Environmental Character Area Profile for the Minerals Local Plan: 10. Hagley Hinterland

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 know as blue infrastructure). The GI approach requires thinking about the environment as an integrated system of stepping stones or nodes in a wider network[1].

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[2] will need to be considered.

Environmental Character Areas[3] 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.

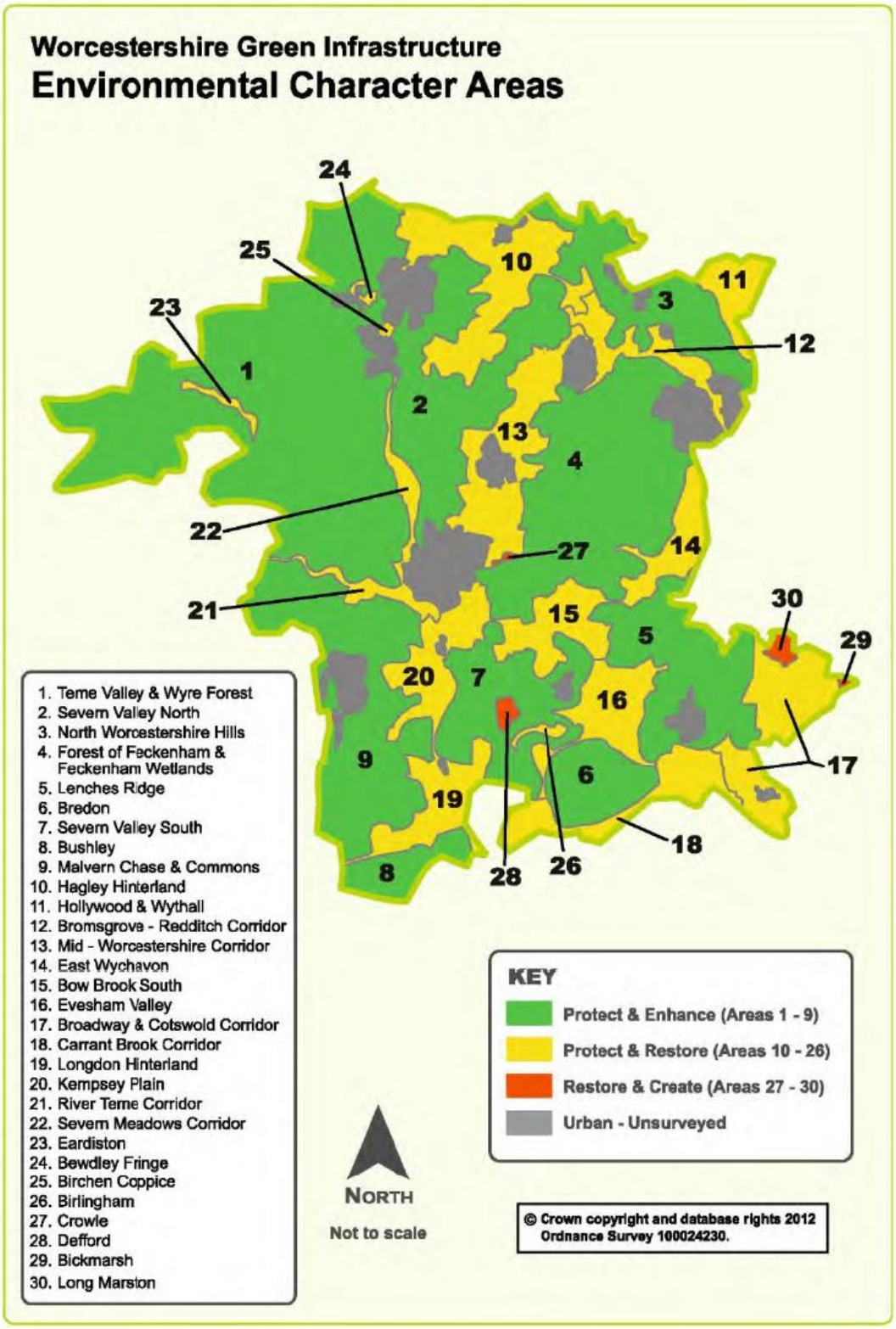
1.10. Profiles for each of the following ECAs are available on our website www.worcestershire.gov.uk/mineralsbackground:

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

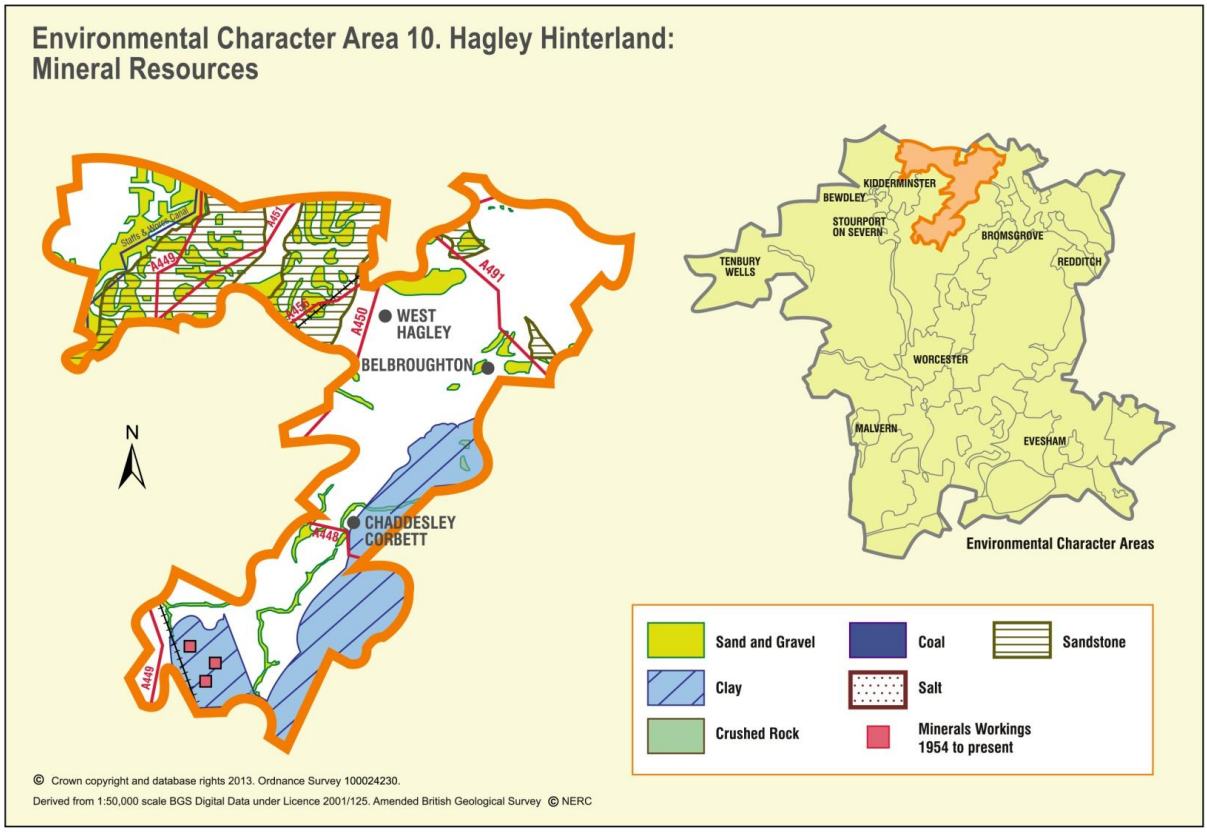
These are illustrated on Figure 1. Environmental Character Areas.

Figure 1. Environmental Character Areas



2. Characteristics and priorities of the Hagley Hinterland ECA

Figure 2. Environmental Character Area 10. Hagley Hinterland: 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 10 includes 32 resource areas; both very deep deposits of the Kidderminster and Wildmoor sandstone Formations and shallower river terrace sand and gravel deposits. 5 resource areas have been designated "key" and 1 "significant." There is little evidence that either the Kidderminster Formation or river terrace deposits have been worked but by contrast the Wildmoor sandstone has been worked extensively in large, deep, dry pits, some of which are still operational. Sales are currently principally for building sand. The ECA is however a well built up part of the Green Belt and many deposits are compromised by development.

Hard rock

2.3. There is no evidence that strata suitable for aggregate production from crushed rock exists in this ECA.

Industrial minerals

Clay

2.4. No evidence.

Silica sand

2.5. Large scale production of Foundry Sand was extracted from sites in this ECA north and south of Sandy lane. These are still currently operational at Veolia tip (formerly Stanley N Evans) north of the lane and Cinetic sand (formerly John Williams Cinetic Sand) currently operated by the Salop Sand and Gravel Company south of the lane. Immediately west of junction 4 of the M5 is another "Foundry Sand Pit" currently operated by MV Kelly (formerly "Pinches"). Current production of Silica Sand is based entirely on workings astride Sandy Lane.

Building Stone

2.6. The Lower Keuper sandstone outcrops in this area near Hagley and is referred to as the best building stone in the area. It has been extensively used for churches and other buildings.

2.7. Deposits of Bromsgrove sandstone also exist in the ECA and a small former building stone quarry lies to the east of junction 4 of the M5 but there is little other evidence of significant building stone quarrying.

Brine

2.8. There is no evidence of brine working in this area or that Halite deposits might exist at depth 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

2.9. 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 but this section considers the likely levels of development within 10 miles of the ECA.

2.10. This ECA incorporates largely rural areas spanning Wyre Forest District, Bromsgrove District and Wychavon District and lies between the urban

areas of Kidderminster, Bewdley and Stourport to the west, Bromsgrove to the south east and the West Midlands conurbation to the north west, including Stourbridge, Halesowen and Longbridge. Wyre Forest anticipates 2,946 homes, 35.17 ha of employment land and 17,000 sq m of retail space, Bromsgrove District anticipates 4,559 homes, 46.4 ha of employment land and replacement of a retail park and Wychavon anticipates 5,807 homes, 18.5 ha of employment land and a new neighbourhood centre in the next 14-18 years[4].

2.11. The ECA incorporates part of the "large settlement"[5] of Catshill and the "small settlements"[6] of Belbroughton, Clent, Fairfield, Holy Cross and Lower Clent which are proposed for some development in the Bromsgrove District Council Draft Core Strategy 2, the category 1 village of Hartlebury[7] which is proposed for some development in the South Worcestershire Development Plan proposed submission document and the villages of Cookley and Blakedown and the rural settlement of Chaddesley Corbett and Wolverley which are proposed for some development in the Wyre Forest Core Strategy[8].

2.12. These and other areas beyond Worcestershire could create further demand for minerals in this Environmental Character Area.

Green Infrastructure priorities[9]

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

[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] 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.

[6] 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.

[7] 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.

[8] Villages are the fourth and Rural settlements are fifth 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, or small scale rural employment.

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

2.14. The category is based an assessment of the ECAs landscape character, biodiversity and the historic environment characteristics. These characteristics were each attributed a score, with biodiversity being given 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 Hagley Hinterland ECA is to *protect and restore.* The overarching principle identified by the GI partnership is to maintain and restore habitat connectivity. Protect and restore acid grassland and wooded habitats.

Landscape and biodiversity

2.16. This Environmental Character Area divides cleanly into two parts, quite distinct in their biodiversity and landscape character. From a north/south line just east of Blakedown and due west are the Kinver Sandlands, a Regional Landscape Character Area whose character is based on the underlying geology and soils. The Landscape Type here is uniformly Sandstone Estatelands, except for a small linear area of Riverside Meadows following the course of the River Stour. The landscape is set out in a strongly geometric pattern of large rectangular fields with straight roads and hedgerows. The sandy, free draining soils in this western part of the ECA are acid and generally of low fertility, giving rise to the most extensive areas of heathland and acid grassland in the county. Examples include Hartlebury Common and Devil's Spittleful and Rifle Range Nature Reserve.

2.17. East of this east/west divide, the landscape is more varied with a range of Landscape Types including Estate Farmlands, Principal Timbered Farmlands, Principal Settled Farmlands, Enclosed Commons and Wooded Hills and Farmlands. Here the ECA is a small part of the Mid-Worcestershire Forest Regional Landscape Character Area. The underlying geology is also more varied with a range of soils, both light and free draining and heavy. Generally, the western part is of a more planned character, the Landscape Type being Estate Farmlands, while the eastern part is of more ancient wooded character with smaller, irregularly shaped fields. The most northern part of this ECA includes the locally dominant Clent Hills and is contiguous with the North Worcestershire Hills ECA. Hagley Park, one of the most important designed historic landscapes in the county is also found in this northern section. The lower lying areas, particularly in the west, are subject to intensive farming which has removed many of the original hedgerow boundaries. Those remaining are a resource of hedgerow trees, some of which may be veteran or potentially veteran. In the more wooded eastern and northern parts there are also areas of wet woodland and neutral unimproved grassland.

GI Priorities:

2.18 The landscape and biodiversity priorities identified for the Hagley Hinterland ECA are[10]:

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

- Enhance and protect the hedgerow field boundaries respecting the characteristic enclosure pattern of each Landscape Type (planned or semi-regular in the Estate landscapes; organic or irregular in the Timbered and Settled Farmlands).
- Seek opportunities to protect and strengthen the woodland character and pattern (planned, discrete plantations and tree belts in the Estate landscapes; ancient, scattered hedgerow trees Settled and Timbered Farmlands, with some small woods in the latter).
- Pursue appropriate management of the heathlands in order to maintain their non-wooded character and existing biodiversity interest.
- Encourage the reversion of the Hagley designed landscape park from arable to grazing.
- Newly created GI features should aim to augment the existing resource concentrating on the main priorities for protection and creation including acid grassland and veteran tree connectivity through linking, merging and buffering existing and newly created habitats.
- Hedgerows and small woodlands provide important connectivity through the landscape.

Geodiversity

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

Historic Environment

2.19. This large character area embodies a number of distinctive landscapes and which has a currently poor archaeological record for pre post medieval remains.

2.20. Most of the mineral deposits are located in the North West of the character area and comprise terrace sand and gravels and sandstone. There have been a small number of prehistoric finds, including Palaeolithic, indicating activity during this period. The Cookley valley contains numerous post medieval industrial sites.

GI Priorities:

2.21. The historic environment priorities identified for the Hagley Hinterland ECA are[11]:

- Protect the setting of Hagley Park, enhance and create linkages with wider historic environment green networks (hedgerows and woodland).
- Protect historic water features and buffer key sites, such as moats, fishponds and millponds.
- Conserve and enhance diverse multi-period historic field patterns and hedgerows.

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

Blue Infrastructure

Flooding

2.22. Three tributary systems of ordinary watercourses drain this ECA within Bromsgrove District between West Hagley and Bromsgrove. The most northerly system includes the Fenn Brook which drains from the Clent Hills through the village of Belbroughton into Hoo Brook. This system has numerous mill ponds, culverts and weirs in its upper reaches, which, to a certain degree, protect Belbroughton from flooding. However, many of these are suffering from a lack of maintenance and capacity problems, resulting in minor local flooding which has affected properties in the village of Belbroughton.

2.23. The central system drains into the Hockley Brook, with its source located just north of Pepper Wood. This system flows through the village of Dordale. Although there are no reported flooding problems, the channel needs to be kept clear of blockages to allow rapid runoff to be conveyed. The most southerly system does not include any named watercourses. It initiates in the hills to the southwest of Bournheath village and drains to the southwest through the village of Dodford. There are no formal defences along this watercourse, although flooding has been reported due to culvert problems, or, as at Bournheath, as a consequence of the confluence of two catchments interacting with highway drains and sewers.

2.24. The final two tributary groups drain the very north of the catchment. The largest group drains the northerly slopes of the Clent Hills and includes the source of the (Bromsgrove) River Stour, which subsequently outflows through Halesowen. There are no reported instances of fluvial flooding along these watercourses, although this may be due to the lack of reporting due to the rural nature of the area. The smaller group include the Callow Brook which has its source located in the Waseley Hills Country Park and drains east through the area of Rubery located within Bromsgrove District. There are numerous reports of flooding within Rubery, which are primarily associated with rapid runoff from the upstream hillsides creating culvert capacity problems and interactions with the sewer network. There are no formal defences on either of these systems.

2.25. Gallows Brook is located in the north-western corner of the District, with its source located in the Clent Hills. It flows almost due West and becomes a Main River downstream of the Stourbridge Road, the A491. It then bisects the village of West Hagley and outflows into the River Stour. It has two main, unnamed, tributaries, both of which join Gallows Brook within West Hagley, one from the north and one from the south. There are relatively few reports of flooding within West Hagley which are attributable to this Brook or its tributaries. The most notable occurrences have been due to restrictions in the channel width, where it passes beneath road bridges or enters culverts, or capacity problems due to lack of maintenance. As with many of the other watercourses within Bromsgrove District, the Gallows Brook receives a quick run off from upstream land but also suffers from highway drainage and storm infiltration into the foul sewers. A number of

balancing ponds are also present along the southerly tributary of Gallows Brook, most notably upstream of Clent.

2.26. The Battlefield Brook also rises in the Lickey Hills, to the northwest of Spadesbourne Brook. It then flows as two tributaries which converge in the village of Catshill. Flooding has occurred down much of its length, although most notably on its easterly upstream fork in Catshill and Marlbrook. The Bromsgrove Council Drainage Engineer attributes much of this to runoff to problems associated with the Catshill area which warrants urgent attention to control localised flooding.

2.27. This ECA includes the sources and headwaters of these watercourses and for much of the year they are small in size with fairly low flows. However, due to the topography, geology and the effect of development, the catchments have a rapid rainfall-runoff response and thus during rain storms the water levels within the watercourses increase rapidly. 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.

2.28. Within the Wyre Forest part of this ECA the issues are simpler. The key source of flooding within the District is from the Main River network, notably in Kidderminster from the Stour, particularly where it combines with flooding from the Staffordshire and Worcestershire Canal. In isolation, the canal system operates effectively and is able to accommodate the flows that enter it from feeder streams and its own small catchment areas. However, as evidenced in the events of June and July 2007, problems arise when the River Stour interacts with the canal system. When river levels in the Stour exceed the bank heights of the canal, water enters the canal system and quickly uses the storage afforded by the available freeboard. The canal then acts as a conduit to flood water, passing flood water downstream. This situation was observed in the summer of 2007, when levels in the River Stour at Kinver, just north of the Wyre Forest District boundary, exceeded the towpath level of the canal. The canal was unable to cope with the additional flux of water resulting in bank failure and ultimately property flooding at Whittington (outside the District).

2.29. Very heavy rainfall within the District has the potential to result in large numbers of individual local floods. Surface water run-off management in the entire District therefore remains an important issue for all developments which highlight the need for Sustainable Drainage Systems (SUDS) thereby maximising the use of source control measures.

2.30. Groundwater flooding is not a particular cause for concern within Bromsgrove District as the underlying aquifer tends to drain when water levels within it become too high. The Environment Agency has also stated that due to the high levels of abstraction from this aquifer for water supply, the groundwater levels have never reached the surface.

2.31. The Environment Agency is not aware of any specific incidences of groundwater flooding within the Wyre Forest District.

2.32. The River Severn Catchment Flood Management Plan makes this a policy 5 area, where it will "Take further action to reduce flood risk".

Water Supply

2.33. 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.

2.34. In general this ECA is over abstracted. The CAMS reports identified that the Rivers Salwarpe and (Bromsgrove) Stour are over-abstracted. This means that existing abstraction is causing unacceptable damage to the environment at low flows on the (Bromsgrove) Stour. Most supplies in Wyre Forest District are from the Trimpley 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.

2.35. 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 groundwater and surface water sources within its administrative area. These restrictions must be taken into account when considering new development sites.

Water Quality

2.36. Almost the whole ECA is categorised as having water company or other source point source pollution pressure. Phosphate and Nitrate levels are concerning across much of Bromsgrove District, with the Hen Brook the worst, scoring quality levels of ‘Bad’. The Hen Brook is classified as ‘Poor’ along all its sections. This will be partially due to the agricultural practices in the upstream rural parts of the District and cause concern for eutrophication and water supply.

2.37. In Wyre Forest the river Stour and Blakedown Brook are most at risk of failing WFD quality standards.

GI Priorities:

2.38. The blue infrastructure priorities identified for the Hagley Hinterland ECA are[12]:

- 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

2.39. 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.

2.40. The tourism industry plays a vital role in strengthening the Worcestershire economy by increasing inward investment, creating new business opportunities and supporting jobs. Tourism also provides leisure and recreational opportunities for residents making it an attractive place to live, helping to provide a good quality of life.

2.41. There are a number of visitor and tourist attractions in this ECA. Attractions include the Clent Hills, Worcestershire County Museum at Hartlebury Castle, Harvington Hall, Hagley Hall, Blakeshall Common and Kingsford Forest Park.

2.42. Walking and hiking are an important part of the visitor attractions in Worcestershire. There is one long distance way-marked route in this ECA. The North Worcestershire Path crosses east-west along the northern edge of the ECA via Blakeshall, Hagley and the Clent Hills on its route between Majors Green in Birmingham and Bewdley. There is also the Cookley to Kingsford Link recreational route in the north west and a network of Public Rights of Way throughout the ECA.

GI Priorities:

2.43. The access and recreation priorities identified for the Hagley Hinterland ECA are[13]:

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

- 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

2.44. The ECA is well connected to the Strategic Road Network. Junction 4 of the M5 is in eastern outcrop of the ECA and connects to the A491 to Hagley and Black Country in the north west and the A38 to Birmingham in the north east. The A456 trunk road connects Kidderminster in west, through Hagley to Birmingham in north east, and the A449 trunk road connects the ECA to the north of Kidderminster and north to Wolverhampton.

2.45. The A450 connects Hagley to Hartlebury across part of the south west of the ECA. The A448 and A442 cross the south of ECA connecting Kidderminster to Bromsgrove and Droitwich respectively. A449 trunk road crosses the southern tip of the ECA connecting Kidderminster to Worcester. Other roads in this Environmental Character Area are more minor.

2.46. 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

2.47. The Stourbridge Line runs between Worcester and Birmingham via Kidderminster. West Hagley station is on the western boundary of the ECA and Blakedown and Hartlebury stations are within the ECA.

Water

2.48. The Staffordshire and Worcestershire Canal crosses the western edge of the ECA on its route between Stourbridge and Kidderminster. This closely follows the course of the River Stour through the ECA.

GI Priorities:

2.49. The GI transport priorities identified for the Hagley Hinterland ECA are[14]:

- 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:

2.50. The LTP 3 transport priorities identified for the Hagley Hinterland 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 likely to be progressed in the short term and will include junction enhancements, street furniture decluttering, replacement and enhancement.
- **Hagley Station Enhancement Scheme** – a scheme of improvements to passenger facilities and information, and refurbishment of existing buildings and facilities, which is likely to be progressed in the short term.
- **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.
- **Blakedown Station Enhancement Scheme** – improvements to access and facilities at the station which could include a new station car park, passenger shelters and further real time information display boards, which is likely to be progressed in the medium term.
- **Hartlebury Station Enhancement Scheme** – a scheme to enhance the station and promote greater use. This scheme is subject to investment by the rail industry, increased stopping services or increased demand, and is only likely to be progressed in the long term.

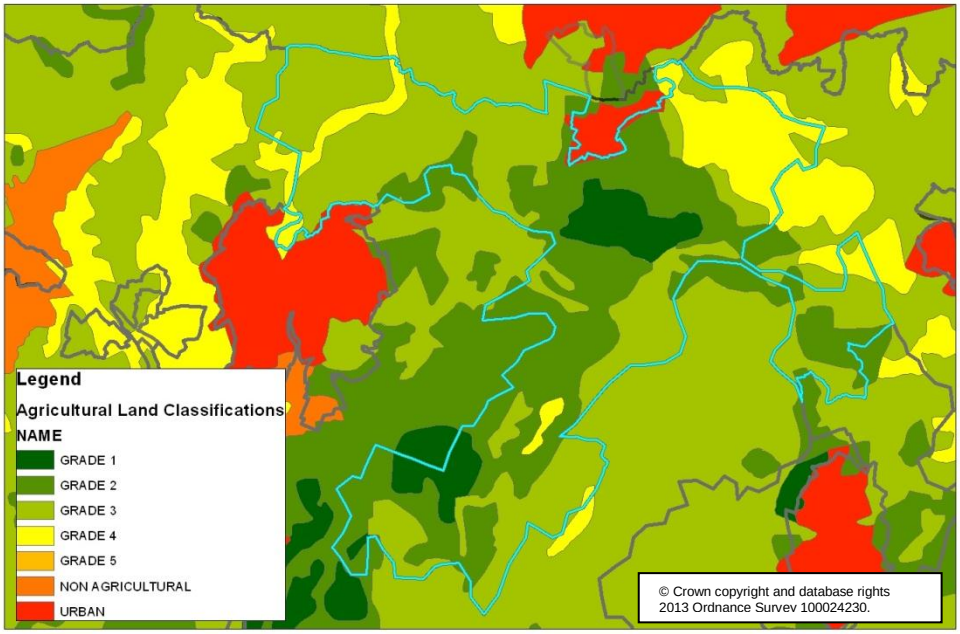
[14] Worcestershire County Council (July 2012) *Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2*

Agriculture and Forestry

2.51. Land use in this ECA is a combination of pastoral and mixed farming, with significant cash cropping to the north and east of Kidderminster and towards the Severn valley to the south.

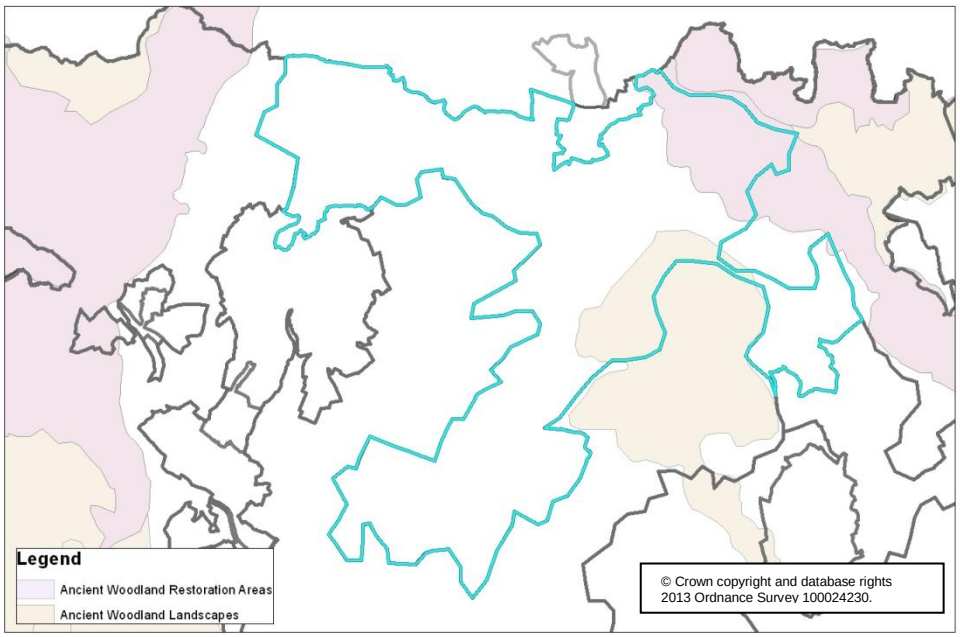
2.52. Agricultural land quality varies across the area, with high quality grade 1-3 land in most of the ECA, with patches of grade 1 land to the north east of Hartlebury and to the south of Hagley, and a significant area of lower grade 4 land in the Clent Hills in the north eastern end of the ECA, as shown in Figure 3.

Figure 3. Agricultural land quality



2.53. The forestry commission's woodland opportunity maps show that almost all of this ECA is listed as priority 1 with small areas as priority 2 for woodland creation which could benefit landscape character, biodiversity, cultural heritage and/or public access. They also show that woodland restoration in the Clent Hills could benefit ancient woodland as this and the area around Belbroughton is an ancient woodland landscape (Figure 4).

Figure 4. Ancient woodland landscape and restoration



Climate Change

2.54. 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

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

2.56. 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.

2.57. 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.

2.58. 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

2.59. 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.

2.60. 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.

2.61. 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. Parts of this ECA are however amongst the better performing areas in the county.

2.62. 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.

2.63. The overarching principles identified by the GI partnership regarding socio-economic matters for this ECA are:

- Maintain both health and economic wealth.

- The main economic issues are low household incomes for most of this area and unemployment and economic-related deprivation to the north of Kidderminster
- The health issues include above-average obesity, heart and respiratory diseases.