

# Environmental Character Area Profile for the Minerals Local Plan: 4. Forest of Feckenham and Feckenham wetlands

## 1. Introduction

- 1.1. Minerals development usually takes place on previously undeveloped land and can therefore result in permanent change to the natural environment and green spaces in Worcestershire. The impacts of both the working and the restoration of mineral sites need to be considered in detail in the development of the Worcestershire Minerals Local Plan (the MLP).
- 1.2. The Council will take a 'green infrastructure' (GI) approach to considering these impacts. The GI approach is a different way of thinking about the green spaces in Worcestershire. It moves beyond solely considering the environmental benefits of green spaces and integrates the consideration of economic, health and social benefits in the planning and management of green spaces. Rather than considering each green space in isolation it looks at the ways in which individual sites and corridors of green space collectively form the distinctive character of Worcestershire that attracts both visitors and business to the County.
- 1.3. The components of GI include biodiversity, landscape, historic environment, access and recreation and water (also known as blue infrastructure). The GI approach requires thinking about the environment as an integrated system of stepping stones or nodes in a wider network<sup>1</sup>.

## Green infrastructure and mineral workings and restoration

- 1.4. There is significant potential for mineral workings to destroy existing networks of green infrastructure if the nature and character of these networks is not taken into account. However there is also significant potential to contribute positively to green infrastructure through the restoration of mineral workings.
- 1.5. The GI approach extends beyond thinking about designated sites of biodiversity or historic interest. This means that the impact of a mineral working on the wider environment and the integrated system of stepping stones or nodes in a wider network<sup>2</sup> will need to be considered.

## Environmental Character Areas<sup>3</sup> and the Minerals Local Plan

- 1.6. The Worcestershire Green Infrastructure Partnership has undertaken an analysis of the landscape character, biodiversity and the historic environment of Worcestershire to identify 30 distinct GI Environmental Character Areas (ECAs). Details about how these were developed is set

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<sup>1</sup> Green Infrastructure Guidance – Natural England.

<sup>2</sup> Green Infrastructure Guidance – Natural England.

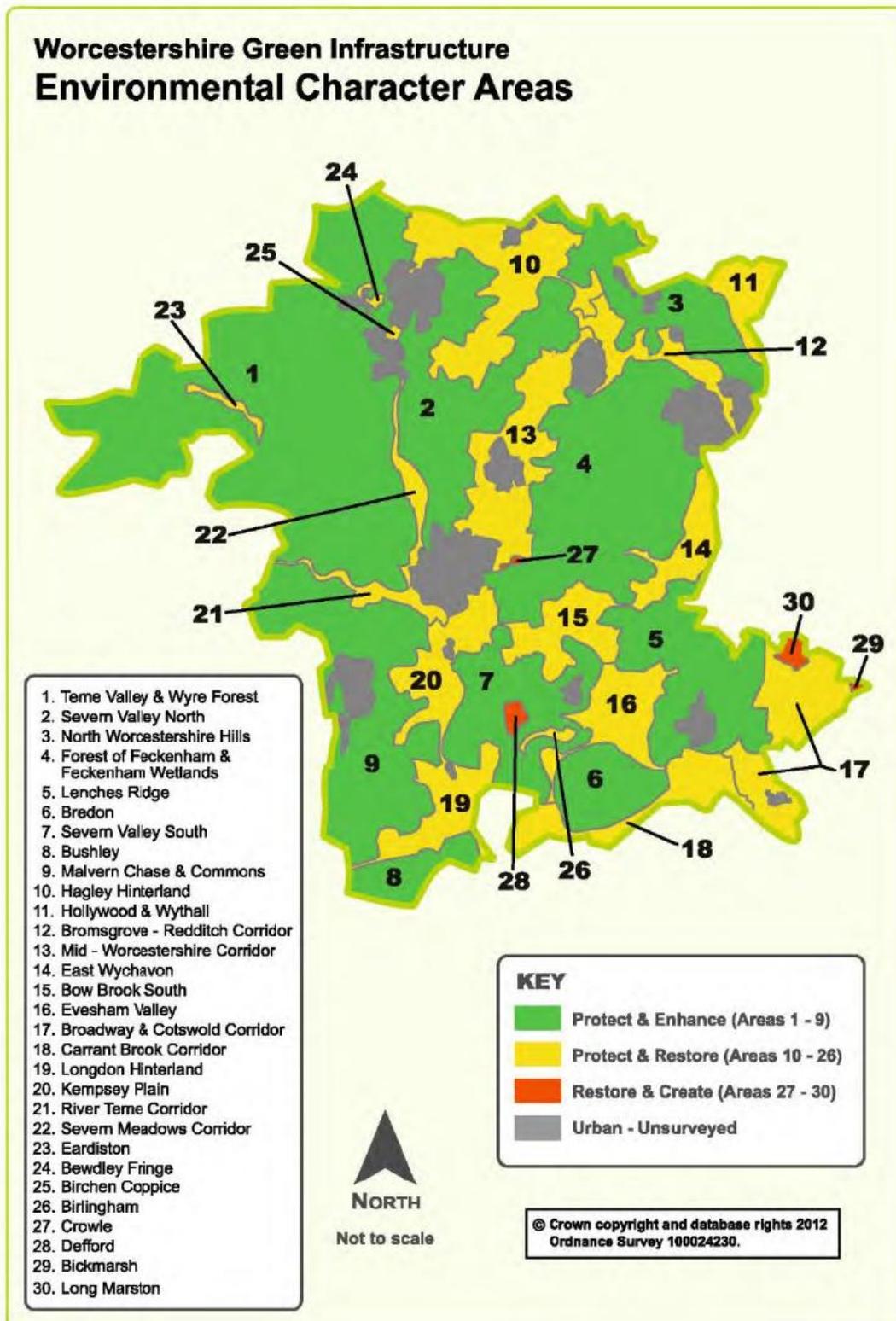
<sup>3</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

out in *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2 (2012)* available at [www.worcestershire.gov.uk/GI](http://www.worcestershire.gov.uk/GI)

- 1.7. These underlie the distinctive character of Worcestershire and it is the Council's intention that the unique characteristics of each area will drive the restoration strategy for the Minerals Local Plan.
- 1.8. This is one of 30 profile documents which set out the characteristics and priorities for the each ECA. It sets out the mineral resources in the ECA and the GI priorities identified by the Worcestershire GI Partnership. These priorities are structured around biodiversity, historic environment, landscape character, water environment (also known as blue infrastructure) access and recreation and transport. The document is also supplemented by other locally relevant information as appropriate.
- 1.9. This information will be used to develop the spatial strategy and restoration priorities for each ECA.
- 1.10. Profiles for each of the following ECAs are available on our website [www.worcestershire.gov.uk/mineralsbackground](http://www.worcestershire.gov.uk/mineralsbackground):
- 1.11. The Environmental Character Areas are:
  1. Teme Valley & Wyre Forest
  2. Severn Valley North
  3. North Worcestershire Hills
  4. Forest of Feckenham & Feckenham Wetlands
  5. Lenches Ridge
  6. Bredon
  7. Severn Valley South
  8. Bushley
  9. Malvern Chase and Commons
  10. Hagley Hinterland
  11. Hollywood & Wythall
  12. Bromsgrove – Redditch Corridor
  13. Mid-Worcestershire Corridor
  14. East Wychavon
  15. Bow Brook South
  16. Evesham Valley
  17. Broadway & Cotswold Corridor
  18. Carrant Brook Corridor
  19. Longdon Hinterland
  20. Kempsey Plain
  21. River Teme Corridor
  22. Severn Meadows Corridor
  23. Eardiston
  24. Bewdley Fringe
  25. Birchen Coppice
  26. Birlingham
  27. Crowle
  28. Defford
  29. Bickmarsh
  30. Long Marston

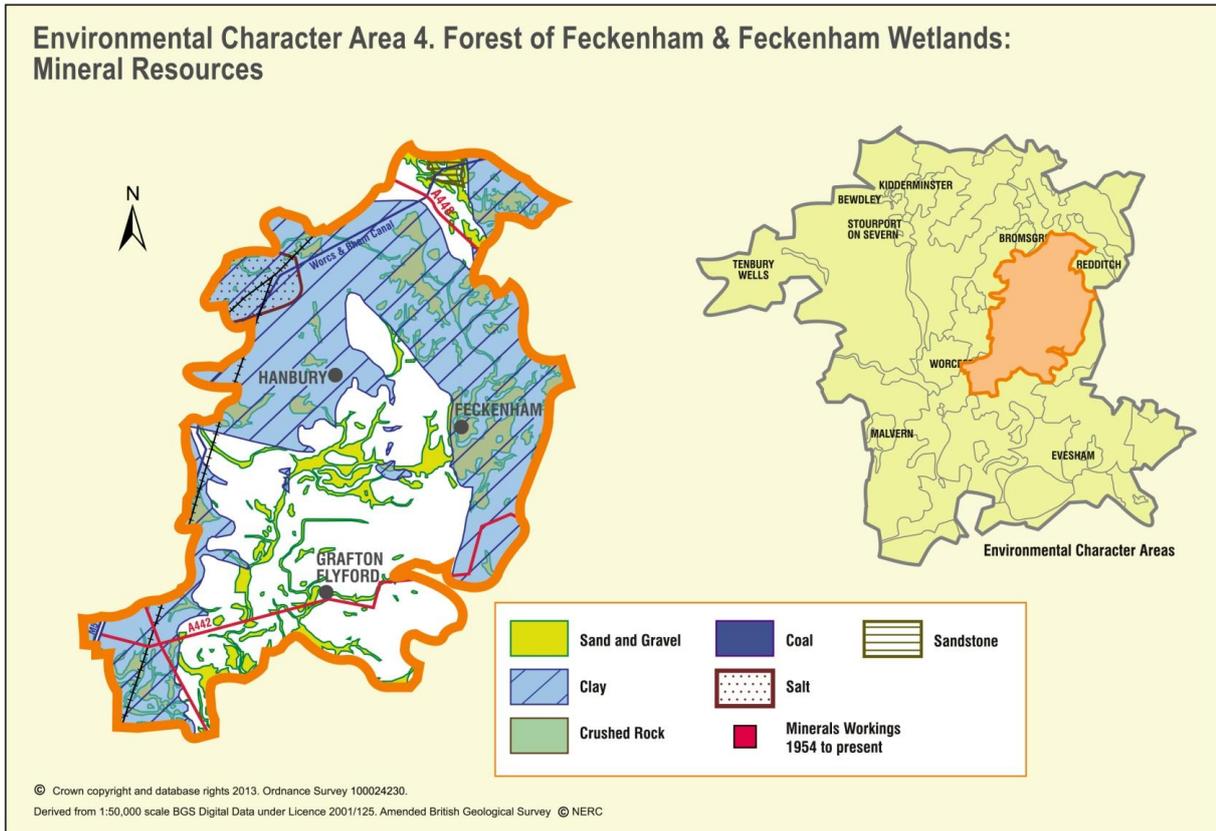
These are illustrated on Figure 1. Environmental Character Areas.

Figure 1. Environmental Character Areas



## 2. Characteristics and priorities of the Forest of Feckenham and Feckenham wetlands ECA 4

Figure 2. Environmental Character Area 4 Forest of Feckenham and Feckenham Wetlands



### Mineral Resources

#### Aggregates

2.1. Details about the aggregate resources in this ECA are given in the background report "Analysis of Mineral Resources in Worcestershire" available on [www.worcestershire.gov.uk/mineralsbackground](http://www.worcestershire.gov.uk/mineralsbackground). The following is therefore only a simple summary.

#### *Sand and gravel*

2.2. ECA 4 contains potentially important, widely distributed, sand and gravel resources, particularly associated with river and stream valleys. Details of the depth and nature of the resource are generally poor but some 6.3mt may be inferred, more may exist.

### *Hard rock*

- 2.3. No suitable strata for the production of crushed rock for aggregate use have been identified.

### *Building stone*

- 2.4. Building stone was worked in at least 2 locations in this ECA in the past but the material does not seem to have been of good quality and evidence suggests that it was limited to the construction of farm buildings and walls.

### Industrial minerals

#### *Clay*

- 2.5. Clay deposits are extensive but details of the strata are poor. There are records and place name evidence of at least 3 former brick pits in the ECA which were all over a couple of hectares in size. All preceded the need for planning permission.

#### *Brine*

- 2.6. There are extensive records of former Brine Workings in this ECA. Several place names reflect this e.g. Salwarpe, Saltway, and Brine Pits Farm and Cottage. The memoir for Redditch suggests that Halite may extend eastward into this area as far as the Stoke Prior and Lickey End faults and westward as far as the Smite-Pirton-Tewkesbury fault system.

#### *Silica sand*

- 2.7. There is no evidence that suitable strata exist.

### **Future Growth**

- 2.8. The key driver for mineral extraction is to provide the raw materials required for the economy to function properly and for homes and infrastructure to be built. Minerals are unevenly distributed. Some of the minerals that we need are not found in Worcestershire and will need to be imported from outside the County. Many minerals are expensive to transport, particularly aggregates as they are a relatively low value and bulky material, and they are likely to be used close to their source, meaning that some local mineral extraction will be needed to support local growth in housing and the associated infrastructure that is required, or to provide raw materials for local industry. On average, about 80 per cent of mineral products are used within 30 miles of the quarry.
- 2.9. This ECA is a largely rural area spanning Wychavon and Bromsgrove Districts and Redditch Borough as well as clipping the edge of Worcester City. Wychavon anticipates the development of 5,807 homes, 18.5 ha of employment land and a new neighbourhood centre, Bromsgrove anticipates 4,559 homes, 46.4 ha of employment land and replacement of a retail park, Redditch anticipates 3,259 homes, 51 ha of employment land and significant retail development, whilst Worcester City anticipates the

development of 6,525 homes, 74 ha of employment land and 10,000 sq m of retail space in the next 14-18 years<sup>4</sup>.

- 2.10. The ECA incorporates the Category 1 village of Inkberrow, the Category 2 villages of Flyford Flavell and Upton Snodsbury, and the Category 3 villages of Crowle and Himbleton which are proposed for some development in the South Worcestershire Development Plan proposed submission document<sup>5</sup>, the small settlement of Stoke Prior which is proposed for some development in the Bromsgrove Draft Core Strategy 2<sup>6</sup>, and the small rural settlement of Feckenham which is proposed for some development in the Revised Preferred Draft Core Strategy Development Plan Document for the Borough of Redditch<sup>7</sup>. The ECA also incorporates the Worcester urban development areas of Worcester Woods Business Park and Land at Nunnery Way (football stadium).
- 2.11. These and other areas beyond the boundary of the ECA could create demand for minerals in this Environmental Character Area. Particularly the urban areas surrounding the ECA of Worcester, Droitwich, Bromsgrove and Redditch and to a lesser extent Stratford upon Avon which are anticipated to experience significant development over the life of the Minerals Local Plan.

### Green Infrastructure priorities<sup>8</sup>

- 2.12. All Environmental Character Areas (ECA's) have been placed into one of three categories based on their overall score for Green Infrastructure. These are:
1. Protect and enhance
  2. Protect and restore
  3. Restore and create
- 2.13. The category is based an assessment of the ECAs landscape character, biodiversity and the historic environment characteristics. These characteristics were each attributed a score, with biodiversity being given

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<sup>4</sup> Information gathered by Worcestershire County Council in early 2013. This gives a good indication of the likely levels of development which can be expected, but for the latest figures please refer to the relevant City, District or Borough Council.

<sup>5</sup> Category 1, 2 and 3 villages are fourth in the five tier settlement hierarchy set out in the South Worcestershire Development Plan proposed submission document. Their role is predominately aimed at meeting locally identified housing and employment needs. They are therefore suited to accommodate market and affordable housing needs alongside limited employment for local needs. The scale of allocated development is significantly less than that for the urban areas and is aimed at helping to address housing needs and support local services.

<sup>6</sup> Small settlements are the third in a three tier settlement hierarchy set out in the Bromsgrove District Council Draft Core Strategy 2. They are suitable for some development such as housing to meet local needs, local services or small scale rural employment.

<sup>7</sup> Feckenham is the third in a three tier settlement hierarchy set out in the Revised Preferred Draft Core Strategy Development Plan Document for the Borough of Redditch. It is suitable for some development within the settlement boundary to provide for identified local needs.

<sup>8</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

a greater weighting than landscape and the historic environment, each of which were given equal but lower weightings.

2.14. The strategic GI approach for the Forest of Feckenham and Feckenham wetlands ECA is to *protect and enhance*. The overarching principle identified by the GI partnership are:

- Protect the traditional field patterns, boundaries and small woodlands.
- Enhance stream corridors.

### *Biodiversity and landscape*

2.15. The Forest of Feckenham and Feckenham Wetlands Environmental Character Area covers an area to the south-west of Redditch including the valley of the Bow Brook and extending as far south as Spetchley. The area was a rich mosaic of ancient woodland, old pastures and hay meadows, hedgerows and wetlands. However, the biodiversity value of the area has declined as the remaining areas of interest have become more fragmented and alternative land uses have become important in the area including horse grazing and arable agriculture.

2.16. The central, dominant part of the ECA has been characterised by the county Landscape Character Assessment (LCA) as the Landscape Type, Wooded Estatelands. These are large scale landscapes that are characterised by large, discrete blocks of woodland a mixed farming land use and a noticeable component of large country houses set in parkland and ornamental grounds. The land here is gradually being farmed more intensively with accompanying loss of natural habitats. To the east and north-west of the ECA the Landscape Type is Principal Timbered farmlands, a character that is far more intimate, wooded and small scale with densely scattered hedgerow trees, traditional orchards, species rich meadows and small, ancient woodlands. The traditional pastoral land use has resulted in a legacy of unimproved grassland valued for its high biodiversity value and rare flora. Much of this legacy is under threat, as grassland is agriculturally improved through the addition of fertilizer or is no longer managed.

2.17. Scattered throughout these landscapes are areas of previously open common that have been enclosed and are now cultivated. These are particularly noticeable by their straight roads and wide road verges.

2.18. Along the Piddle and Bow Brooks there are substantial areas described by the LCA as Wet Pasture Meadows where the low lying ground drains badly and wetland habitat is noticeable. The Bow Brook itself has been subject to declining water quality and fails to meet water framework directive standards for diffuse pollution and aquatic invertebrates. There are some significant local flood issues.

2.19. Since 2008, Worcestershire Wildlife Trust has been leading a project to enhance the biodiversity of the areas, through improving the quality of water in the Bow Brook, through the restoration of natural features such as ripple beds, meanders etc and reducing poaching by farm animals. Efforts

will also concentrate on reducing shading and in stream vegetation growth and reducing diffuse pollution from farm run off.

### *GI Priorities:*

- 2.20. The biodiversity priorities identified for the Forest of Feckenham and Feckenham wetlands ECA are<sup>9</sup>:
- Links should be made with existing site management, in order to achieve site expansion, merge and buffer the key priorities.
  - Priority to protect, buffer and enhance existing sites to create linked networks of habitat where possible.
  - Restore and enhance neutral grasslands, orchards, woodland, wet woodland, stream corridors and hedgerow boundaries and restore habitat connectivity.
  - Enhance and create traditional field boundaries.
  - Enhance stream corridors and associated wetland habitats.
  - Conserve parkland and associated veteran trees.
  - Protect and enhance the composition and pattern (planned in the estate landscapes and enclosed commons; organic in the farmland landscapes) of hedgerows through management and replanting.
  - Protect and enhance the woodland character through large scale new planting in the Wooded Estatelands and, in the Timbered Farmlands, through creation of new woodland with consideration for patterns of relic ancient woodland and existing woodland fragments.
  - Pursue the restoration and appropriate management of wetland habitat along the river corridors and within the Wet Pasture Meadows.

### *Geodiversity*

- 2.21. There are no geological SSSIs or local geological sites in this ECA.

### Historic Environment<sup>10</sup>

- 2.22. There is a high incidence of historic landscape diversity across the former Feckenham Forest area due partly to the development of mixed land use during the medieval period and the dynamics of evolution in the landscape resulting from contraction for the Forest in the late medieval and early post medieval period.
- 2.23. This area is predominantly characterised by relic medieval and post medieval landscapes. There are a large number of moated enclosures and fragments of former parkland, field systems and settlements. Where lighter soils occur over the bands of sands and gravels there is increased

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<sup>9</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

<sup>10</sup> Historic Environment and Archaeology Service, Worcestershire County Council and Cotswold Archaeology (R Jackson and H Dalwood et al) (November 2007) *"Archaeology and aggregates in Worcestershire: A resource assessment and research agenda"* Supported by English Heritage through the Aggregates Levy Sustainability Fund.

evidence in the form of surface artefact scatters, for earlier occupation sites dating from the prehistoric and Romano British periods.

### *GI Priorities:*

- 2.24. The historic environment priorities identified for the Forest of Feckenham and Feckenham Wetlands ECA are<sup>11</sup>:
- Protect historic environment diversity present across the Forest of Feckenham area characterised by a patchwork of: medieval cultivation earthworks and moated settlement sites; multi-period, multi-scale field patterns associated with medieval assarting and enclosed open heath and small, irregular woodlands. Buffer historic landscape features, such as earthwork boundaries, ridge and furrow, abandoned prehistoric, Romano-British and medieval settlement remains.
  - Protect historic water features and buffer key sites, such as moats, fishponds and millponds.
  - Enhance historic hedgerow pattern to strengthen broad historic landscape character.
  - Enhance and create linkages with wider historic environment green networks (hedgerows, woodland and common).

## **Blue Infrastructure**

### **Flooding**

- 2.25. ECA4 is drained by several significant watercourses, all of which flood to some extent.
- 2.26. The River Salwarpe flows in a south-easterly direction from just upstream of Sugarbrook Lane to the District Boundary south of Bromsgrove town, beyond which it flows through Droitwich and on to its confluence with the River Severn. The watercourse retains the status of Main River upstream of Sugarbrook Lane as far as the M5 motorway. Its name changes repeatedly along this stretch in this area encompassing the title 'the Sugar Brook'. It flows as Main River for roughly 30km before its confluence with the River Severn upstream of Worcester at approximately 30m AOD. Downstream of Bromsgrove town the River Salwarpe carries flows of 12.6m<sup>3</sup>/s in a 1 in 100 year return period event (CEH dataset). At this point, as the topography flattens out and the catchment dramatically increases in size as multiple tributaries feed in, including the Spadesbourne Brook and the Sugar Brook, as a result the River Salwarpe is prone to flooding along most of its length. Most of this results from exceedance of the channel capacity, most notably due to lack of maintenance, although runoff from the roads and railways is thought to be a prime factor and overtopping of the canal has contributed in the past.
- 2.27. The Hen Brook is located at the south of Bromsgrove District with its source in the hills to the east of the village of Woodgate. It flows in a westerly direction roughly parallel with the River Salwarpe to their

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<sup>11</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

confluence at the village of Henbrook, outside the District boundary, to the southwest. Flooding on this Brook has most notably been associated with overtopping of the Worcester and Birmingham Canal in July 2007, resulting in localised flooding in Stoke Prior. Flooding resulting from the interaction of the canal can be serious, although, as stated by the Council Drainage Engineer, potentially impracticable to remedy. In 2000, water, presumably from the overtopping of the Brook collected under the railway bridge, resulting in waist-height flooding. Balanced outfalls into the Hen Brook and Worcester and Birmingham Canal from the highway drains serving the trading estates off Hanbury Road have also resulted in flooding in the area, most notably south of the canal, although the paddles have now been raised on one of the locks. Frequent flooding from the Hen Brook has occurred around Stoke Prior/Stoke Wharf, from a combination of badly maintained watercourses and flooding from the Canal, mentioned above. As a result the Environment Agency has stated that if any more allocations are expected in this area then these flooding problems need to be investigated further in a more detailed Level 2 SFRA.

- 2.28. The Bow Brook is located within the Borough of Redditch. However, the sources of two of its tributaries – Spring Brook and Swans Brook – are located within Bromsgrove District and flow in a south-easterly direction. Both tributaries flow through very rural areas and there are no formal defences or reports of flooding along their length, although land drainage does cause minor surface water flooding problems. Flooding occurred in 2007. West of Feckenham village, where the Swans Brook becomes renamed as Bow Brook, is an area referred to as „the Whirly Hole, which is a historical flooding area dating back to Medieval times.
- 2.29. The lower section of the Worcester and Birmingham canal, in the Stoke Prior area of Bromsgrove, has been reported to overtop following heavy rainfall and resulted in the repeated flooding of Fishhouse Lane, most recently 2007. The canal, along with the Hen Brook has a tendency to overflow at Hanbury Road, by the Navigation Public House, resulting in the flooding of properties and factory units. It is also reported that excess water at the top of the Tardebigge lock flight following storms in the late 1970s resulting in overtopping of the canal which fed water down the Batchley Brook and flooded parts of Redditch, although this has not been confirmed by British Waterways. However some of the flooding from this canal has been attributed to vandalism of the lock gates.
- 2.30. The geology can have an effect on the runoff, and the flooding, within a catchment as a result of the permeability of the strata. The geology within South Worcestershire is variable. Impermeable clays and mudstones dominate the Warwickshire Avon sub-catchment and Groundwater flooding is not considered to be a major issue in the South Worcestershire Joint Core Strategy area.
- 2.31. The River Severn Catchment Flood Management Plan makes this a Policy 3 and policy 5 area, where in the east of the ECA it will "Continue with existing or alternative actions to manage risk at the current level" and in the west "Take further action to reduce flood risk".

## Water Quality

- 2.32. None of the rivers in ECA 4 require assessment under the WFD for Chemical quality. The ecological status of most watercourses is moderate but one section of an un named watercourse north of Earls Common is poor. The whole ECA is however categorised as under agricultural/rural diffuse pollution pressure.
- 2.33. The current Groundwater quantitative status is generally good within the area. However there is pressure on groundwater resources at Worcester and Droitwich Spa.

### *GI Priorities:*

- 2.34. The blue infrastructure priorities identified for the Forest of Feckenham and Feckenham wetlands ECA are<sup>12</sup>:
- Manage areas of low, moderate or high flood risk and take action where necessary to keep pace with climate change.
  - Explore opportunities to restore sustainable natural storage of floodwater on undeveloped floodplains. Make more space for rivers through urban areas via 'blue corridors' (i.e. Restoring access for floodwater onto key strips of floodplain by limiting redevelopment to flood-compatible land-uses e.g. parkland).
  - Reduce dependence on raised flood defences, as this is unsustainable in the long term, by taking opportunities to restore sustainable natural storage of floodwater on undeveloped floodplains.
  - Address poor status of designated 'aquatic conservation' sites. Activities that affect these sites must be changed to improve their condition.
  - Ensure that the run-off from all proposed development is minimised. SUDS must be encouraged and targeted within planning approvals and retro-fitting of SUDS where surface water flooding is already a problem.
  - Support ecological improvements. Examples of this include Severn & Avon Wetlands Project; Natural England's three fluvial SSSIs.
  - Reduce the levels of nutrients and sediments entering watercourses and take actions to improve the management of water resources.

### Access, informal recreation and tourism

- 2.35. This ECA is predominantly in Wychavon District. Only 3.6% of the Wychavon District is accessible natural greenspace, this is the lowest proportion across all districts in Worcestershire. As a whole accessibility to greenspace is poor with only 20% of households in Wychavon are within 5km of 100ha+sites and 2% of households within 10km of 500ha+sites. There are no sub-regional recreation assets in this ECA.
- 2.36. There are deficiencies in opportunities for access and recreation across the Vale of Evesham, with the Rights of Way network being less dense

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<sup>12</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

than in any other area of the County. There is also a lack of sites such as Country Parks, picnic places and Registered Commons. Few nature reserves exist although there are a number of smaller community sites such as Village Greens and Millennium Greens.

- 2.37. Provision is required at both a strategic and neighbourhood level. At a neighbourhood or local scale there is scope for towns and villages to address natural greenspace needs within the rural communities. This should be a requirement of development and other options should be explored for existing communities such as stewardship agreements.
- 2.38. Tourist attractions in this ECA include Hanbury Hall, the Jinny Ring Craft Centre, Avoncroft Museum, Spetchley Park Gardens, and Upton Warren Outdoor Education Centre at a former mineral working near Wychbold.

### *GI Priorities:*

- 2.39. The access and recreation priorities identified for Forest of Feckenham and Feckenham wetlands ECA are<sup>13</sup>:
- Consider the proximity to and ability to integrate with the rights of way network, recreational way-marked routes and the cycle network;
  - Accommodate associated facilities necessary for the use and enjoyment of the site in a manner that is appropriate and able to integrate with the landscape character, wildlife and cultural interests.
  - Act as a greenway from town into the countryside and utilise existing canal, former railway lines, river corridors and wherever possible link with public transport routes.
  - Adopt minimum quality standards, (commensurate with its location and scale) that sites and routes should be expected to achieve will be those from the Green Flag Award Programme, and the Country Parks Accreditation Scheme, as appropriate.

## Transport

### *Road*

- 2.40. This ECA sits between four of the towns in Worcestershire, but major road connections are limited. The A44 crosses the south west corner of the ECA to connect Worcester with Pershore and Evesham in the south. The A422 crosses the southern end of the ECA connecting the A44 in the west with Alcester and Stratford-upon-Avon in the east.
- 2.41. The A448 crosses the northern end of the ECA to connect Bromsgrove in the north west with Redditch in the east. The A38 runs just within the western boundary of the ECA to connect Bromsgrove to the north west with Droitwich and Junction 5 of the M5 to the east of the ECA. Other roads in this Environmental Character Area are more minor.

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<sup>13</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

- 2.42. The Worcestershire Advisory Lorry Route Map shows a low bridge which would restrict the movement of vehicles over 16'0" (4.8m) on the A44 at Spetchley. It also shows restrictions on some of the minor roads which form part of the lorry route map, including a low bridge which would restrict the movement of vehicles over 16'0" (4.8m) on the B4084 near Norton, and three low bridges around Stoke Prior where roads pass under the railway line restricting the movement of vehicles over 14'3" (4.3m) and 12'9" (3.8m) on Shaw Lane and over 12'3" (3.6m) on the B4091. Other local roads may have further restrictions and will need further assessment if they are to be used for accessing mineral resources.

### *Rail*

- 2.43. The Birmingham to Hereford/Cheltenham line runs through the ECA, branching at Stoke Prior to the south of Bromsgrove. One branch leaves the ECA to serve Droitwich and Worcester and the other continues through the ECA to the intersection with the Cotswold Line near Norton, just outside the southern boundary of the ECA.

### *Water*

- 2.44. The Worcester and Birmingham Canal runs through the ECA, connecting Worcester and the Droitwich Canal with Birmingham.

### *GI Priorities:*

- 2.45. The GI transport priorities identified for the Forest of Feckenham and Feckenham wetlands ECA are<sup>14</sup>:
- Opportunities should be sought to protect, enhance and create green infrastructure that promotes sustainable movement by walking and cycling, reducing the need to travel by car by providing pleasant environments that promote sustainable transport as a means to minimise the impact of transport on the natural environment and mitigate the impacts of climate change.

### *LTP Priorities:*

- 2.46. The LTP 3 transport priorities identified for the Forest of Feckenham and Feckenham Wetlands ECA are:
- **A38 Wychbold-Bromsgrove-Cofton Hacket (Birmingham) interurban corridor maintenance and improvement scheme** - a programme of improvements to transport infrastructure on this route, which is likely to be progressed in the short term and will include junction enhancements, street furniture decluttering, replacement and enhancement.
  - **A44 Worcester-Pershore-Evesham interurban corridor maintenance and improvement scheme** - a programme of improvements to transport infrastructure on this route, which is likely to be progressed in the short term and will include junction enhancements, street furniture decluttering, replacement and enhancement.
  - **A448 Bromsgrove to Redditch interurban corridor maintenance and improvement scheme** - a programme of

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<sup>14</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

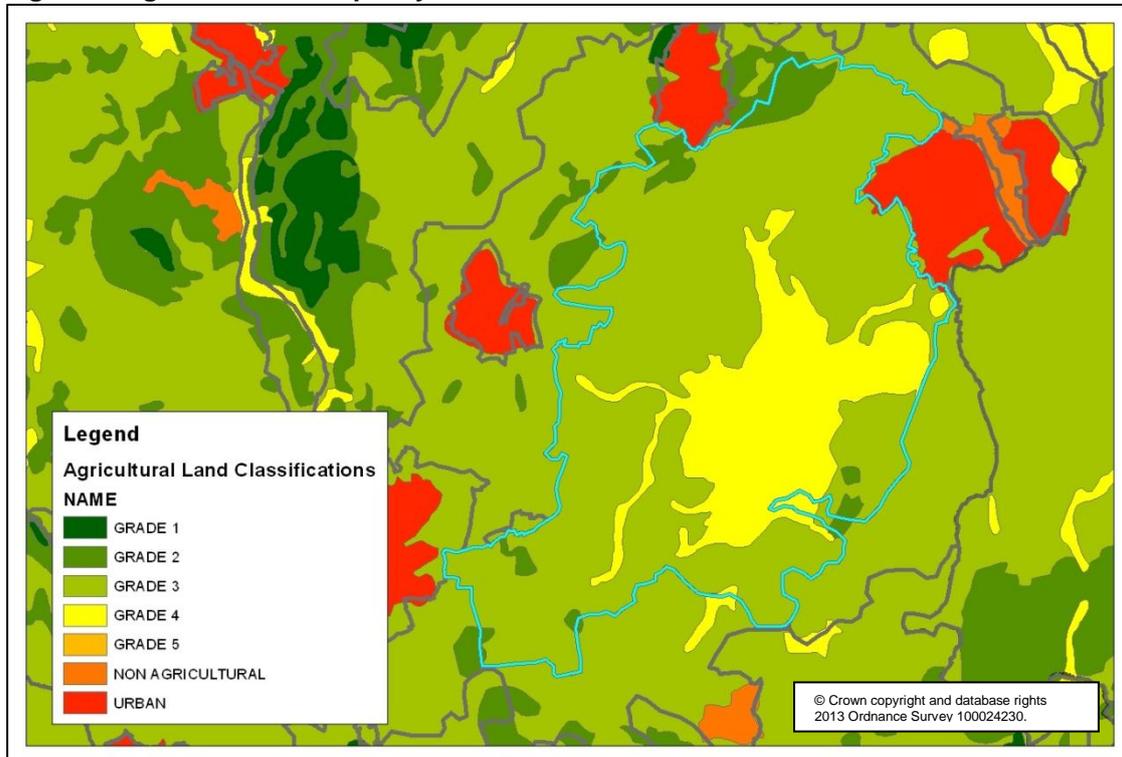
improvements to transport infrastructure on this route, which is likely to be progressed in the medium term and will include junction enhancements, street furniture decluttering, replacement and enhancement.

- **A442 Worcester-Alcester interurban corridor maintenance and improvement scheme** - a programme of improvements to transport infrastructure on this route, which is likely to be progressed in the medium term and will include junction enhancements, street furniture decluttering, replacement and enhancement.
- **Bromsgrove Eastern Bypass Enhancement Scheme** - this corridor experiences congestion, particularly at peak times and two Air Quality Management Areas (AQMAs) have been declared, including one at Stoke Heath in the ECA. This scheme involves a package of enhancement measures, including major junction improvements, and is likely to be progressed in the long term.
- **Droitwich Spa to Stoke Works (Bromsgrove) rail line dualling scheme** - a scheme to reinstate dual track between Stoke Works (Bromsgrove) and Droitwich Spa, to increase capacity on this route. Dependent on the rail industry to progress this in the long term.

### Agriculture/Forestry

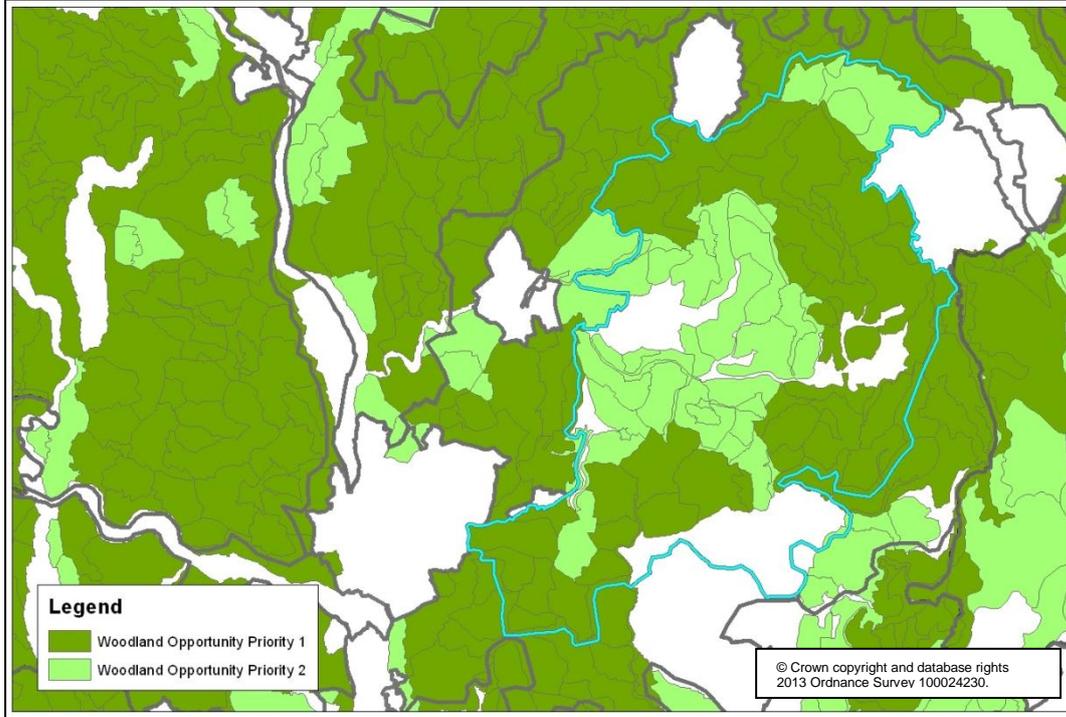
2.47. The agricultural land use in this ECA is dominated by pastoral and mixed farming. Agricultural land quality varies across the area, dominated by grade 3 and low quality grade 4 land, with some pockets of higher quality grade 2 land around the perimeter of the ECA, as shown in Figure 3.

**Figure 3. Agricultural land quality**

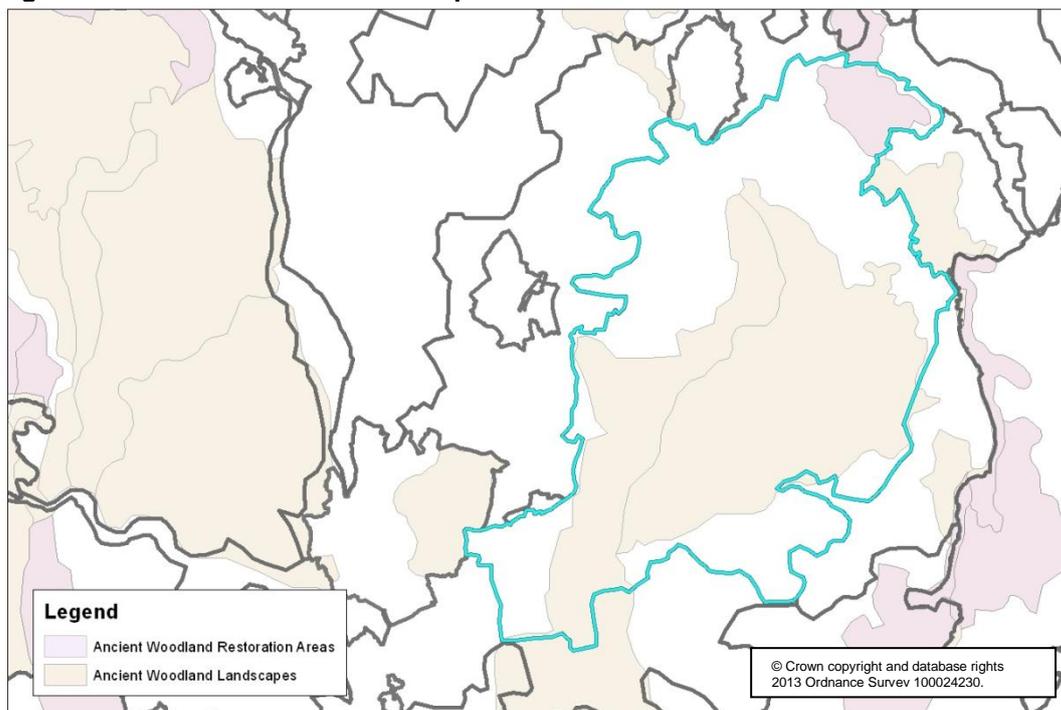


2.48. The forestry commission's woodland opportunity maps show that much of this ECA is listed as either priority 1 or 2 for woodland creation which could benefit landscape character, biodiversity, cultural heritage and/or public access (Figure 4). They also show that much of the centre of the ECA and the north eastern tip are an ancient woodland landscape but only the northern section is prioritised for woodland restoration (Figure 5).

**Figure 4. Woodland creation for landscape, biodiversity, heritage and public access**



**Figure 5. Ancient woodland landscape and restoration**



## Climate Change

2.49. Some effects of climate change will be similar across the whole county and many of the issues which can be addressed are likely to be common to all ECAs, such as:

- Improving air quality
- Providing flood risk management solutions
- Preventing water and soils pollution as a result of climate change related extreme weather conditions
- Promoting energy efficient and low carbon solutions
- Contributing to renewable energy production

## **Opportunities and issues**

2.50. Green Infrastructure features such as buffering of watercourses provide a way of minimising fluvial flooding. Planned landscaping incorporating flood defences could provide both and short term benefits and sustainable drainage schemes (SUDS) are a mechanism for managing both fluvial and pluvial flood risk.

2.51. Agricultural and horticultural businesses could face damaging water shortages in the coming decades as a result of climate change. In many parts of Worcestershire, water resources are under severe pressure. The majority of catchments in which horticultural production is concentrated have been defined by the Environment Agency as being either over-licensed and/or over-abstracted. Well executed water storage facilities could not only provide water supply for the business in the dry periods but a wide range of green infrastructure benefits such as biodiversity or landscape and opportunities for increased physical activity and exposure to nature.

2.52. The soil types in much of this ECA are inherently at risk of subsidence and heave. It is possible that changes in weather patterns as a result of climate change may worsen these tendencies.

2.53. Significant areas of heathland, bracken and conifer woodland in this ECA are amongst the habitats most at risk from fire as a result of climate change.

## Socio-economic considerations

2.54. The analysis of the socio-economic situation in Worcestershire in this strategy considers the economy and health & well-being at a high level. It is not intended to draw a full picture of the economy or health and well-being in the county, instead it focuses only on the indicators which are of most relevance to green infrastructure:

- **Economy:** unemployment, household income and deprivation levels.
- **Health and well-being:** health deprivation, heart diseases, obesity, mental health problems and respiratory conditions.

- **Access to sites for informal recreation:** considers links between informal recreation opportunities and mental and physical well-being.
- 2.55. There is thought to be a link between green infrastructure and some aspects of health. The issues of obesity, respiratory conditions, mental health, heart disease and health deprivation have been considered in this context.
- 2.56. 26% (120,000) of all adults in Worcestershire are obese which equates 3% above the national average. Another 40% of adults are overweight. Childhood obesity, estimated 10% for 5 year olds and 18% year olds, is closely linked to the deprivation levels.<sup>15</sup> Part of this ECA, the southern part of Redditch district, has lower levels of obesity than most of the county.
- 2.57. Obesity and respiratory problems in this county generally follow the same geographical pattern. Mental health problems, by contrast, tend to be found in the and around major settlements. Although mortality rates from cardiovascular diseases are significantly lower than the national rate, patterns of heart diseases are more dispersed than the other health indicators assessed and poor performance is found across the county. Contrary to other health indicators, heart diseases are least prevalent in some of the urban areas.
- 2.58. The overarching principles identified by the GI partnership regarding socio-economic matters for this ECA are:
- Maintain the current economic performance.
  - Some improvements and prevention of health issues around heart diseases, obesity and respiratory conditions.

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<sup>15</sup> Worcestershire Health and Well-being Board (2012) Joint Strategic Needs Assessment