

Environmental Character Area Profile for the Minerals Local Plan: 2. Severn Valley North

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.

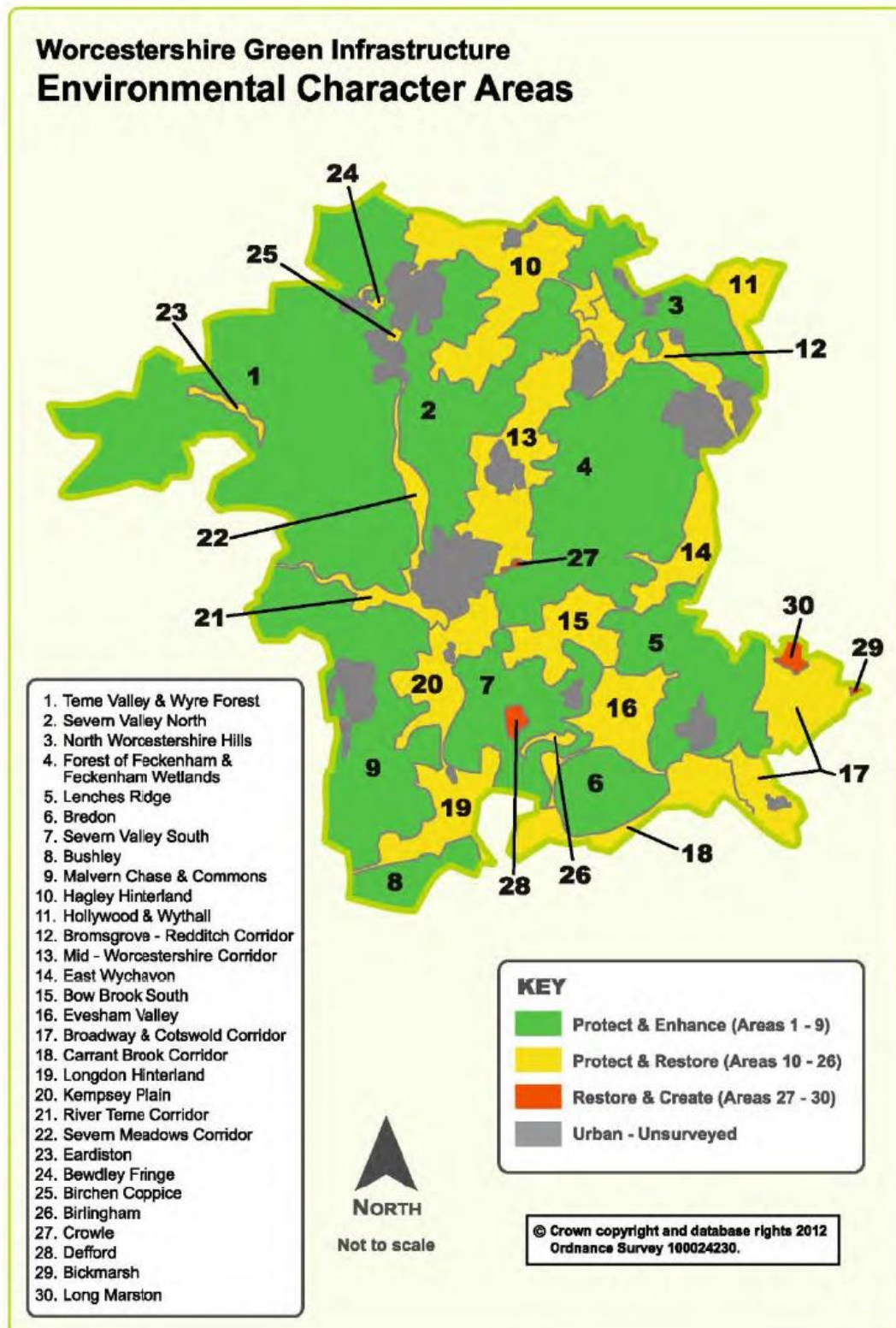
³ Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

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

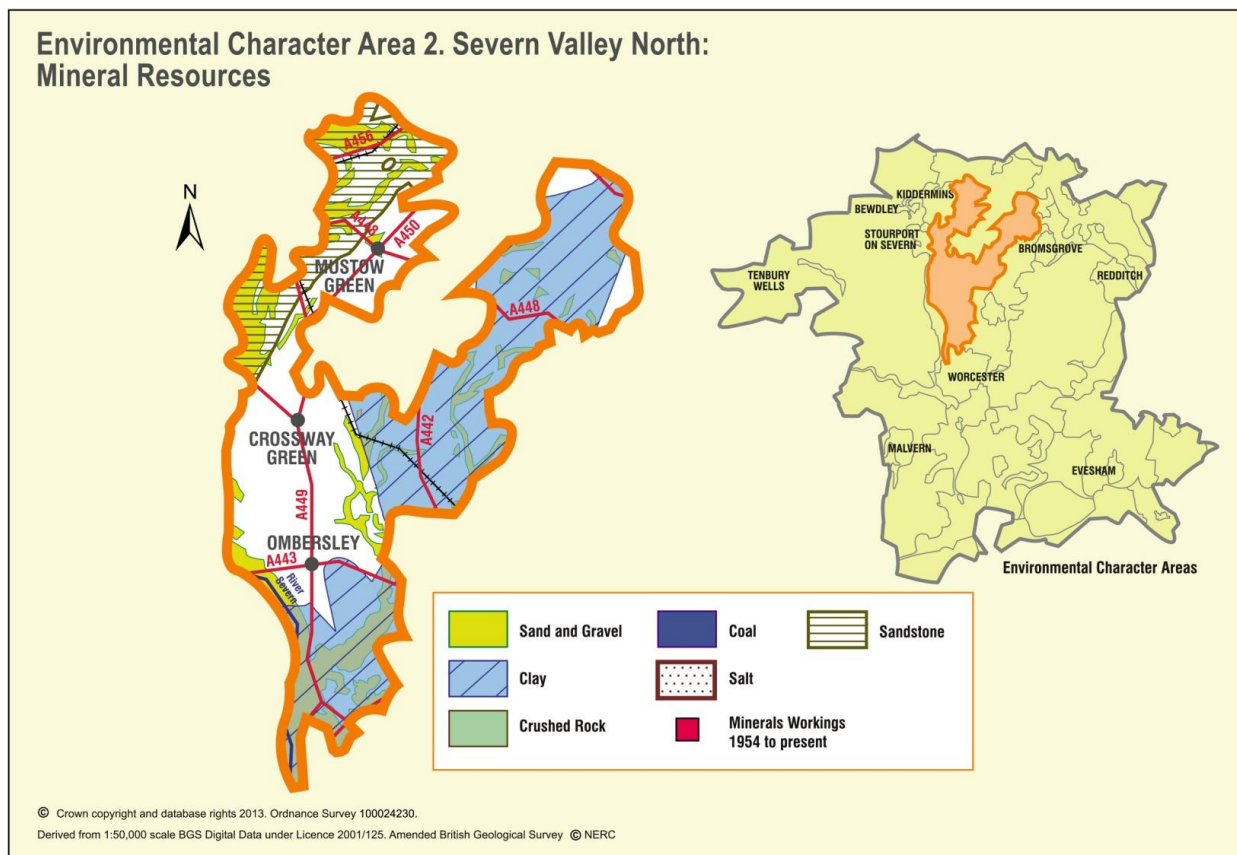
These are illustrated on Figure 1. Environmental Character Areas.

Figure 1. Environmental Character Areas



2. Characteristics and priorities of the Severn Valley North ECA 2

Figure 2. Environmental Character Area 2 Severn Valley North: 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

2.2. ECA 2 has substantial mineral resource areas. The geology is complex. In the north east of the ECA extensive and deep areas of solid sands (Wildmoor and Kidderminster Formation) are partially overlain by smaller scattered drift (river terrace, sub alluvial and glacial sand and gravel) deposits. South and east of Ombersley river deposits are more significant.

Hard rock

- 2.3. There are no potential crushed rock resources in this ECA. The sandstones in the North West are soft and are likely to be more suitable to produce sand rather than crushed rock.

Building Stone

- 2.4. There are exposures of Lower Keuper Sandstone in this ECA and ECA 1 which have been used for building stone. The memoir records that the uppermost beds were formerly quarried for building stone at Ombersley and Hadley and used for restoration work in Worcester Cathedral (before 1869). This stone has also been used in Hartlebury Castle and church and churches at Claines, Hallow, Holt, Shrawley and Wichenford.
- 2.5. Quartzite pebbles from the Kidderminster Formation beds have been used in the pavements and gutters in Chaddesley Corbett and Bewdley.

Industrial minerals

Clay

- 2.6. This ECA includes the county's entire permitted clay reserves. The Keuper Marl is currently exploited for brick clay North West of Hartlebury station where the brickworks are capable of producing up to 2m bricks/week, the scale of further potential resources is unknown but could be very significant.

Silica sand

- 2.7. There are extensive and deep deposits of Wildmoor Formation sandstones in the north west of this ECA which were worked in the past to produce moulding sands. The last quarry to do so in this area closed before 1990.

Brine

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

Future Growth

- 2.9. 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.

- 2.10. This ECA is a largely rural area spanning Wychavon, Bromsgrove and Wyre Forest Districts as well as clipping the edge of Malvern Hills District and 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, and Wyre Forest anticipates 2,946 homes, 35.17 ha of employment land and 17,000 sq m of retail space whilst Malvern Hills District anticipates 2,592 homes and 29.76 ha of employment land, and 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 years⁴.
- 2.11. The ECA incorporates the Category 1 village of Ombersley and part of Hartlebury which are proposed for some development in the South Worcestershire Development Plan proposed submission document⁵, the village of Wilden which is proposed for some development in the Wyre Forest Core Strategy⁶, and the small settlements of Dodford and Bourneheath which are proposed for some development in the Bromsgrove Draft Core Strategy 2⁷. The ECA also incorporates the Worcester urban expansion area of Gwillam's Farm.
- 2.12. These and other areas beyond the boundary of the ECA could create demand for minerals in this Environmental Character Area, particularly Worcester city which is anticipated to experience significant development over the life of the Minerals Local Plan and the towns of Kidderminster, Bromsgrove and Droitwich Spa which surround the ECA.

⁴ 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.

⁵ 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.

⁶ Villages are the fourth in the five tier settlement hierarchy set out in the adopted Wyre Forest Core Strategy. They are suitable for some development such as housing to meet local needs, local services or small scale rural employment.

⁷ 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.

Green Infrastructure priorities⁸

2.13. 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

2.14. 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.

2.15. The strategic GI approach for the Severn Valley North ECA is to *protect and enhance*. The overarching principle identified by the GI partnership is restoration of the Severn Flood Plain.

Biodiversity and landscape

2.16. The Severn Valley North Environmental Character Area falls wholly or partially within the Wyre Forest Acid Grasslands and Heaths Biodiversity Delivery Area, one of the priority opportunity areas determined by the Worcestershire Biodiversity Partnership for the delivery of county Biodiversity Action Plan targets.

2.17. This ECA, to the north of Worcester, is centred on the valley of the River Severn which flows just to the west of the ECA boundary. The confluence of the Rivers Severn and Salwarpe dominates the southern part, while the confluence of the River Stour with the Severn dominates the northern part. The ECA is Y shaped and divided longitudinally into two more or less equal parts by differing landscape characters, underlain by the surface geology and soils. The eastern "arm" of the Y where the soil is generally heavy clay, has been classified as Landscape Type Principal Timbered Farmlands by the county Landscape Character Assessment (LCA). Here, the landscape has a small scale, wooded character 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.

2.18. The western "arm" of the Y is more diverse in character but is dominated by the large, central areas of Principal Settled Farmlands that are based on more free draining, easily workable soils. Here tree cover is more limited to sparsely scattered hedgerow trees and there is a higher incidence of arable cultivation.

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

- 2.19. The northern part of this western "arm" is underlain by sandstone which has given rise to a different character, described by the county LCA as Landscape Type Sandstone Estatelands where the large, intensively farmed fields are laid out in a planned geometric pattern. Woodland here is confined to discrete blocks, often plantations.
- 2.20. Just to the east of Stourport, close to the confluence of the Severn and Stour, is a small but important area of Unenclosed Commons that are dominated by Hartlebury Common, particularly noted for its system of inland sand dunes.
- 2.21. Around the two confluences the character of the landscape is more dominated by the river systems with Landscape Types Riverside Meadows, and Settled Farmlands on River Terraces. Key to these areas is the importance of retaining and enhancing a functioning floodplain along the rivers in order to protect communities downstream from flood events. Traditionally, these riparian landscapes would have included wet woodland, and functioning flood plain meadows (or hams), the remnants of which have a high biodiversity value.

GI Priorities:

- 3.9 The landscape and biodiversity priorities identified for the Severn Valley North ECA are⁹:
- Links should be made with existing site management, in order to achieve site expansion and buffer the key priorities including wet woodlands and grasslands. Where sites are closely associated buffering should be merged to form direct links.
 - In the case of the River Severn corridor the link is already in place but augmentation of this in the floodplain will be critical for a number of GI aspirations, in conjunction with enhancements to the blue infrastructure.
 - Protect and enhance the composition and pattern (planned in the estate landscapes; organic in the farmland landscapes) of hedgerows through management and replanting.
 - Protect and enhance the tree cover pattern through new planting of watercourse, highway and hedgerow trees to address density and age structure; and, in the Timbered Farmlands, through creation of new woodland, with consideration for patterns of relic ancient woodland and existing woodland fragments.
 - Seek opportunities to protect and create areas of permanent pasture, particularly in the Settled Farmlands and Riverside Meadows landscapes.
 - In the unenclosed and unwooded Unenclosed Commons, opportunities should be sought to retain rough grazing land use and management regimes which support the unwooded and unenclosed nature of the landscape.

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

Geodiversity

- 2.22. Much of this ECA is part of the Abberley and Malvern Hills Geopark. There is one geological SSSI in this ECA, River Stour Flood Plain and one local geological sites at Hartlebury Common.
- 2.23. The River Stour Flood Plain SSSI is important for palaeohydrological studies of the River Severn, providing both morphological and sedimentary evidence relating to the development of the river during the late Devensian. The site includes the Power House Terrace and the lower floodplain. It is of particular value in that it relates closely to geomorphological conditions before and after a critical date of 15,000 yr BP. In addition to information on sedimentary environments, the deposits have provided valuable information on episodes of channel infilling and accumulation rates.

Historic Environment¹⁰

- 2.24. The northern region of this character area contains sandstone and sand and gravel deposits. Archaeologically the area is poorly understood with the majority of records relating to post medieval industrial sites. The dendritic topography has resulted in the creation of numerous fishponds and mill pools.
- 2.25. The sandstone hills in the northern area have a high potential for Mesolithic activity, but to date have had little significant investigation.
- 2.26. Sands and gravels also occur along the river Severn and Salwarpe, to the south of this character area, and here the archaeological potential is typified by intensive occupation and land use from the prehistoric periods through to the post medieval period. The confluence of the two rivers is likely to be a focus of activity, although evidence of this may be masked in places by alluvial deposits. The meanders of the rivers are also likely to have left a series of palaeochannels sealed beneath later alluvial deposits, and these have a high potential to contain well-preserved palaeoenvironmental sequences.
- 2.27. As there is no history of mineral workings in this area, no archaeological discoveries have been made on mineral sites
- 2.28. The historic Landscape Character reflects a dispersed early medieval settlement pattern, possibly founded on earlier Roman estates. The field pattern has been affected by reorganisation and amalgamation, but is, nonetheless, diverse and multi-period in origin, derived from mixed historic land use: medieval and later mixed farming and the piecemeal enclosure of former woodland and unenclosed lowland heath.

¹⁰ 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.

- 2.29. As there is no history of mineral workings in this area, no archaeological discoveries have been made on mineral sites

GI Priorities:

- 2.30. The historic environment priorities identified for the Severn Valley North ECA are¹¹:
- Explore opportunities to protect prehistoric and Romano-British settlement on the river terraces and other sites with below ground archaeology adjacent to existing rural settlements.
 - Protect and enhance historic parkland character.
 - 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

- 2.31. This ECA covers parts of five District Councils.
- 2.32. The main flood risk in the South Worcestershire Development Plan section (Worcester City, Malvern Hills and Wychavon DCs) is from the Rivers Severn and Salwarpe, the Droitwich canal and many small watercourses in the rural areas. Surface water is a local issue in many locations.
- 2.33. Flood risk is significant in Worcester City, in this ECA the main causes of flooding for Worcester are from the River Severn and localised surface water flooding and flooding in the Barbourne Brook catchment, (caused by a possible combination of fluvial and surface and sewer floods. To the west of the city the primary risk is from the Laughern Brook, north and west of Worcester and through Hallow, resulting from overtopping of the watercourse channel. Worcester City LPA considers that the River Severn is not defended against flooding to a satisfactory standard.
- 2.34. The largest river in the Wychavon DC section of the ECA is the river Severn but the River Salwarpe and the Elmbridge Brook (which joins the River Salwarpe to the west of Droitwich) are also important sources of flooding, as is surface water flooding from sewers and overland flow. The Droitwich Canal interacts with the River Salwarpe in several places and also needs to be considered as a potential source of flooding from overtopping.
- 2.35. There is also a significant flood risk around Fernhill Heath where the primary risk is from overland surface water, with further development and creation of impermeable ground surfaces, surface water flooding may become a problem. In addition the Martin Brook may pose some flood risk in this area.

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

- 2.36. The main cause of flooding in the western, Malvern Hills part of the ECA is from local watercourses and surface water sewers. In particular, rapid response catchments are of concern, and as many of the watercourses at risk are less than 3km² in area there are no flood risk maps covering these areas. Further assessment may need to be undertaken of future development to determine the level of risk in these catchments.
- 2.37. 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. According to the River Severn Catchment Flood Management Plan (CFMP), the lower reaches of the River Severn flow over Non Aquifer Triassic Mercia Mudstone Group strata and Jurassic Lower Lias Clays. The drift gravels at this point allow groundwater to flow from the drift deposits to the river and vice versa. The western part of the ECA is in the Warwickshire Avon sub-catchment where Impermeable clays and mudstones dominate and no such flows are significant.
- 2.38. Groundwater flooding is not considered to be a major issue in the South Worcestershire Joint Core Strategy area.
- 2.39. In the north eastern, Bromsgrove, part of the ECA, the greatest flood risks are from flash flooding of ordinary watercourses as a result of rapid response of catchments to runoff. In many cases this has resulted in an overwhelming of the road, rail and canal networks and their associated drains and outflows. The SFRA attributes this to a lack of maintenance resulting in blockages and reduced flow capacity. The Hockley Brook and an unnamed watercourse through Dodford are the most significant in this part of the ECA. There are multiple occurrences of sewer and surface water flooding within the District with reports located in Bromsgrove town and nearly all of the larger villages.
- 2.40. In the Wyre Forest part of this ECA flood risk is a significant concern for Kidderminster from the Stour and Stourport from the Severn. Problems have also arisen from the Staffordshire and Worcestershire canal; when river levels in the Stour exceed the bank heights of the canal, water enters the canal system and it acts as a conduit passing flood water downstream. In the summer of 2007, this caused bank failure and ultimately property flooding at Whittington (outside the District). Further downstream, within the District, problems were encountered at Kidderminster Lock where the towpath was completely flooded, Falling Sands Lock was damaged and additional water passed downstream to Stourport, where a lock structure was overtopped. The threat of flooding was only alleviated by opening the sluices to the River Severn.
- 2.41. The Environment Agency confirmed that they are not aware of any specific incidences of groundwater flooding within the Wyre Forest District.
- 2.42. 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".

Water Quality

- 2.43. Almost the entire ECA is categorised as a water body with water company point source pollution pressure, the area in the north east also has "other" source pressures".
- 2.44. The River Severn and Laughern Brook have poor quality due to unacceptable levels of phosphorus. The Grimley Brick Pits SSSI and Northwick Marsh are thought to be in hydraulic continuity with the River Severn during elevated flows and so are at risk from poor water quality in the river.
- 2.45. The River Salwarpe, Hadley Brook and Elmbridge Brook all have a moderate ecological quality status as they flow through or near to Droitwich Spa because of 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.
- 2.46. The river Stour and Blakedown Brook are also at risk of failing WFD quality standards.

Water Supply

- 2.47. Most supplies in Wyre Forest District are from the Trimley reservoir and River Severn. The Sherwood Sandstone aquifer beneath the central part of the district provides an additional source of supply and must be protected. Both the river and the aquifer are susceptible to over abstraction and pollution.
- 2.48. No water is available in the rest of the ECA.
- 2.49. In the Bromsgrove area this is particularly due to over-abstraction, due to loss of base flow from the underlying groundwater. 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. The area north of Droitwich also has flow pressures. It is therefore essential that appropriate measures are taken not to over abstract the sources groundwater and surface water sources within its administrative area.

GI Priorities:

- 2.50. The blue infrastructure priorities identified for the Severn Valley North ECA are¹²:

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

- 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.

Access, informal recreation and tourism

- 2.51. There is a relatively dense Rights of Way Network and a good provision of accessible greenspace in the form of larger sites adjacent to areas of population, such as Clent Hills, Waseley Hills Country Park, Lickey Hills Country Park and Arrow Valley Country Park. There are a good number of nature reserves and formal parks in all three district/borough areas of Wyre Forest, Bromsgrove and Redditch.
- 2.52. Tourist attractions in this ECA include Harvington Hall, Worcestershire County Museum at Hartlebury Castle and Stone House Cottage Garden.

GI Priorities:

- 2.53. The access and recreation priorities identified for the Severn Valley North 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 be those from the Green Flag Award Programme, and the Country Parks Accreditation Scheme, as appropriate.

Transport

Road

- 2.54. Junction 4a of the M5 lies on the eastern edge of the ECA, although this is the interchange with the M42 and there is no access to join the motorway at this point. The A456 trunk road connects Kidderminster in west to Birmingham in north east, and the A449 trunk road runs through the ECA connecting Kidderminster in the north-west to Worcester in the south.

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

- 2.55. The A448 crosses the ECA to connect Kidderminster and Bromsgrove and the A442 connects Kidderminster and Droitwich. The A450 runs through part of the north west of the ECA to connect the A449 at Hartlebury to the A456 in the north. The A4133 crosses the centre of the ECA from Tenbury Wells in the west of the county and on to Droitwich to the east of the ECA. The junction of this road with the A449 at Ombersley suffers from some peak time congestion. Other roads in this Environmental Character Area are more minor.
- 2.56. The Worcestershire Advisory Lorry Route Map shows a low bridge which would restrict the movement of vehicles over 13'6" (4.1m) at the junction between the A450 and the A449 to the south of Kidderminster. 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 Stourbridge Line runs through the ECA on its route between Worcester and Birmingham via Kidderminster. Hartlebury and Blakedown stations are just outside the boundary of the ECA.

Water

- 2.58. The River Severn runs close to the western boundary of the ECA from Stourport to Holt Fleet and through the southern end of the ECA from Holt Fleet to Worcester. It is navigable up to Stourport on Severn. The Staffordshire and Worcestershire Canal crosses the western edge of the ECA on its route between Stourport and Kidderminster.

GI Priorities:

- 2.59. The GI transport priorities identified for the Severn Valley North ECA are¹⁴:
- 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 Severn Valley North ECA are:
- **A456 Kidderminster-M5 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.
 - **A449 Kidderminster-Worcester interurban corridor maintenance and improvement scheme** - a programme of improvements to transport infrastructure on this route, which is

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

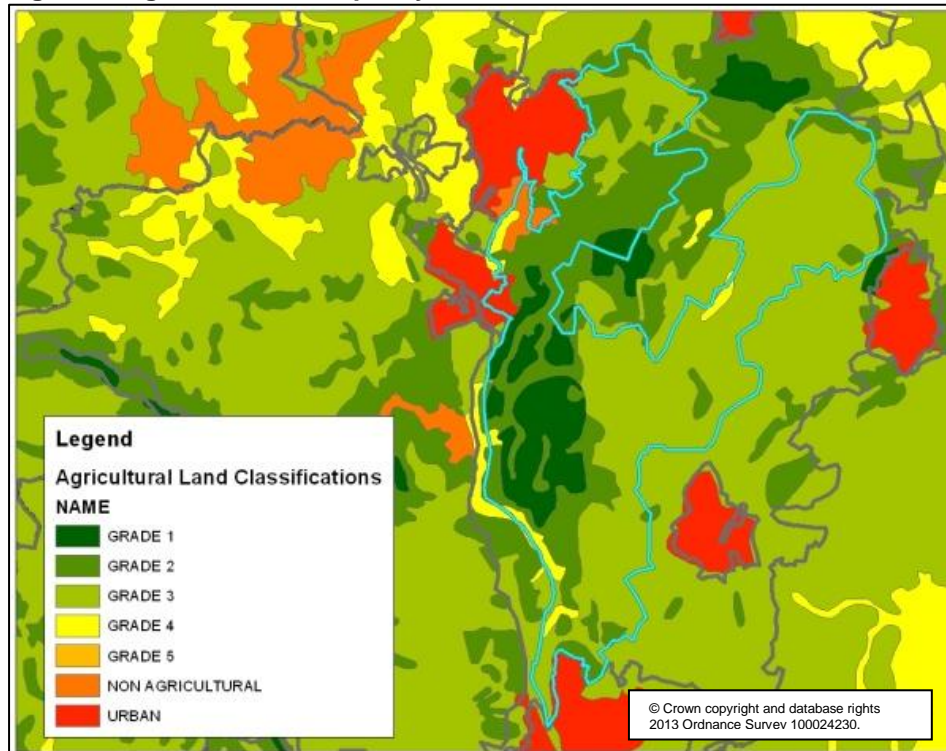
likely to be progressed in the short term and will include junction enhancements, street furniture decluttering, replacement and enhancement.

- **Stourbridge Rail Line Enhancement Scheme** - This scheme would involve journey time improvements to the Stourbridge Line, in line with the West Midlands Rail Utilisation Strategy and is likely to be progressed in the short-medium term.
- **A448 Kidderminster-Bromsgrove 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.
- **A443/A4133 Tenbury Wells-Worcester (M5) 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.

Agriculture/Forestry

2.61. The agricultural land use in this ECA is dominated by mixed farming and cash crops with some pastoral land. Agricultural land quality varies across the area, with the western half of the ECA dominated by high grade 1 and 2 land and the eastern half predominantly grade 3 land. Small pockets of lower quality grade 4 and 5 land are present, particularly along the western boundary of the ECA and there is some urban land where the ECA meets Stourport, Kidderminster and Worcester, 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 priority 1 for woodland creation which could benefit landscape character, biodiversity, cultural heritage and/or public access, with some areas of priority 2 (Figure 4). However, they also show that the north east of the ECA is part of an ancient woodland landscape but this is not prioritised for woodland restoration (Figure 5).

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

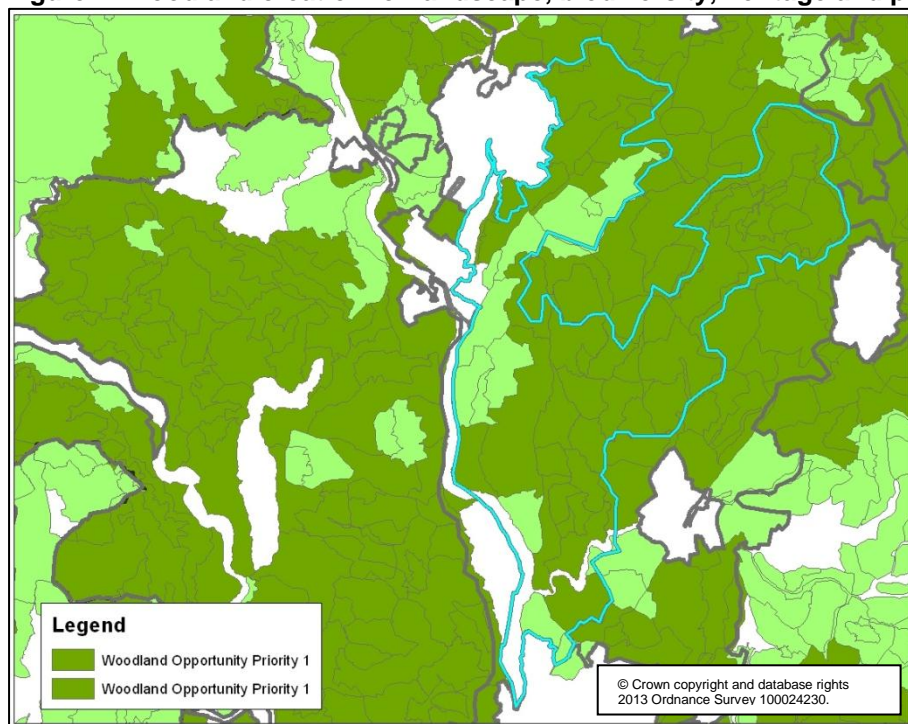
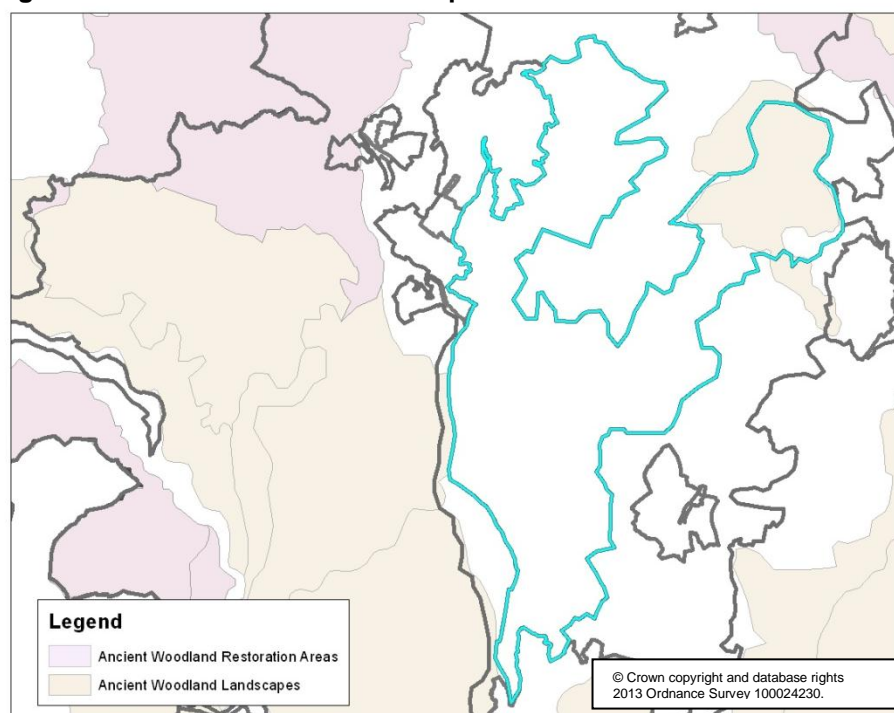


Figure 5. Ancient woodland landscape and restoration



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 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 and a small area east of Bewdley 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 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.¹⁵ Part of this ECA, north of Droitwich, north of Bromsgrove and west of Kidderminster, have lower levels of obesity than most of 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:
- Enhance economic wealth and address health inequalities.
 - Main economic issues: below average household income.
 - Main health issues: heart diseases.

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