

# Environmental Character Area Profile for the Minerals Local Plan: 27. Crowle

## 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*

---

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

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

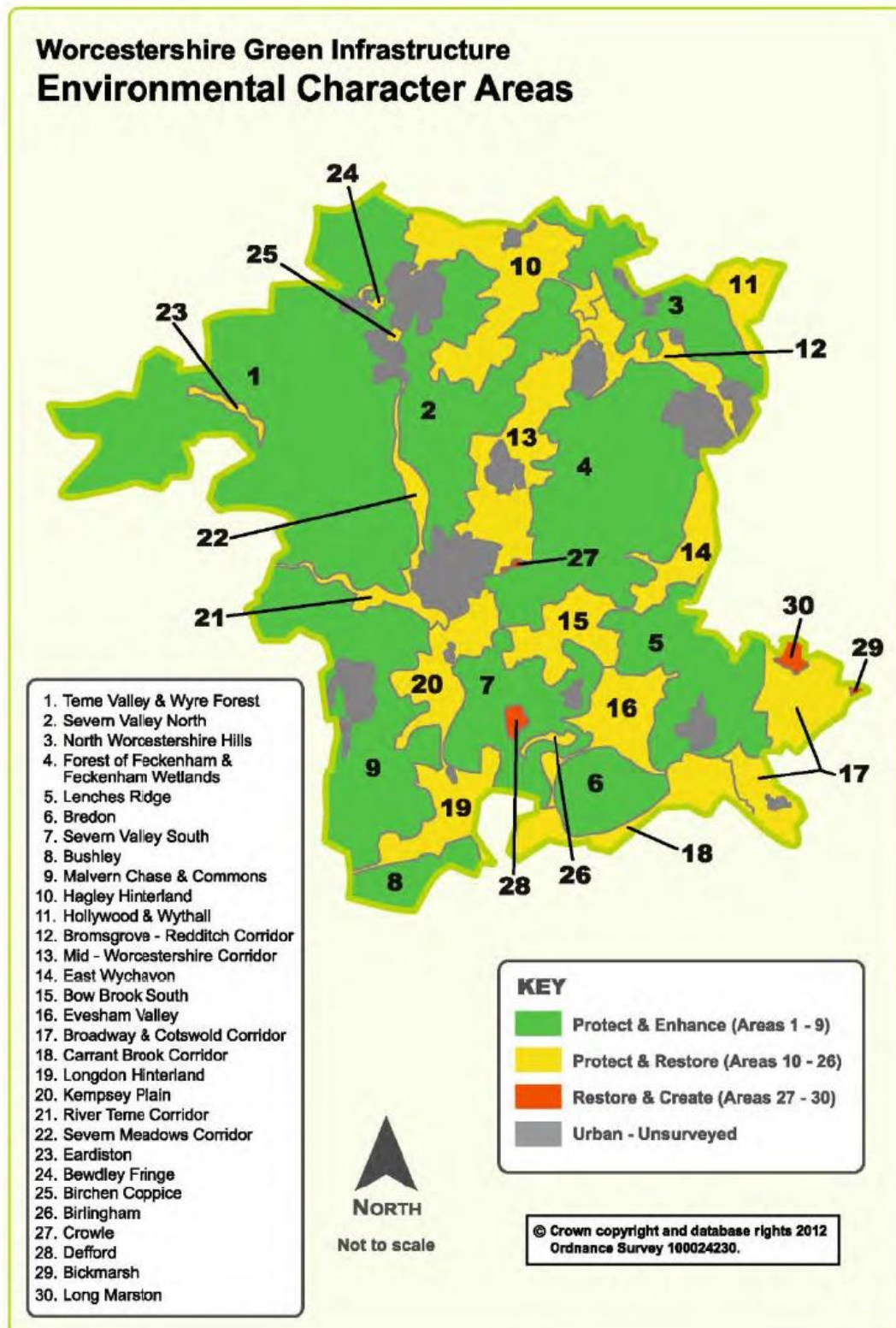
<sup>3</sup> Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

*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

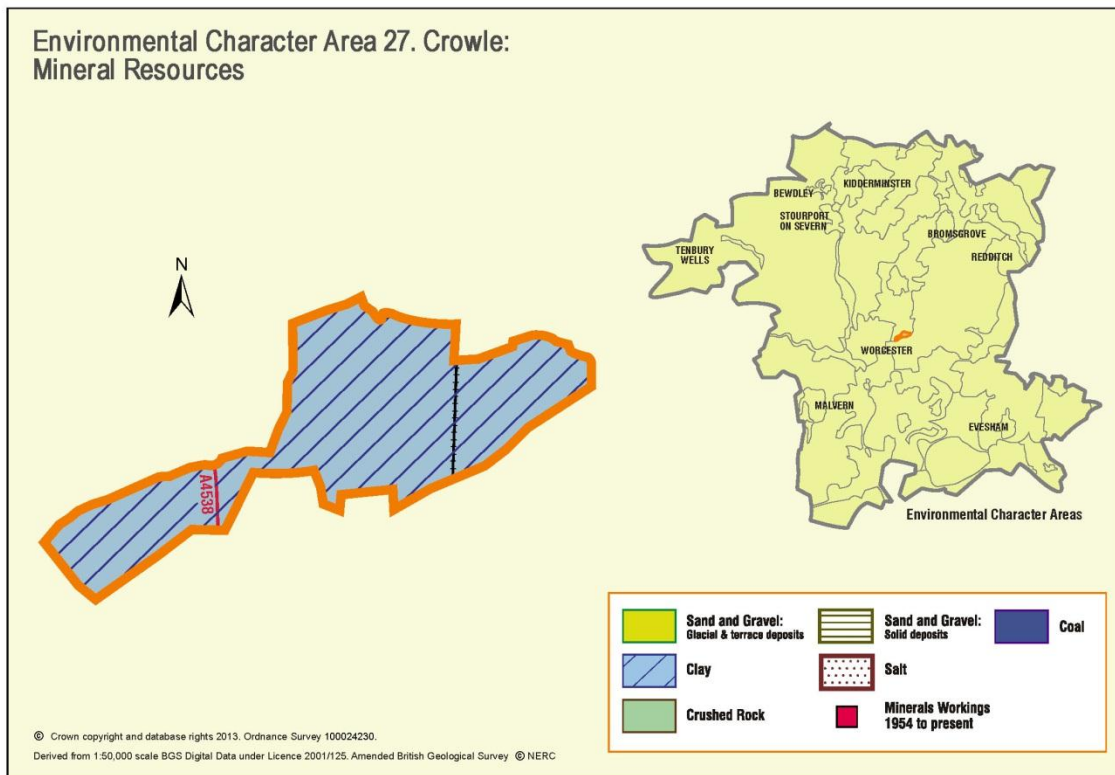
These are illustrated on Figure 1. Environmental Character Areas.

Figure 1. Environmental Character Areas



## 2. Characteristics and priorities of the Crowle ECA

Figure 2. Environmental Character Area 27 Crowle: Mineral Resources



### Mineral Resources

#### Aggregates

2.1. Details about the aggregate resources in all ECAs 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. No evidence of sand and gravel resources.

#### *Hard rock*

2.3. No evidence that suitable strata exist.

#### Industrial minerals

#### *Clay*

2.4. No evidence that suitable strata exist.

#### *Silica sand*

2.5. No evidence that suitable strata exist.

## *Brine*

- 2.6. The Saleway borehole identified that the Droitwich Halite Formation appears to underlie this ECA. The memoir for Worcester suggests that the halite deposits may be present at depth to the east of the Smite-Pirton-Tewkesbury fault system.

## **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 is near to the Category 3 village of Crowle which is proposed for some development in the South Worcestershire Development Plan proposed submission document<sup>5</sup>.
- 2.9. Other areas beyond the boundary of the ECA could create demand for minerals in this Environmental Character Area, including Worcester City which is to the west of the ECA and is proposed for 6,525 homes and 74ha employment land in the South Worcestershire Development Plan proposed submission document<sup>6</sup>.

---

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

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

<sup>6</sup> 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.

## 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 Crowle ECA is to *restore and create*. The overarching principle identified by the GI partnership is to restore and create wet pasture and marshland.

### Landscape and biodiversity

2.13. The Crowle Environmental Character Area is a small ECA located entirely within the Shell Forest Natural Area, just west of Worcester and separated from the city by the M5. It comprises a single Land Cover Parcel within the county Landscape Character Assessment and is identified as the Landscape Type Wet Pasture Meadows. They are landscapes where the low lying ground drains badly and wetland habitat is noticeable. These seasonally inundated pastoral meadows do not support woodland, tree cover being represented by lines of trees following drainage ditches and streams. The heavy, calcareous clay soil of this ECA impedes drainage and also contributes to winter standing water. In spite of this, the inherent pastoral land use has been disrupted by intensive arable farming which has also led to the loss of a high proportion of hedgerow trees. The historic enclosure pattern is intact but individual hedges are thin and over maintained.

### *GI Priorities:*

2.14. The biodiversity priorities identified for the Crowle ECA are<sup>8</sup>:

- Restore and enhance the character of Wet Pasture Meadows. Restore and protect the hedge and ditch field boundaries and regular enclosure pattern. Restore the characteristic linear tree belts alongside ditches and watercourses. Seek every opportunity to retain areas of permanent pasture in this inherently pastoral landscape.
- Protect and enhance existing site and biodiversity interest. Implementation and delivery to be directed to existing site management and buffering as a first principle.

---

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

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

- Newly created green infrastructure should augment the existing resource, and link priorities habitats including hedges. Priorities for restoration are wet meadows and marsh habitats.

### Geodiversity

2.15. There are no Local Geological Sites in this ECA.

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

2.16. This very small character area has had no archaeological investigation, where free draining soils occur there is an increased potential for prehistoric and Romano British occupation sites.

2.17. The historic landscape character is dominated by reorganised post-medieval fields with some areas of mature infield trees leading to a relic parkland character.

### *GI Priorities:*

- 2.18. The historic environment priorities identified for the Crowle ECA are<sup>10</sup>:
- Protect and buffer the line of the Roman road which is located to the east of the A4538 on a north-south alignment.
  - Restore historic hedgerow field pattern.

### Blue Infrastructure

2.19. Only one significant watercourse is mapped in this ECA, a tributary of the Bow Brook, which ultimately drains into the river Avon at Defford, west of Pershore.

2.20. The geology can have an effect on the runoff, and the flooding, within a catchment as a result of the permeability of the strata. The geology within South Worcestershire is variable. Impermeable clays and mudstones dominate the Warwickshire Avon sub-catchment and Groundwater flooding is not considered to be a major issue in the South Worcestershire Joint Core Strategy area.

2.21. The River Severn Catchment Flood Management Plan makes this a Policy 3 area, where it will "Continue with existing or alternative actions to manage risk at the current level."

### **Water Quality:**

2.22. The Bow Brook and the River Avon it joins both are currently classed as having a moderate ecological potential. Neither achieves good status under the WFD as they contain unacceptable levels of phosphorus. The ECA is categorised as having agricultural/rural diffuse pollution pressure and water company point source pollution pressure.

---

<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*

## **Water supply**

2.23. No water available.

### *GI Priorities:*

- 2.24. The blue infrastructure priorities identified for the Crowle 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.

### Access, informal recreation and tourism

2.25. There are no publicly accessible sub-regional GI assets in this ECA. However, in eastern Worcestershire, the eastern half of Worcester City has good provision of accessible greenspace in Worcester Woods Country Park, Perry Wood, Tolladine Wood, Warndon Wood and the other natural greenspaces and formal parks within the City boundary. Beyond the City boundary into Wychavon District, smaller sites such as Village Greens, Millennium Greens and Doorstep Greens exist, as well as a number of nature reserves and picnic places. With the proposed housing growth in Pershore and some larger villages, a greater provision of accessible greenspace is required.

### *GI Priorities:*

- 2.26. The access and recreation priorities identified for the Crowle 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.

---

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

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



## Transport

### *Road*

- 2.27. The A4538 crosses the western end of the ECA connecting to the M5 at Junction 6 to the north and the A44 to the south of the ECA. Other roads in this Environmental Character Area are more minor.
- 2.28. 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. Other local roads may have further restrictions and will need further assessment if they are to be used for accessing mineral resources.

### *Rail*

- 2.29. The Birmingham to Bristol line runs through the ECA.

### *Water*

- 2.30. There are no navigable waterways in the ECA.

### *GI Priorities:*

- 2.31. The GI transport priorities identified for the Crowle 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:*

- 2.32. There are no LTP 3 transport priorities identified for the Crowle ECA.

## Agriculture/Forestry

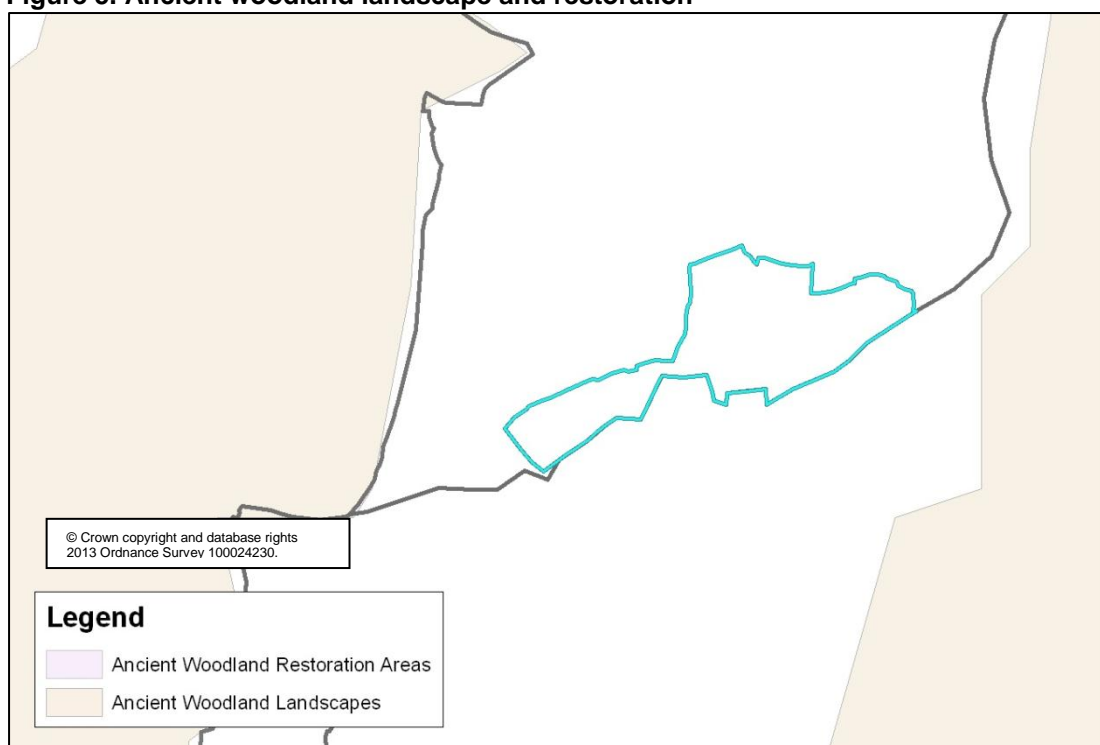
- 2.33. The agricultural land use in this ECA is dominated by pastoral land and mixed farming. Agricultural land quality across the area is grade 3, as shown in Figure 3.

---

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



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



## Climate Change

2.35. 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**

2.36. 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.

2.37. 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.

- 2.38. The soil types in this ECA may be 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

- 2.39. 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.
- 2.40. 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.
- 2.41. 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.
- 2.42. 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.