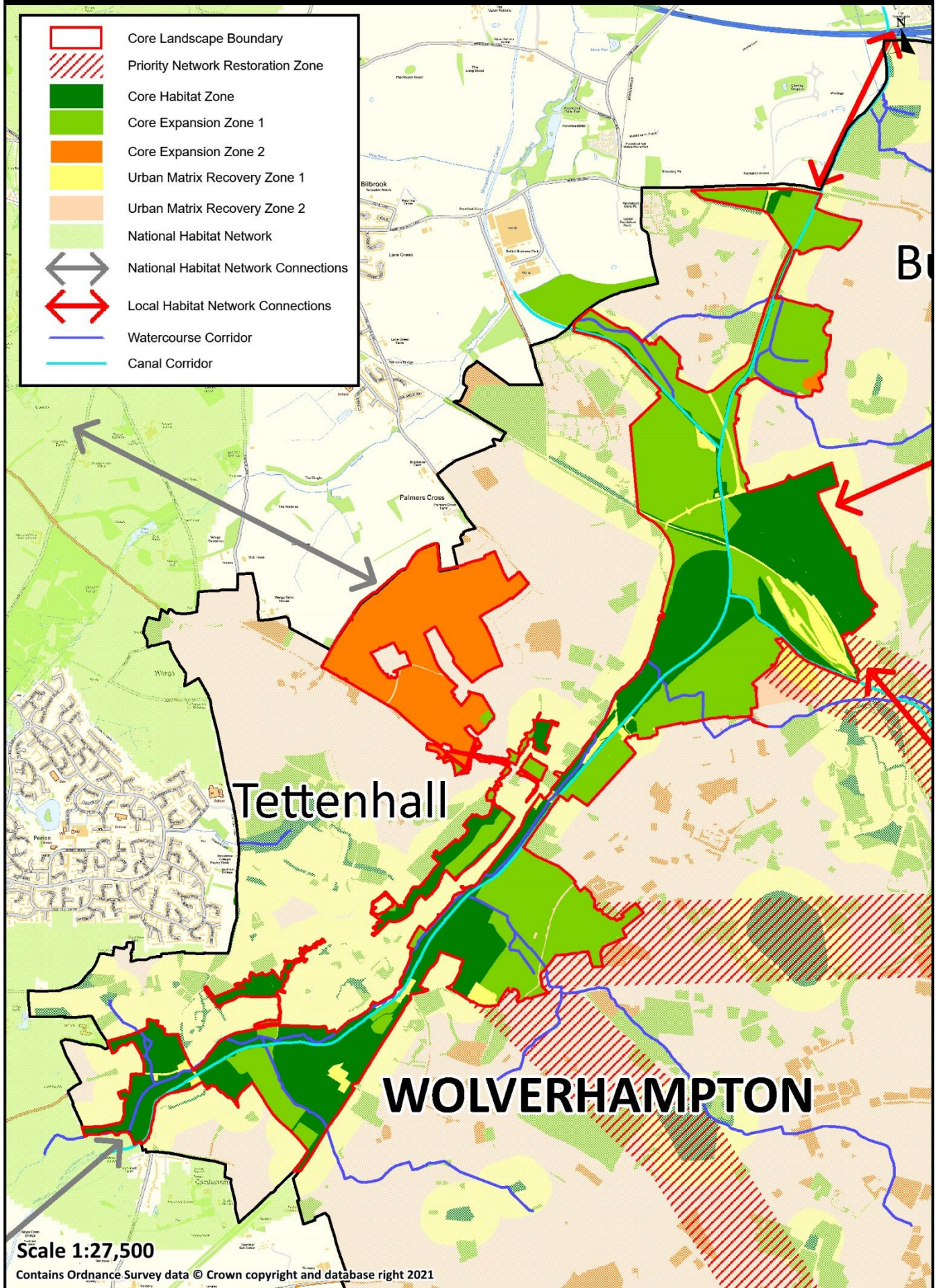
Invertebrates

Butterflies	
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Moths	
Other Invertebrates	
Flora (axiophytes)	
Woodland	<i>Adoxa moschatellina, Ajuga reptans, Allium ursinum, Anemone nemorosa, Angelica sylvestris, Athyrium filix-femina, Blechnum spicant, Brachypodium sylvaticum, Bromopsis ramosa, Caltha palustris, Carex remota, Carex sylvatica, Chaerophyllum temulum, Chrysosplenium oppositifolium, Deschampsia flexuosa, Dioscorea communis, Epipactis helleborine, Festuca gigantea, Filipendula ulmaria, Fragaria vesca, Frangula alnus, Galium odoratum, Geum rivale, Lysimachia nemorum, Lysimachia vulgaris, Malus sylvestris, Melica uniflora, Mercurialis perennis, Miliium effusum, Moehringia trinervia, Oxalis acetosella, Poa nemoralis, Quercus petraea, Solidago virgaurea, Stellaria holostea, Teucrium scorodonia, Tilia cordata, Torilis japonica, Valeriana officinalis, Veronica montana, Viola reichenbachiana.</i>
Grassland	<i>Agrostis canina, Ajuga reptans, Alchemilla filicaulis subsp. vestita, Blechnum spicant, Brachypodium sylvaticum, Bromopsis erecta, Caltha palustris, Dactylorhiza praetermissa, Daucus carota subsp. carota, Deschampsia flexuosa, Filipendula ulmaria, Fragaria vesca, Geum rivale, Lathyrus nissolia, Leontodon hispidus, Lotus pedunculatus, Odontites vernus, Persicaria bistorta, Potentilla sterilis, Rhinanthus minor, Sanguisorba officinalis, Silene flos-cuculi, Solidago virgaurea, Stachys officinalis, Stellaria holostea.</i>
Heathland	<i>Agrostis canina, Aira praecox, Blechnum spicant, Carex nigra, Deschampsia flexuosa, Teucrium scorodonia.</i>
Mires	<i>Agrostis canina, Alchemilla filicaulis subsp. vestita, Angelica sylvestris, Athyrium filix-femina, Caltha palustris, Carex acutiformis, Carex nigra, Carex riparia, Dactylorhiza praetermissa, Filipendula ulmaria, Galium palustre, Geum rivale, Glyceria declinata, Hypericum tetrapterum, Juncus acutiflorus, Lotus pedunculatus, Lysimachia vulgaris, Menyanthes trifoliata, Potentilla palustris, Pulicaria dysenterica, Ranunculus aquatilis, Ranunculus flammula, Silene flos-cuculi, Sparganium emersum, Stachys palustris, Valeriana officinalis, Veronica beccabunga, Veronica scutellata.</i>
Open Water	<i>Butomus umbellatus, Carex acutiformis, Carex riparia, Galium palustre, Menyanthes trifoliata, Potamogeton perfoliatus, Ranunculus aquatilis, Sagittaria sagittifolia, Schoenoplectus lacustris, Veronica catenata, Veronica scutellata.</i>
Post-industrial (water-stressed)	<i>Aira praecox, Anthyllis vulneraria, Arenaria serpyllifolia, Blechnum spicant, Clematis vitalba, Daucus carota subsp. carota, Deschampsia flexuosa, Erigeron acris, Fragaria vesca, Reseda lutea, Silene vulgaris, Trifolium arvense, Vicia tetrasperma.</i>
Cultivation	<i>Vicia tetrasperma.</i>

Ecological Connectivity
Local Habitat Network
<p>There are no direct links to other ecological sub-areas. The main ecological links to the rest of the Black Country landscape are via identified Priority Network Restoration Zones. Most significant of these is from the junction of the Staffordshire and Worcestershire Canal with the Birmingham Main Line canal which links Smestow Valley & Tettenhall Ridge to the rest of the Black Country's canal network.</p> <p>Further indirect 'stepping-stone' Priority Network Restoration Zones have been mapped which, via areas of green space (including mature parks) and mature gardens, link the ecological sub-area to other parts of the canal network and to Core Landscape 09 Sedgley Park, Sedgley Escarpment & The Limestone Way.</p>
National Habitat Network
<p>Smestow Valley & Tettenhall Ridge links directly to the national habitat network in rural South Staffordshire via the Smestow Brook and canal corridors at the south of the ecological sub-area.</p> <p>There are indirect connections to the national habitat network in South Staffordshire via South Staffordshire Golf Course, a distance of approximately 1 km.</p> <p>Further ecological connections to rural South Staffordshire via the Staffordshire & Worcestershire Canal and the Shropshire Union Canal corridors in the north of the ecological sub-area.</p>

CL01 - Smestow Valley & Tettenhall Ridge - Components & Connectivity



Ecological Sub-area Opportunities

Focus Habitats		
Habitat	Action	Measure
Hedgerows	Improve management of existing	Habitat in good condition
	Restore through gapping up	Habitat in good condition
	Establish hedgerow trees	Habitat structure improved
Ponds	Restore existing	Habitat in good condition
	Create new	New habitat at existing and new sites
Rivers	Restore hydromorphology (naturalise modified channels)	Improved ecological status
	Reduce artificial inputs	Improved chemical status
Eutrophic Standing Waters	Enhance marginal and emergent vegetation	Increased floral diversity and habitat structure improved
Neutral Grassland	Enhance existing neutral grasslands	Increased floral diversity
	Create new species-rich neutral grasslands	Increased floral diversity and habitat structure improved
Lowland Mixed Deciduous Woodland	Coppice	Habitat structure improved
	Create woodland edge	Habitat structure improved
	Diversify woody component	Habitat structure improved
	Diversify field-layer component of plantations	Increased floral diversity
	Create new	New habitat at existing and new sites

Target Species	
Species/Species Group	Measure
Atlantic Salmon	Confirmed recent records
Bats	Increased abundance of confirmed species
Breeding farmland birds (specialists)	Increased species and abundance
Breeding water & wetland birds (specialists)	Increased species and abundance
Breeding woodland birds (specialists)	Increased species and abundance
Brown/Sea Trout	Confirmed recent records
European Otter	Increased signs, confirmed breeding population
European Water Vole	Increased population
Great Crested Newt	Increased abundance and number of breeding ponds
Hedgehog	Confirmed recent records

Geodiversity		
Site	Action	Measure
n/a		

Connectivity Opportunities	
Local Habitat Network	
Connection	Action
Within Core Landscape CL01	Restoration of modified channel of the Smestow Brook and tributaries.
	Species-rich neutral grassland enhancement and creation at sites including areas of public open space, golf courses, school grounds and sports fields.
	Plantation woodland enhancement.
	Creation of new ponds.
	Field boundary hedgerow restoration and creation.
	Planting of standard trees in parks, green spaces and school grounds.
National Habitat Network	
Connection	Action
Priority Network Restoration Zone (Birmingham Main Line Canal)	Increased marginal vegetation through the installation of coir roles along hard banks.
	Species-rich neutral grassland enhancement and creation on undeveloped land including parks, green spaces, school grounds and substantial road verges.
	Woodland enhancement and small-scale planting.
	Planting of standard trees (including fruit trees) along canal corridor.

Information and Data Sources		
	Source	Date
Landuse	Ecological Evaluation of Birmingham and Black Country GIS data set, EcoRecord.	2021
Topography	OS Terrain 50 GIS data set, Ordnance Survey.	2017
Geology	British Geological Society 1:625,000 bedrock & superficial GIS web map services from BGS website: http://mapapps.bgs.ac.uk/geologyofbritain/home.html	2021
	Black Country UNESCO Global Geopark sites names and location information https://blackcountrygeopark.dudley.gov.uk/bcg/	2021
Soils	Soilscapes, Cranfield Soil & Agricultural Institute website: http://www.landis.org.uk/soilscapes/	2021
Species and Habitats	EcoRecord species and habitat databases.	2021
Ecological Connectivity	EcoRecord, The Wildlife Trust for Birmingham and the Black Country (2021) <i>Draft Black Country Local Nature Recovery Opportunity Map</i>	2021
	EcoRecord et al. (2021) <i>Midlands Heathland Heartland Lowland Heathland Nature Recovery Opportunity Mapping</i> .	2021
Historic Landscape Character Areas	Wolverhampton City Council (2010) <i>Black Country Historic Landscape Characterisation</i> [data-set]. York: Archaeology Data Service [distributor] https://doi.org/10.5284/1000030	2010
Historic Environment Area Designations	Black Country Historic Landscape Characterisation Study, Oxford Archaeology.	2019

[1] HISTORIC ENVIRONMENT AREA DESIGNATIONS

The Black Country Historic Landscape Characterisation Study has divided the Historic Environment Area Designations into four categories:

Archaeological Priority Areas (APA): sites with a high potential for archaeological remains of regional or national significance that have not been considered for designation as scheduled monuments, or where there is insufficient data available about the state or preservation of any remains to justify a designation. APAs are likely to have high archaeological and historic interest.

Areas of High Historic Townscape Value (AHHTV): areas where built heritage makes a significant contribution to local character and distinctiveness. The significance of AHHTVs is likely to be derived primarily from their architectural and historic interests. However, these areas may also have artistic and archaeological interests. Areas of High Historic Townscape Value are not limited to towns or cities, they also include villages, hamlets and areas of industry where the built heritage is considered to make a positive contribution to the historic environment of an area.

Designed Landscapes of High Historic Value (DLHHV): landscape areas that make an important contribution to local historic character but do not meet the criteria for inclusion on the national Register for Parks and Gardens. The significance of these areas is likely to arise from their historic, artistic and architectural interests, although such areas may also contain remains of archaeological interest.

Areas of High Historic Landscape Value (AHHLV): these recognise the quality of the wider landscape and their relative values. The significance of these areas arises from the natural and historic features contained within them (e.g. woodland, watercourses, hedgerows, and archaeological features). The significance of these areas is likely to be derived from their archaeological and historic interests.

[2] KEY HABITATS follows the UK Biodiversity Action Plan (BAP) Broad & Priority Habitat definitions

This is a UK-habitat classification prepared by the UK Biodiversity Group that classifies all terrestrial and freshwater habitats in the UK into 37 broad habitat types. UK BAP Priority Habitats are a range of semi-natural habitat types that were identified as being the most threatened and requiring conservation action. The original Priority Habitat list was created between 1995 and 1999 and revised in 2007. The list of Priority Habitats has been used to help draw up statutory lists of habitats of principal importance for the conservation of biodiversity in England, Scotland, Wales and Northern Ireland. The suite of habitats of principal importance for the conservation of biodiversity (formerly Priority Habitats) nest into the defined Broad Habitat Types.

[3] KEY SPECIES

Bird Indicators: Species listed under UK Biodiversity Indicator C5, Birds of the wider countryside and at sea (JNCC). The indicator shows changes in the breeding population sizes of common native birds of farmland and woodland and of freshwater and marine habitats in the UK.

Amphibians & Reptiles: All amphibian and reptile species native to the UK are included.

Mammals: Those protected by UK or EU law, included on the current list of Principal Importance in England under Section 41 of the NERC Act (2006 or amended), and those included on the latest B&BC LBAP list of Priority Habitats/Species.

Fish: Those protected by UK or EU law, included on the current list of Principal Importance in England under Section 41 of the NERC Act (2006 or amended), and those included on the latest B&BC LBAP list of Priority Habitats/Species.

Invertebrates: Pantheon Assemblage Types Analysis.

Flora (axiophytes): Those included on the Birmingham & the Black Country list of axiophytes (administered by EcoRecord) by four locally defined habitat types.