

Environmental Character Area Profile for the Minerals Local Plan: 3. North Worcestershire Hills

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 network¹.

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 network² will need to be considered.

Environmental Character Areas³ 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*

¹ Green Infrastructure Guidance – Natural England.

² Green Infrastructure Guidance – Natural England.

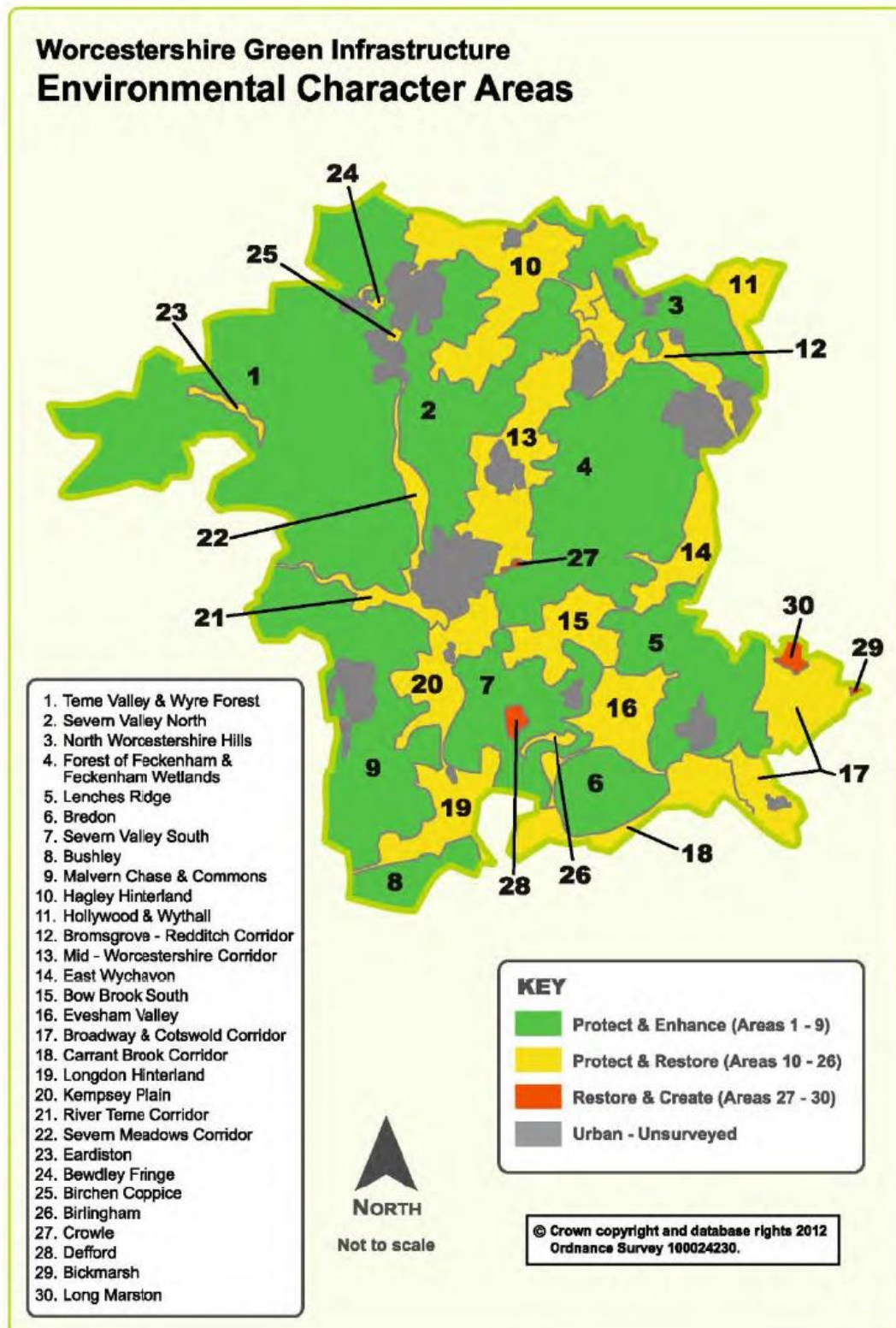
³ Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

Worcestershire: Green Infrastructure Framework 2 (2012) available at www.worcestershire.gov.uk/GI

- 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:
- 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

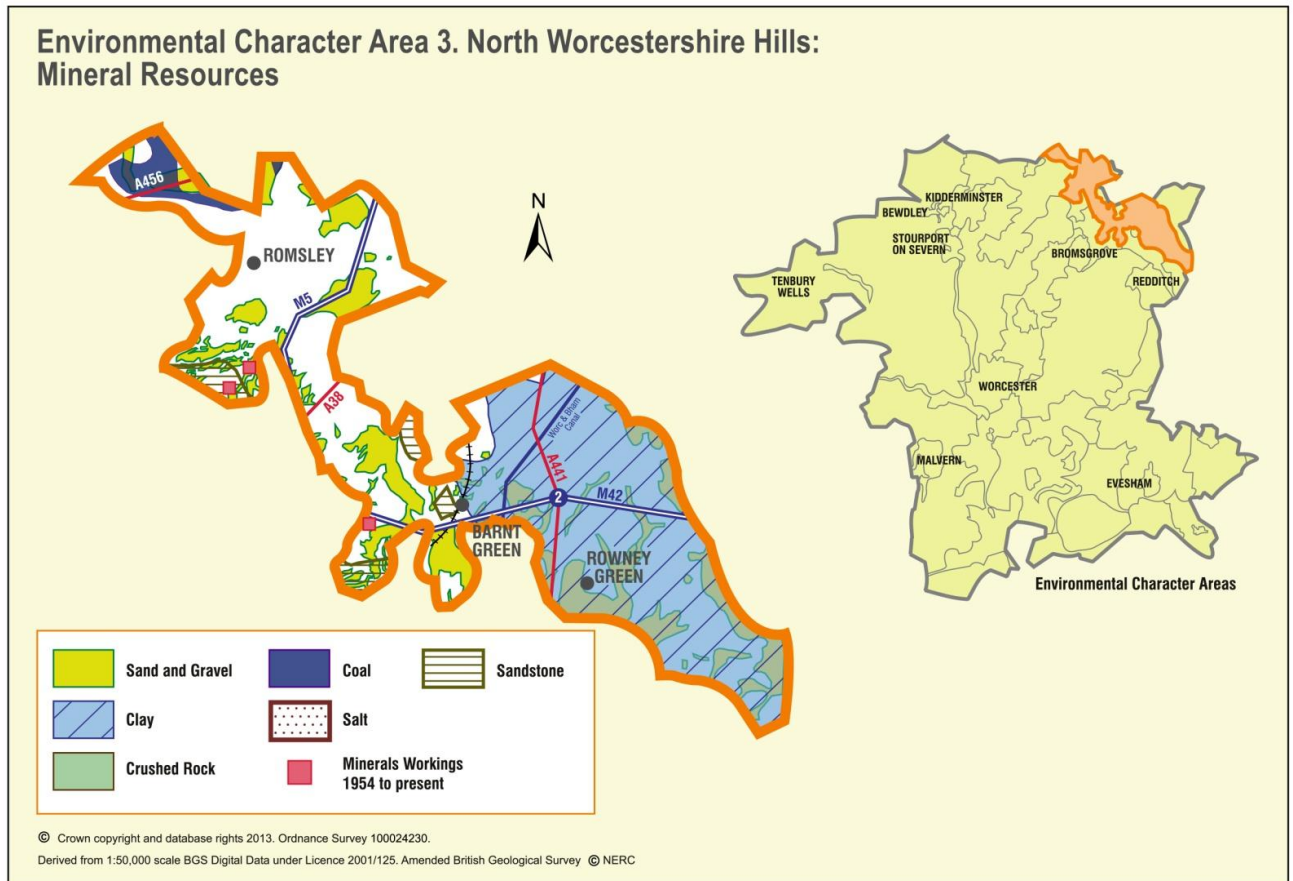
These are illustrated on Figure 1. Environmental Character Areas.

Figure 1. Environmental Character Areas



2. Characteristics and priorities of the North Worcestershire Hills ECA 3

Figure 2. Environmental Character Area 3. North Worcestershire Hills: Mineral Resources



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. The following is therefore only a simple summary.

Sand and gravel

There are 13 resource areas in this ECA, including sand and gravel, silica sand and crushed rock resources. In summary, there are large glacial sand and gravel resources south of the M42 but many of the deposits lie both above and below wide areas of boulder clay and with the exception of

an application at Yew Tree Farm in 1973, exploration work by operators and as part of motorway construction has not been followed up.

- 2.2. Deposits of Kidderminster formation, "Brecchia" and "Conglomerates" which could be used to produce sand and gravel exist on both sides of the M5 and between the A491 and the motorway in this ECA. The deposits are very variable and although deep in places are often overlain by deep deposits of boulder clay and much of the area is also compromised by development. In recent times production of Wildmoor Sandstone has been significant, notably at Madeley, Marlbrook and Shepley, all of which were subsequently infilled with waste and there are still operational sand pits at the Veolia, John Williams and Chadwich Lane sites.
- 2.3. In places the above deposits are also overlain by small irregular river terrace deposits but these are modest in scale and unlikely to be commercially important.
- 2.4. The strata described above cross into adjoining ECAs, the divisions within and between them and between ECA3 and ECAs 10 and 11 are largely based on where the greater part of any particular deposit lies.

Hard rock

- 2.5. There are exposures of Lickey Hill Quartzite, described in the memoir as "Hard, of unknown thickness, steeply dipping, tightly folded and highly fractured" in strata some 200-300m wide in the Lickey Hills. The material has been worked for roadstone in the past, but there are no records of applications for planning permission to work hard rock resources in this area.

Sandstone

- 2.6. Bromsgrove Sandstone was worked for building stone from a site in this ECA in the past.

Industrial and energy minerals

Clay

- 2.7. Clay is present throughout the southern and eastern parts of this Area. Bricks are recorded to have been manufactured locally from small workings in Mercia Mudstone, Lower Lias and glacial clays in the past but there are no detailed records for when. None of these brickworks appear to have been large. There are no records of applications for planning permission to work clay in this ECA.

Silica sand

- 2.8. Deposits west of the M5 were worked extensively in the recent past for "Foundry sand" and significant further deposits may be inferred. Current production is based entirely on workings astride the A491 west of the motorway. Production levels are now very low, most of the output in this ECA is now for relatively low grade building sands.

Coal

- 2.9. Coal underlies part of this ECA as east of the Lickey Hills. There is no evidence of past working. Coal measures to the east in Warwickshire are below the current depth for working. The memoir reports, that this coal would be "excellent for domestic, industrial and power station fuels." BGS mineral reports for the area state that the coalfields in Worcestershire are unlikely to attract further interest.⁴ There is no evidence that these strata will be worked in the lifetime of the Minerals Local Plan.

Brine

- 2.10. There is no evidence that brine has been extracted in this ECA but the memoir for Redditch suggests that Halite deposits may extend eastwards from Droitwich as far as the Lickey End (and Stoke Prior) faults.

Future Growth

- 2.11. 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 but this section considers the likely levels of development within 10 miles of the ECA.
- 2.12. This ECA is a largely rural area within Bromsgrove District and is almost entirely designated as green belt, although it is surrounded by major urban areas. Bromsgrove District anticipates 4,559 homes, 46.4 ha of employment land and replacement of a retail park in the next 14-18 years⁵.
- 2.13. The ECA incorporates the "large settlement"⁶ of Barnt Green and the "small settlements"⁷ of Blackwell, Romsley, Beoley, Hopwood and

⁴ Worcestershire County Council (2012) *Worcestershire Minerals Local Plan Background Document: Coal Mining in Worcestershire*

⁵ 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.

⁶ Large settlements are second in the three tier settlement hierarchy set out in the Bromsgrove District Council Draft Core Strategy 2. Suitable development for large settlements is likely to include convenience A1 retail to meet local needs, local services, residential or small scale business/office development.

⁷ Small settlements are third in the three tier settlement hierarchy set out in the Bromsgrove District Council Draft Core Strategy 2. Suitable development for small settlements is likely to include housing to meet local needs, local services, or small scale rural employment.

Rowney Green which are proposed for some development in the Bromsgrove District Council Draft Core Strategy 2⁸.

- 2.14. These and other areas beyond the boundary of the ECA could create demand for minerals in this Environmental Character Area. Particularly the urban areas of Redditch to the south and Bromsgrove to the south west. Outside Worcestershire the West Midlands conurbation is likely to see significant levels of development in the future, as well as Alcester and Bidford on Avon which are proposed in the Stratford-on-Avon District Draft Core Strategy as Main Rural Centres for development.

Green Infrastructure priorities⁹

- 2.15. 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

- 2.16. 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.

- 2.17. The strategic GI approach for the North Worcestershire Hills ECA is to *protect and enhance*. The overarching principle identified by the GI partnership is to maintain wooded character, linking and buffering existing sites.

Landscape and biodiversity

- 2.18. The landscape character of the majority of this area is heavily influenced by its historical development from the medieval Forest of Arden and still reflects this ancient wooded character within its Landscape Types of Wooded Hills and Farmlands, Principal Wooded Hills, Principal Timbered Farmlands, Timbered Plateau Farmlands and Timbered Pastures. The landscape here is dominated by the Waseley and Lickey Hills which are important resources for both biodiversity and recreation. The woodlands, which are more extensive on the hills, are of varying quality with extensive planting of conifers and non-native broadleaved species.

⁸ Large settlements and small settlements are second and third respectively in the three tier settlement hierarchy set out in the Bromsgrove District Council Draft Core Strategy 2. Suitable development for large settlements is likely to include convenience A1 retail to meet local needs, local services, residential or small scale business/office development. Suitable development for small settlements is likely to include housing to meet local needs, local services, or small scale rural employment.

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

- 2.19. The south western sections are lower lying land where the Landscape Types of Principal Settled Farmlands, Settled Farmlands with Pastoral Land Use, Wooded Estatelands and Enclosed Commons reflect the greater suitability of the flatter land for agriculture. Here the farmland is more intensively managed and there is a noticeable dominance of horsiculture. Fragments of the original heaths are still extant and there are many small stream and river valleys which include areas of biodiversity interest with wet woodland and marshes present.

GI Priorities:

- 2.20. The landscape and biodiversity priorities identified for the North Worcestershire Hills ECA are¹⁰:
- Protect and enhance the ancient wooded/treed character through management and/or re-planting as appropriate to the characteristic tree cover patterns of the different wooded Landscape Types of this area: large, discrete blocks in the Wooded Hills and Farmlands; interconnecting irregularly-shaped woods in the Principal Wooded Hills; linear or streamside woods in the Timbered Plateau Farmlands; scattered hedgerow trees (mainly oaks) of the Timbered Pastures and Principal Timbered Farmlands.
 - Encourage the eventual removal of conifers and non-native tree species and replacement with appropriate native species.
 - Seek opportunities to strengthen the hedgerow network bringing attention to the predominantly mixed composition and organic or variable enclosure patterns.
 - Protect and enhance smaller areas of biodiversity interest: heathland, wet woodland, marsh, unimproved grassland.

Geodiversity

- 2.21. The Madeley Heath pit geological SSSI and local geological site, Sling gravel pits SSSI and Shepley Sandpit and Knoll local geological sites are found on the western edge of this ECA. All are associated with historic mineral working. These workings took place before mineral extraction was regulated by the planning regime.

Historic Environment

- 2.22. The archaeological character and potential of this area is relatively poorly understood. The north-western area of this character area contains coal deposits that have been exploited historically, and as such the landscape is one that reflects its industrial past, principally along the Wasslegrove Dingle.
- 2.23. Occasional finds of prehistoric flints and buried remains indicate that this area was utilised during this period, but to date no significant settlement sites have been found.
- 2.24. Where sandstone outcrops occur historic quarries have the potential to contain remains of industrial archaeological significance.

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

- 2.25. The historic landscape character of the area is strongly influenced by the enclosure of large tracts of open heathland in the C17th-C19th.

GI Priorities:

- 2.26. The historic environment priorities identified for the North Worcestershire Hills ECA are¹¹:
- Protect and buffer historic water management features and ponds. Protect earthwork features associated with medieval settlement and land division.
 - Enhance and create linkages with wider historic environment green networks (hedgerows, woodland and common).
 - Enhance historic hedgerow pattern to strengthen broad historic landscape character.

Blue Infrastructure

Flooding

- 2.27. This ECA contains the following watercourses: River Arrow, Cole, Spadesbourne, Battlefield Brook, Stour, Illey Brook, Fen Brook, Gallows Brook and the Worcester and Birmingham Canal.
- 2.28. There are relatively few Main Rivers in this ECA but a high density of ordinary watercourses. As a result it does not tend to experience extensive fluvial flooding.
- 2.29. Bromsgrove district includes the sources and headwaters of these watercourses, they are small in size with fairly low flows for much of the year but because of the topography, geology and the effect of development the water levels within watercourses increases rapidly during rain storms. This increase in flow causes many of the watercourses to overtop during severe storms and cause rapid localised flooding. In addition to the increase in flow, the localised flooding within the District is exacerbated by the lack of maintenance, infilling of the watercourses due to development and culvert collapse along the ordinary watercourse channels resulting in blockages and thus a decreased channel capacity.
- 2.30. The majority of flooding from watercourses within Bromsgrove town has occurred along the Spadesbourne Brook, the Sugar Brook and the River Salwarpe.
- 2.31. All events have been fairly local in scale and affected mainly roads and a few properties. In many of these locations such flooding has occurred repeatedly over living memory.
- 2.32. Although the enmained River Arrow bisects the town of Redditch, it is located sufficiently high in the catchment to avoid extensive fluvial flooding, as indicated by the relatively narrow extent of its Flood Zones. Only two occurrences of flooding, originating from the River Arrow, have

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

been identified within the SFRA and only one of these, which occurred in 1900, was reported to have caused extensive flooding along the watercourse.

- 2.33. The main sources of fluvial flooding within Redditch Borough, and most notably Redditch town, have originated from the ordinary watercourses draining through the developed areas to the River Arrow. None of these are significant in this ECA.
- 2.34. Groundwater flooding is not a particular cause for concern within this ECA as the underlying aquifer tends to drain when water levels within it become too high.
- 2.35. There are no reports of groundwater flooding within the District.
- 2.36. 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".

Supply

- 2.37. The main water supply resource within the Bromsgrove and Redditch Area is the Sherwood Sandstone Aquifer, located under the northwest and central area of Bromsgrove District. This groundwater supply provides most of the potable water supply for District and Borough, but besides its primary water supply function, the aquifer has significant environmental value and is vulnerable to over abstraction and pollution. The whole of Bromsgrove District is under pressure with regards to water availability. Due to its location in the headwaters of catchments and containing the large aquifer, problems with water availability within Bromsgrove District extent far beyond its borders and can have negative impacts on sites much further downstream. It is therefore essential that appropriate measures are taken not to over abstract the sources groundwater and surface water sources within its administrative area.
- 2.38. Hurcott and Podmore Pools SSSI, located on Blakedown Brook in Worcestershire, has been identified as being dependent upon the groundwater stored in the Triassic Sandstone aquifer. The abstraction from two South Staffordshire Water's sources at Hagley and Churchill have been identified as impacting on groundwater levels beneath this SSSI,. Both of these sources supply water to the Hayley Green zone which includes Romsley village in this ECA.
- 2.39. The CAMS report identifies that the River Stour is over-abstracted and the River Cole has No Water Available (until 2019). This means that there is no water available for further licensing at low flows on the River Cole and that existing abstraction is causing unacceptable damage to the environment at low flows. However, on all these rivers water may still be available at high flows with appropriate restrictions. These restrictions must be taken into account when considering new development sites.

- 2.40. The CAMS identifies a number of SSSIs which may affect water availability in the area. One of these, Romsley Manor Farm is located within this ECA.
- 2.41. WFD ecological status of all the above natural water bodies is moderate, with the exception of the Callow brook, which is bad. The Worcester and Birmingham Canal has a 'Poor' chemistry quality along its entire length through the District and, in its northern section, it also scores a 'Poor' biology score. To a certain degree, the pollution within the canal system originates outside the District boundary, most notably within the urban Birmingham conurbation to the north. The River Cole also demonstrates a decrease in Biology in its downstream reaches, dropping to 'Fair'.

GI Priorities:

- 2.42. The blue infrastructure priorities identified for the North Worcestershire Hills ECA are¹²:
- 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.
 - Reduce the levels of nutrients and sediments entering watercourses and take actions to improve the management of water resources.

Access, informal recreation and tourism

- 2.43. The ECA is in the North of Bromsgrove east of Bromsgrove District. Across 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+ 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. Two of Bromsgrove's three sub-regional GI assets are in this ECA, these being Lickey Hills Country Park and Waseley Hills Country Park.
- 2.44. With approximately 500,000 visitors per year the Lickey Hills already experience considerable visitor pressure, both from and within the district and county, but also from the neighbouring Birmingham and Black Country boroughs. However visitor pressure is concentrated around the visitors' centre, car parks and formal recreation facilities.
- 2.45. The Waseley Hills receive approximately 250,000 visitors per year. They do not experience such intense visitor pressure, in part because although it is located close to the conurbation and easily accessible, it does not

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

have the same cultural associations and traditions which are associated with the Lickey and Clent Hills and the Birmingham conurbation.

- 2.46. An increase in visitor pressure from development within the District and also from population increases in Birmingham and the Black Country could cause significant damage to the District's sub-regional assets that are already at capacity. Therefore the GI Framework document recommends that investment in and promotion of Waseley Hills Country Park so it is able to accommodate more visitors and the provision of a new large 500ha+ area of accessible natural greenspace which is easily accessible to the populations of Redditch and Bromsgrove should be a priority.
- 2.47. The provision of a new large 500ha+ area of accessible natural greenspace which is easily accessible to the populations of Redditch and Bromsgrove should also be explored given the predicted population growth rates in Bromsgrove itself and in the neighbouring districts including Redditch and Stratford Upon Avon.
- 2.48. There is also a need for further investment in neighbourhood sites in the District, to address the poor access to 2ha sites within 300m of households.
- 2.49. Walking and hiking are an important part of the visitor attractions in Worcestershire. There are two way-marked routes in this ECA. The North Worcestershire Path crosses east-west via Lickey and Waseley in the ECA on its route between Majors Green in Birmingham and Bewdley. The Illey Way runs from Waseley Hills Country park via Illey to Woodgate Valley Country Park in Birmingham. There is also a network of Public Rights of Way across the ECA.
- 2.50. There are no major tourist attractions in this ECA, although it is well placed for visitors from Bromsgrove, Redditch and the West Midlands conurbation.

GI Priorities:

- 2.51. The access and recreation priorities identified for the North Worcestershire Hills ECA are¹³:
 - 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

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

be those from the Green Flag Award Programme, and the Country Parks Accreditation Scheme, as appropriate.

Transport

Road

- 2.52. The M5 motorway runs north-south through the north-west end of the ECA, with junctions 4 just beyond the ECA to the south and junction 3 just beyond the boundary to the north and Frankley service station just within the northern boundary of the ECA. The M42 runs east-west across the eastern end of the ECA, with junction 2 connecting to the A441 and Hopwood Park service station.
- 2.53. The A441 connects Birmingham to the north with Redditch in the south via junction 2 of the M42, and the A38 connects Worcester and Bromsgrove in the south to Birmingham in the north via junction 4 of the M5 and Longbridge. The A456 runs across the top of the ECA connecting Kidderminster in the west to Birmingham. Other roads in this Environmental Character Area are more minor.
- 2.54. 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. Local roads may have further restrictions and will need further assessment if they are to be used for accessing mineral resources.

Rail

- 2.55. The Cross-Country line from Birmingham to Bristol runs across the centre of this ECA, with a station at Barnt Green and a branch line from there to Redditch.
- 2.56. A rail enhancement scheme to create capacity along the single track to Redditch is currently being considered by the Planning Inspectorate as a nationally significant infrastructure project. The proposal is for the construction of a 'dynamic loop', consisting of approximately 3km of double track and 2 connections to the original track, allowing trains to pass one another.

Water

- 2.57. The Worcester and Birmingham Canal runs through the ECA from Bromsgrove in south to Birmingham in north through Barnt Green and Hopwood. The River Arrow runs through the ECA from the Lickey Hills to Redditch, but there is no evidence available that it is navigable.

GI Priorities:

- 2.58. The GI transport priorities identified for the North Worcestershire Hills ECA are¹⁴:
- Opportunities should be sought to protect, enhance and create green infrastructure that promotes sustainable movement by

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

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:

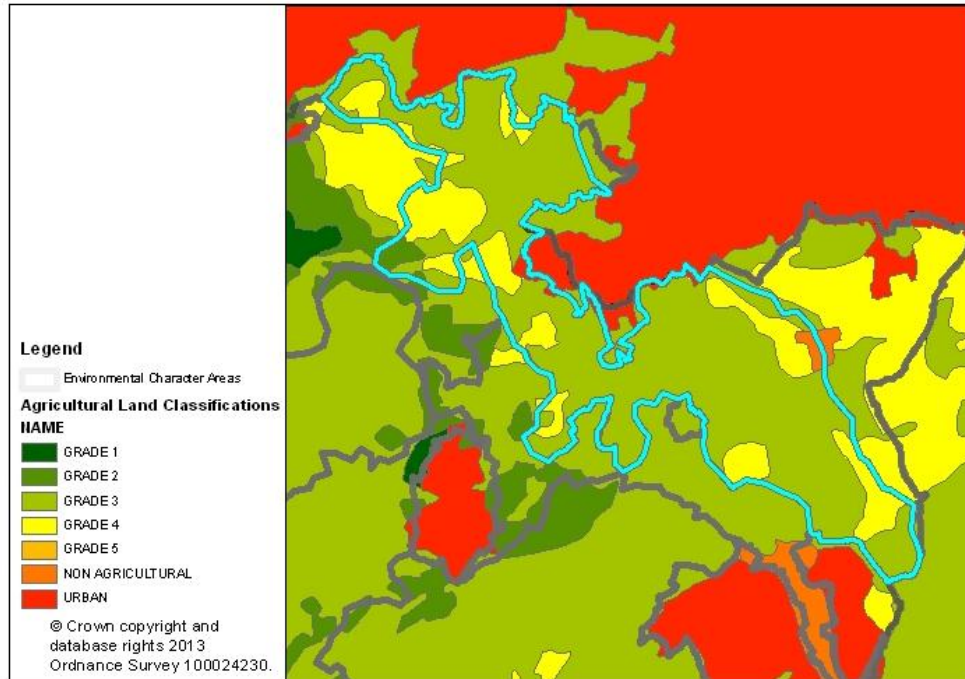
2.59. The LTP 3 transport priorities identified for the North Worcestershire Hills ECA are:

- **A38 Wychbold-Bromsgrove-Cofton Hackett 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.
- **A441 Redditch to Hopwood 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 and pavement enhancements, street furniture decluttering, replacement and enhancement.
- **A435 Redditch to Maypole Roundabout 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 and pavement enhancements, street furniture decluttering, replacement and enhancement.
- **Barnt Green to Redditch rail line enhancement** - development of a passing loop and associated signalling improvements to enhance capacity on the line, likely to be progressed in the short to medium term.

Agriculture/Forestry

2.60. The majority of the agricultural land use in this ECA is pastoral land. Agricultural land quality varies across the area, with the majority of the ECA classified as grade 3 land and some areas of lower quality grade 4 and 5 land, as shown in Figure 3.

Figure 3. Agricultural land quality



2.61. The forestry commission's woodland opportunity maps show that much of this ECA is listed as priority 1 and the remainder as priority 2 for woodland creation which could benefit landscape character, biodiversity, cultural heritage and/or public access (Figure 4). They also show that woodland restoration in the western half of the ECA could benefit ancient woodland (Figure 5).

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

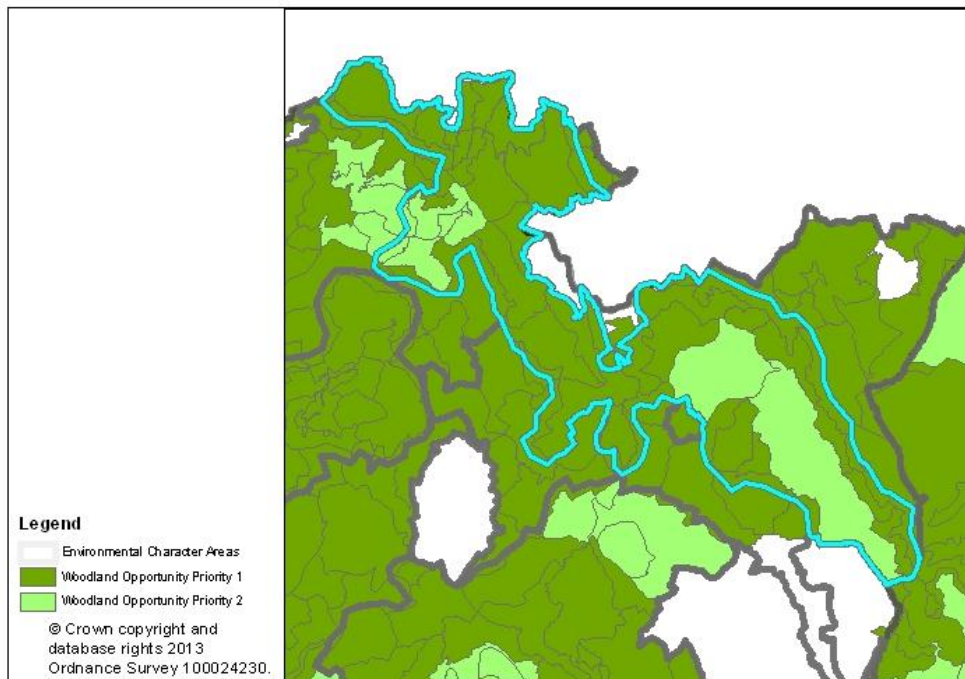
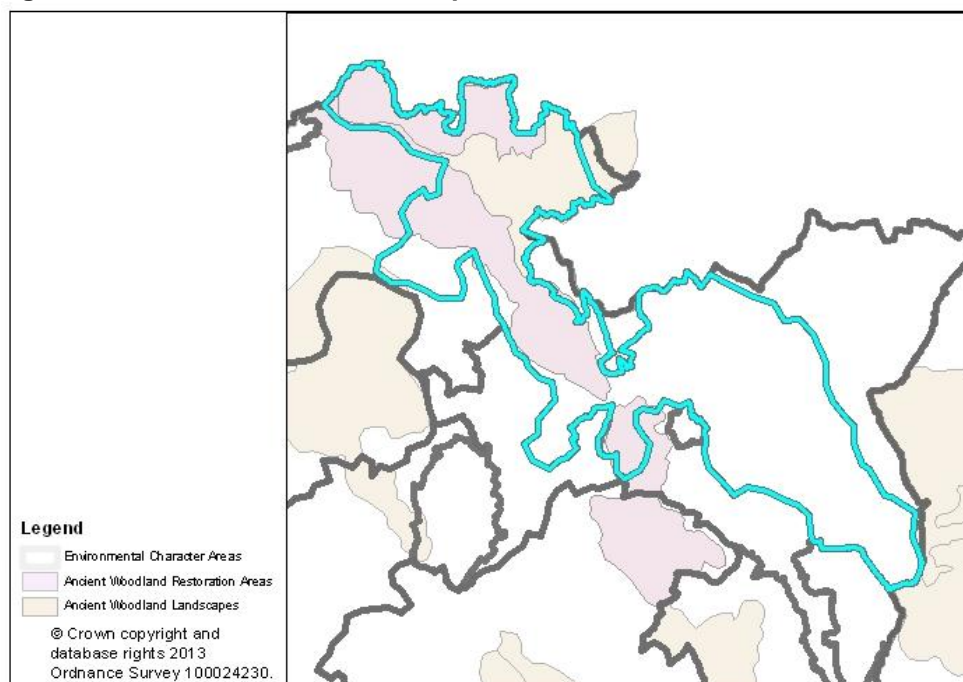


Figure 5. Ancient woodland landscape and restoration



Climate Change

2.62. 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

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

2.64. 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.

- 2.65. The soil types in most of the western part 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.
- 2.66. Locally 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

- 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.

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 levels¹⁵. Part of this ECA, have lower levels of obesity than most of the county.
- 2.69. Obesity and respiratory problems in this county generally follow the same geographical pattern.
- 2.70. Mental health problems, by contrast, tend to be found in the and around major settlements. In Worcestershire one in eight (around 56,000) adults have some form of mental health issue. The most common disorder is mixed anxiety depression, followed by generalised anxiety disorder. Additionally, 10% of children have a clinically significant mental health problem. In spatial terms, mental health problems are found in and around major settlements but there are also some pockets in in the eastern part of Bromsgrove District adjacent to Redditch. (and the Vale of Evesham)

¹⁵ Worcestershire Health and Well-being Board (2012) Joint Strategic Needs Assessment

- 2.71. 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.
- 2.72. The overarching principles identified by the GI partnership regarding socio-economic matters for this ECA are:
- Primary focus on supporting overall health of residents with particular focus on prevention of heart diseases, obesity and respiratory conditions in the area adjacent to Redditch.
 - Support employment creation across the area.