

# Environmental Character Area Profile for the Minerals Local Plan: 13. Mid-Worcestershire Corridor

## 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 out in *Planning for a Multifunctional Green Infrastructure Framework in*

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

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

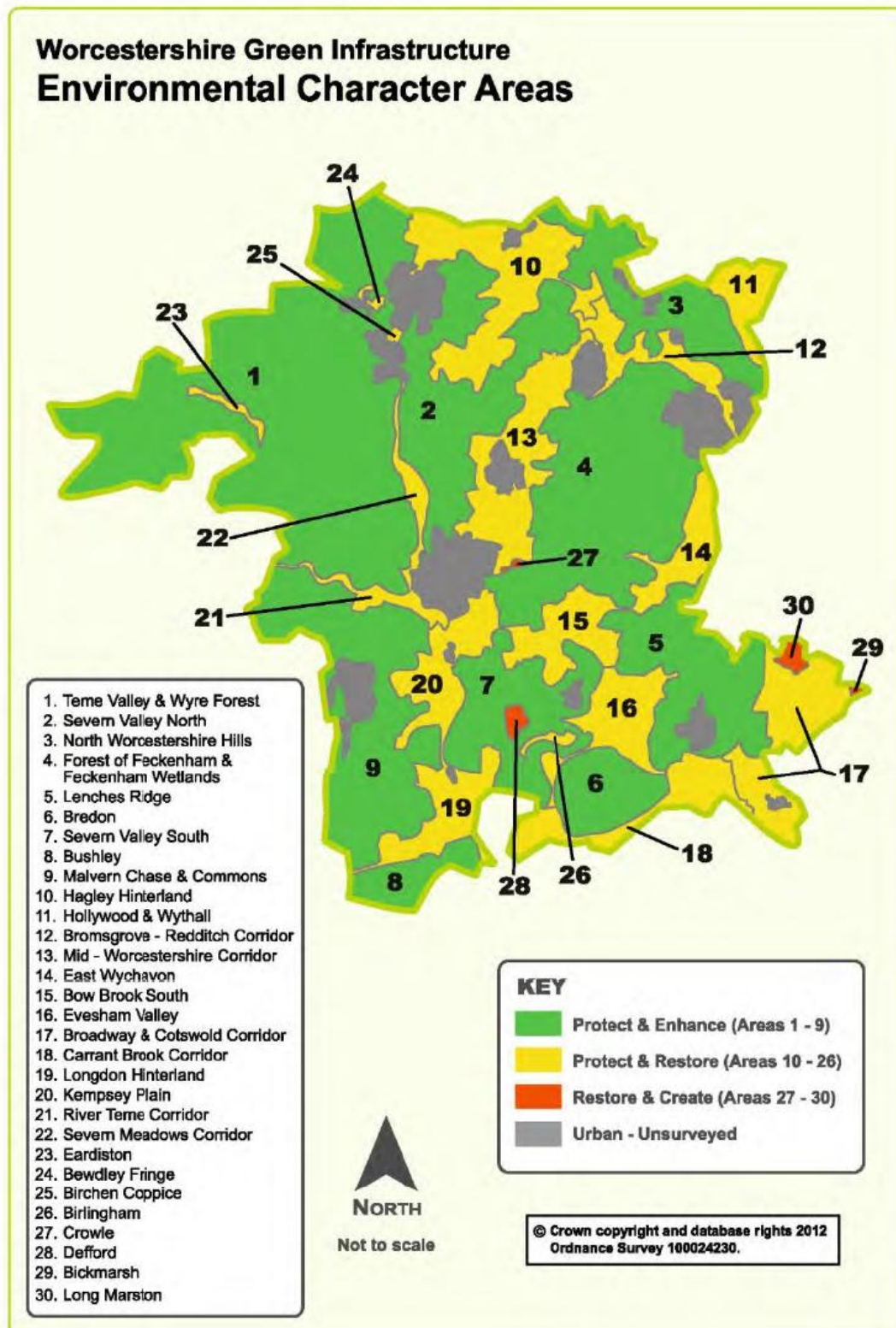
<sup>3</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

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

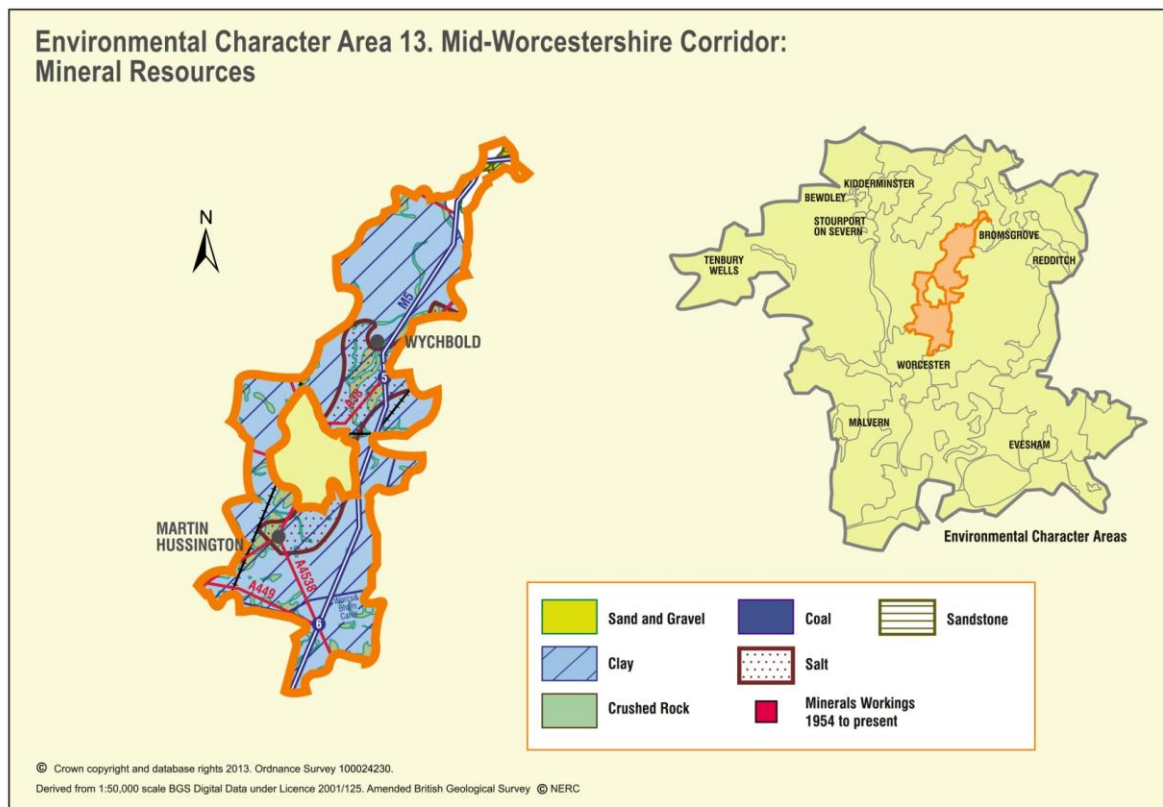
These are illustrated on Figure 1. Environmental Character Areas.

Figure 1. Environmental Character Areas



## 2. Characteristics and priorities of the Mid-Worcestershire corridor ECA 13

Figure 2. Environmental Character Area Mid-Worcestershire Corridor



### 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 13 contains potentially if limited, rather scattered deposits. 3 deposits close to the A38 are over 40Ha in size but data regarding them is fairly poor. A site at Upton Warren was worked extensively before planning controls were imposed and the site is now an important wetland nature conservation and recreation site.

### *Hard rock*

- 2.3. There is no evidence that suitable strata exist. There is no evidence of former building stone workings.

### Industrial minerals

#### *Clay*

- 2.4. There is good evidence of former clay workings in ECA 13, Mercia Mudstone was worked for brick making at Gregory's Mill near Worcester from the C19th to the late 1950's and at least 3 other former brick pits each about 2Ha in size can be identified.

#### *Silica sand*

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

#### *Brine*

- 2.6. There are extensive records and place name evidence of former Brine Workings in this ECA, the memoir for Worcester suggests that Halite deposits may be present at depth to the east of the Smite-Pirton-Tewkesbury fault system and the memoir for Redditch that they may extend as far as the Lickey End (and Stoke Prior) faults.

## **Future Growth**

- 2.7. 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.
- 2.8. This ECA is a rural area within Wychavon District. The district anticipates the development of 5,807 homes, 18.5 ha of employment land and a new neighbourhood centre in the next 14-18 years<sup>4</sup>. The ECA includes the Category 2 village of Fernhill Heath and the Category 3 village of Upton Warren which are proposed for some development in the South Worcestershire Development Plan proposed submission document<sup>5</sup>. The

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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

ECA also surrounds the main town of Droitwich Spa which is proposed for development in the South Worcestershire Development Plan proposed submission document<sup>6</sup>.

- 2.9. These and other areas beyond the boundary of the ECA could create demand for minerals in this Environmental Character Area, including Worcester to the South of the ECA and Bromsgrove to the North.

### **Green Infrastructure priorities<sup>7</sup>**

- 2.10. 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

- 2.11. The category is based on an assessment of the ECAs landscape character, biodiversity and the historic environment characteristics. These characteristics were each attributed a score, with biodiversity being given a greater weighting than landscape and the historic environment, each of which were given equal but lower weightings.

- 2.12. The strategic GI approach for the Mid-Worcestershire corridor ECA is to *protect and restore*. The overarching principle identified by the GI partnership is to protect and restore neutral grasslands, orchards and semi-natural ancient woodland, wet woodland and stream corridors.

### **Biodiversity and landscape**

- 2.13. The Mid-Worcestershire Corridor Environmental Character Area extends from Worcester north through Droitwich to Bromsgrove. This area includes some of the largest settlements and primary transport corridors for the county, including the M5 motorway corridor and the main line rail routes. The corridor also includes the Worcester and Birmingham canal and Droitwich canal which are of importance for biodiversity, along with some of the feeder reservoirs for the lock systems and associated reedbeds.

- 2.14. The area north of Droitwich, with the exception of an area around Timberhonger, has been classified by the county Landscape Character Assessment (LCA) as Principal Timbered Farmlands which is a small

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for the urban areas and is aimed at helping to address housing needs and support local services.

<sup>6</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>7</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

scale wooded landscape with densely scattered hedgerow trees, traditional orchards, species rich meadows and small, ancient woodlands. The Timberhonger area is the larger scale Wooded Estatelands where woodlands are usually seen as large, discrete blocks and where the land is usually more intensively farmed.

- 2.15. To the south of Droitwich there is a mixture of Principal Timbered Farmlands and Settled Farmlands with Pastoral Land Use, another small scale, intimate landscape with densely scattered hedgerow trees, but no woodland.
- 2.16. Key biodiversity features of this ECA reflect the landscape character and include small areas of woodland connected by networks of hedges of varying quality. Small areas of unimproved grassland can be found throughout the area, concentrated in the stream valleys. Of particular note are the network of Harris Brushworks plantations, many now un-managed, that were planted in the mid-20th century and include a range of exotic or unusual tree species planted to provide timber for paintbrush handles. Poplar was particularly popular.
- 2.17. The area is also notable for the saltmarsh communities (very unusual inland) concentrated in the valley of the Salwarpe. This is evident in some saltmarsh communities adjacent to the River Salwarpe and at Upton Warren, with communities of avocets etc. more normally found on the coast.

#### *GI Priorities:*

- 2.18. The biodiversity and landscape priorities identified for the Mid-Worcestershire corridor ECA are<sup>8</sup>:
  - Protect and enhance existing site and biodiversity interest. Implementation and delivery to be directed to existing site management to achieve site expansion, merge and buffer sites and features of existing importance for biodiversity, particularly around Worcester Technology Corridor.
  - Restore and enhance neutral grasslands, orchards and semi-natural ancient woodland, wet woodland and stream corridors.
  - Enhance and create traditional field boundaries.
  - Seek opportunities to enhance and restore the ancient woodland cover, including replanting with mixed, native species where appropriate, respecting the characteristic tree cover pattern: discrete blocks in the Estatelands, scattered hedgerow and watercourse trees – which should be safeguarded or replanted to address age structure and density – in the Timbered and Settled Farmlands.
  - Alongside this, seek opportunities to enhance the composition and pattern of hedgerows through management and replanting, respecting the characteristic pattern of each Landscape Type (organic in the dominating Timbered Farmlands; sub/semi-regular in the Settled Farmlands and Wooded Estates).

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

- Seek opportunities to protect and create areas of permanent pasture, particularly in the Settled Farmlands and Pasture Meadows landscapes.
- Protect and enhance existing site and biodiversity interest. Implementation and delivery to be directed to existing site management to achieve site expansion, merge and buffer sites and features of existing importance for biodiversity, particularly around Worcester Technology Corridor.
- Restore and enhance neutral grasslands, orchards and semi-natural ancient woodland, wet woodland and stream corridors.

### Geodiversity

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

### Historic Environment<sup>9</sup>

2.20. This area is predominantly characterised by relic medieval and post medieval landscapes. There are a large number of moated enclosures and the former medieval nunnery at Cookhill, along with fragments of former parkland, field systems and settlements. Where lighter soils occur over the bands of sands and gravels there is increased evidence in the form of surface artefact scatters, for earlier occupation sites dating from the prehistoric and Romano British periods.

2.21. The historic landscape character is in common with the wider former Feckenham Forest area with a diverse mix of post-medieval piecemeal fields and regular planned enclosure of former medieval open-field cultivation.

### *GI Priorities:*

- 2.22. The historic environment priorities identified for the Mid-Worcestershire corridor ECA are<sup>10</sup>:
- Buffer historic landscape features, such as earthwork boundaries, ridge and furrow, abandoned medieval settlement remains.
  - Explore opportunities to protect below ground archaeology associated with extensive Romano-British settlement in the Droitwich hinterland.
  - Protect historic water features and buffer key sites, such as moats, fishponds and millponds.
  - Protect below ground deposits of high palaeoenvironmental potential associated with the River Salwarpe corridor. Protect and enhance historic field boundary patterns and hedgerow network.
  - Enhance and create linkages with wider historic environment green networks (hedgerows, woodland, parkland and common).

<sup>9</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.

<sup>10</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*



## Blue Infrastructure

### **Flooding**

- 2.23. ECA13 is drained by several significant watercourses, all of which flood to some extent.
- 2.24. The River Salwarpe flows in a south-easterly direction 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 including the title 'the Sugar Brook' in this ECA. 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.
- 2.25. No formal Flood Alleviation Scheme (FAS) exists along the River Salwarpe although there is one section of privately maintained raised defence beside Fish House Lane.
- 2.26. The Hen Brook is located at the south of the 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 confluence at the village of Henbrook, outside the District boundary, to the southwest. Close to the District Boundary, this Brook carries a flow of 5.9m<sup>3</sup>/s in a 1 in 100 year return period event (CEH dataset). 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 this 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.

- 2.27. The Bow Brook flows through both the Borough of Redditch and Wychavon District. The sources of two of its tributaries – Spring Brook and Swans Brook – are however located within Bromsgrove District. 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.
- 2.28. 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. Although the paddles have been raised on one of the locks, the Council Drainage Engineer claims that more improvement work is required on the pound upstream of Hanbury Road. However, some of the flooding from this canal has been attributed to vandalism of the lock gates.
- 2.29. At Fernhill Heath there is some risk from overland surface water. With further development and creation of impermeable ground surfaces, surface water flooding may become a problem. The Martin Brook may also pose some flood risk.
- 2.30. For the town of Droitwich the main causes of flooding are from the River Salwarpe and Elmbridge Brook, surface water flooding from sewers and overland flow. In addition, the Droitwich Canal interacts with the River Salwarpe in several places and improvements, although difficult, need to be considered.
- 2.31. As part of the level 2 SFRA for the SWDP a broad scale surface water sewerage model was produced. The findings from this confirmed that surface water discharge in some areas of Droitwich will exacerbate flooding from the River Salwarpe.
- 2.32. The Birmingham and Worcester canal has flooded in the past, south of Hindlip and within Worcester City, within the city this has been attributed to vandalism of the lock gates.
- 2.33. For the city of Worcester the main causes of flooding are from the River Severn, River Teme and localised surface water flooding and flooding in the Barbourne Brook catchment, caused by a possible combination of fluvial and surface and sewer floods, and several smaller watercourses; Surface water flooding from sewers and overland flows.

- 2.34. A broadscale surface water sewerage model was developed as part of the Level 2 SFRA for the lower reaches of the Barbourne Brook catchment, however the results from the modelling were inconclusive as far as flood risk in the lower reaches of the Barbourne Brook, mainly because the sewer records provided by Severn Trent Water show that the larger surface water catchments discharge upstream of the large surface water balancing area adjacent to the Perdiswell Sports Centre and Golf Club.
- 2.35. In addition local surface water flooding is an issue in many locations in ECA 13.
- 2.36. Groundwater flooding is not considered to be a major issue in the South Worcestershire Joint Core Strategy area
- 2.37. Water Resources are scarce within the region. Catchment Abstraction Management Strategies produced by the Environment Agency show that there is pressure on groundwater resources at Worcester and Droitwich Spa. The surface water and groundwater in the South Worcestershire Development Pan area is either being over-abstracted or there is no water available for further abstractions. Sustainable and efficient use of available water resources will be required and in the long term there will be a need for more water resources and treatment capacity to meet the supply/demand balance.

### **Water Quality**

- 2.38. The whole ECA is categorised as a water body with water company point source pollution and agricultural/rural diffuse pollution pressure.
- 2.39. The River Salwarpe, Hadley Brook and Elmbridge Brook all have a moderate ecological quality status as they flow through or near to Droitwich Spa. The River Salwarpe, Elmbridge Brook and Hadley Brook do not achieve the good status required under the WFD due to unacceptable levels of phosphorus. Phosphorus levels are particularly bad in the River Salwarpe which is why it is now a designated sensitive area to eutrophication.
- 2.40. The River Salwarpe has however passed the chemical quality assessment and Elmbridge Brook and Hadley Brook do not require assessment.
- 2.41. The River Severn, Laughern Brook and Careys Brook have poor ecological quality as they pass through Worcester due to unacceptable levels of phosphorus.
- 2.42. The current chemical status of groundwater around Droitwich Spa is poor and still deteriorating.
- 2.43. The Bow Brook is currently classed as having a moderate ecological potential but does not achieve good status under the WFD because it contains contain unacceptable levels of phosphorus.

- 2.44. Changes to current discharge consents may be necessary at Powick STW for BOD, Ammonium and Phosphorus as well as possible modifications to Ammonium consents at Droitwich STW. None of the consents identified are however below those achievable using Best Available Techniques (BAT) and as such there are no potential "show stoppers" to development in terms of water quality.
- 2.45. The Upton Warren Pools and Westwood Great pool SSSIs are water dependent and could therefore be affected by mineral related development if any pathways were to be affected.
- 2.46. The River Severn Catchment Flood Management Plan makes this a Policy 4 and policy 5 area, where in the east of the ECA it will "Take further action to sustain the current level of flood risk into the future (responding to the potential increases in risk from urban development, land use change and climate change and in the west "Take further action to reduce flood risk".

### *GI Priorities:*

- 2.47. The blue infrastructure priorities identified for the Mid-Worcestershire corridor ECA are<sup>11</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). Seek ecological improvements.
  - Develop Surface Water Management Plans for the Bromsgrove, Droitwich and Kidderminster areas.

### Access, informal recreation and tourism

- 2.48. 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.
- 2.49. There are deficiencies in opportunities for access and recreation in this area, particularly in the Vale of Evesham, with the Rights of Way network being less dense than in any other area of the County. There is also an absence of sites such as Country Parks, picnic places and Registered Commons.
- 2.50. The north of the ECA is in the Bromsgrove District. Accessible natural greenspace covers 6.7% of the land area of the District. Access to small and large sites is low with only 22% of the households living within 300m of a 2ha site and no households in the District have access to a 500ha+

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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*

site within 10km. Access to 100ha+sites within 5km is the most readily accessible size of sites with 76.4% of households in the District being able to access them.

- 2.51. There are no sub-regional GI recreation assets in this ECA, however the Droitwich canals run through the ECA and provide a substantial GI asset and tourist attraction.

### *GI Priorities:*

- 2.52. The access and recreation priorities identified for the Mid-Worcestershire corridor ECA are<sup>12</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*

- 2.53. This ECA forms a corridor between Worcester, Droitwich and Bromsgrove. The M5 motorway runs through the length of the ECA with Junction 5 for Droitwich and Junction 6 for Worcester (north) within the ECA. Junction 4a also crosses the northern tip of the ECA, although this is the interchange with the M42 and there is no access to join the motorway at this point.
- 2.54. The A38 also runs through the length of the ECA from the south of Bromsgrove, via Junction 5 and Droitwich to Worcester. The A448 crosses the northern tip of the ECA to connect Kidderminster in the north west with Bromsgrove to the north east, and the A442 connects Droitwich with Kidderminster.
- 2.55. Junction 6 links with the A449 to Kidderminster, the A4538 which links to Droitwich in the north and connects to the A44 to Evesham in the south east, as well as the A4440 eastern bypass around Worcester. Other roads in this Environmental Character Area are more minor.
- 2.56. The Worcestershire Advisory Lorry Route Map does not show any low bridges which would restrict the movement of vehicles over 16'3" (4.95m) on the lorry route network, although it does show a steep incline on the M5

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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*

between Junctions 4a and 5. Other local roads may have further restrictions and will need further assessment if they are to be used for accessing mineral resources.

### *Rail*

- 2.57. The Birmingham to Hereford/Cheltenham line runs through the ECA, branching outside the ECA at Stoke Prior to the south of Bromsgrove. One branch runs through the ECA to serve Droitwich and Worcester and the other clips the eastern boundary of the ECA.

### *Water*

- 2.58. The Worcester and Birmingham Canal and the Droitwich Canal run through the ECA, connecting Worcester and Droitwich with both the River Severn and Birmingham.

### *GI Priorities:*

- 2.59. The GI transport priorities identified for the Mid-Worcestershire corridor ECA are<sup>13</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:*

- 2.60. The LTP 3 transport priorities identified for the Mid-Worcestershire Corridor ECA are:
- **A38 Wychbold-Bromsgrove-Cofton Hackett (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.
  - **A448 Bromsgrove to Redditch 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.
  - **A38 Worcester-Droitwich Spa-Wychbold 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.
  - **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

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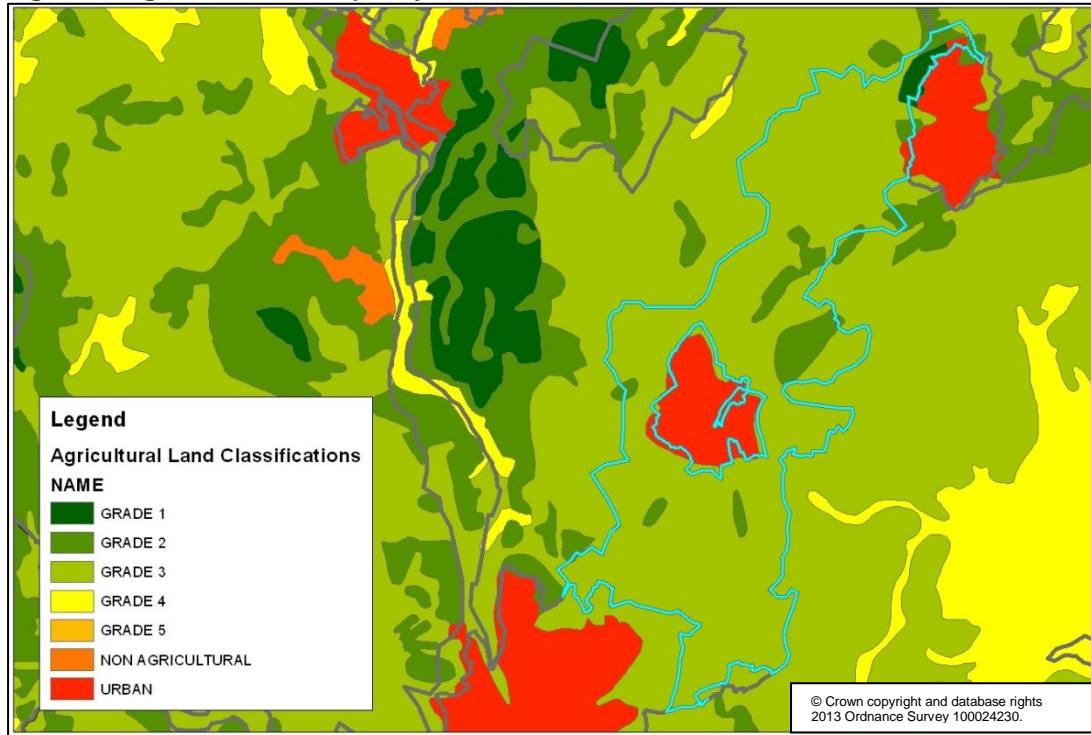
<sup>13</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

route. Dependent on the rail industry to progress this in the long term.

### Agriculture/Forestry

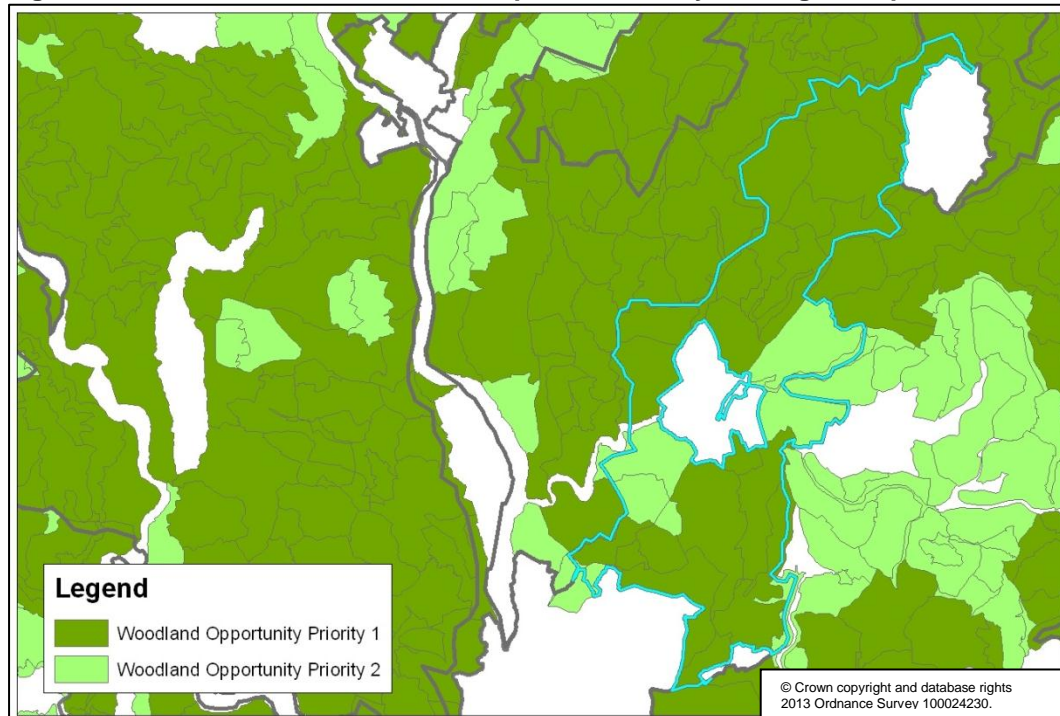
2.61. The agricultural land use in this ECA is dominated by pastoral and mixed farming. Agricultural land quality is dominated by grade 3 land, with some pockets of higher quality grade 2 land and an area of grade 1 land to the north west of Bromsgrove, as shown in Figure 3.

**Figure 3. Agricultural land quality**

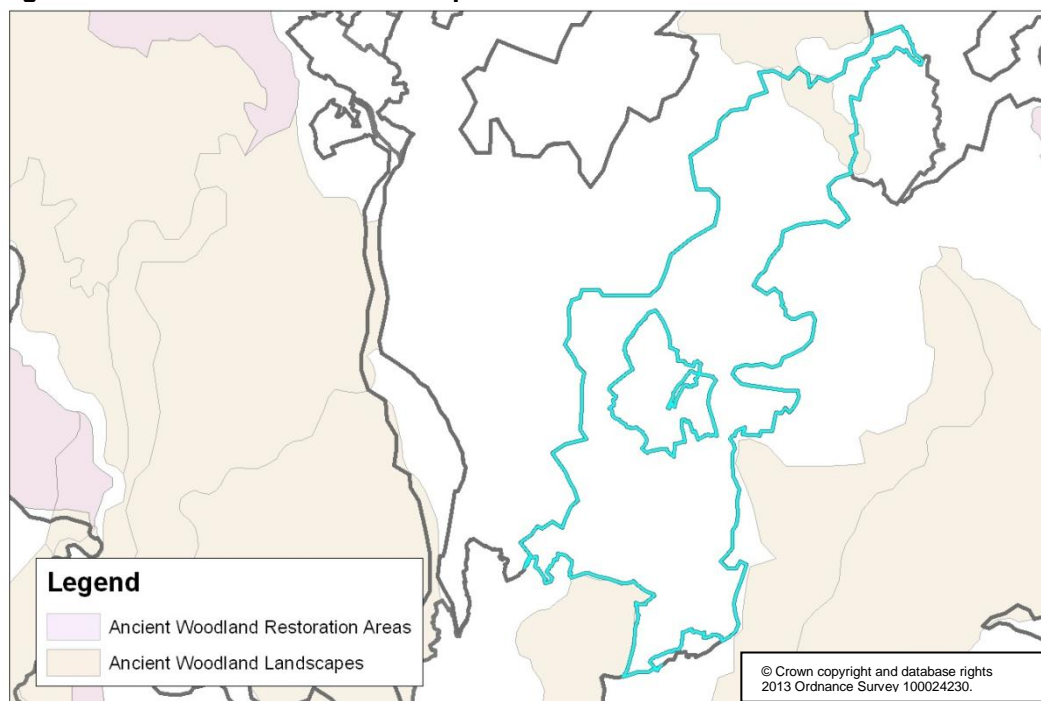


2.62. The forestry commission's woodland opportunity maps show that the majority of this ECA is listed as either priority 1 or 2 for woodland creation which could benefit landscape character, biodiversity, cultural heritage and/or public access (Figure 4). However, they also show that only a small area to the west of Bromsgrove is an ancient woodland landscape and none of the ECA 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

2.63. 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**

- 2.64. 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.
- 2.65. 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.
- 2.66. The soil types to the north of Droitwich and west of Bromsgrove in 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.

### **Socio-economic considerations**

- 3.67. 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.
- 2.68. 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.
- 2.69. 26% (120,000) of the Worcestershire's adult population is obese and another 40% is overweight. The adult obesity levels in Worcestershire are higher than the national average. The level of childhood obesity is around

the national average, at 10% of five year olds and 18% of eleven year olds. In terms of land cover, most of the Worcestershire area has some problems with obesity. This ECA is however amongst the better performing areas in the county.

- 2.70. 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.
- 2.71. The overarching principles identified by the GI partnership regarding socio-economic matters for this ECA are:
- Support enhancements to both health and economic wealth.
  - Address health issues including heart diseases, obesity and respiratory problems.
  - Low household income and unemployment issues are the major economic issue.