

Worcestershire's Local Transport Plan 2017 – 2030

Strategic Environmental Assessment Report Appendix A: Context Review and Baseline Data



Quality Information

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1. Introduction

This appendix sets out the context review and baseline data for the seven environmental themes discussed in Section 1.5.1, as follows:

- Air Quality;
- Biodiversity;
- Climate Change (Incorporating Mitigation And Adaptation);
- Land, Soil And Water Resources;
- Historic Environment And Landscape;
- Population And Communities; and
- Health And Well-Being.

The context review and environmental baseline presented in this appendix is based on the information included in the Scoping Report, which has subsequently been updated to take into account the comments received during scoping consultation.

2. Air Quality

2.1 What Is The Policy 'Context'?

2.1.1 Internationally Established Objectives

The Clean Air for Europe programme (CAFE) was launched in March 2001 with the aim of developing long-term, strategic and integrated policy advice to protect against significant negative effects of air pollution on human health and the environment.

CAFE was a programme of technical analysis and policy development that underpinned the development of the EU Thematic Strategy on Air Pollution.

The EU Thematic Strategy on Air Pollution¹ aims to cut the annual number of premature deaths from air pollution-related diseases by almost 40% by 2020 (using 2000 as the base year), as well as substantially reducing the area of forests and other ecosystems suffering damage from airborne pollutants.

2.1.2 National Policy

Key messages of National Planning Policy Framework:

- 'Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan' (paragraph 124)².
- New and existing developments should be prevented from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of air pollution³.

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland⁴ sets health-based objectives for nine main air pollutants⁵. Performance against these objectives is monitored where people are regularly present and might be exposed to air pollution.

¹ Commission of the European Communities (2005) Thematic Strategy on air pollution [online] available at <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=URISERV:l28159&from=EN> (Accessed 31 August 2016).

² Department for Communities and Local Government (2012) National Planning Policy Framework [online] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf (Accessed 31 August 2016).

³ Ibid.

⁴ Defra (2007) Air Quality Strategy for England, Scotland, Wales and Northern Ireland [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69337/pb12670-air-quality-strategy-vol2-070712.pdf (Accessed 31 August 2016).

⁵ Benzene; 1,3-butadiene; carbon monoxide (CO); lead; nitrogen dioxide (NO₂); ozone; particulates (PM₁₀); sulphur dioxide (SO₂); and polycyclic aromatic hydrocarbons (PAH). Defra is currently consulting on amending this list.

The Defra report 'Action for air quality in a changing climate' ⁶ focuses on the synergies between the two issues of air quality and climate change. In particular, it notes the potential for additional health benefits through the closer integration of climate and air pollution policy. It is suggested that co-benefits can be realised through a variety of means, including promoting low carbon vehicles and renewable energy.

2.1.3 The Local Context

Herefordshire and Worcestershire have produced a cross-county joint air quality strategy ⁷. The strategy identifies commitments, particularly for communication and co-operation within and between local authorities, external organisations and the community. The commitments are grouped under a number of relevant policy sectors, including air quality, planning, transport, climate change and energy management, health and education, industry and domestic sectors.

District, borough and city councils are required to monitor air quality and report regularly to Defra and take action where nationally set levels are likely to be exceeded. Where there are

exceedances in the annual mean NO₂ UK Air Quality Strategy objective and the EU limit value threshold of 40µg/m³ an action plan for that location needs to be produced. These areas where there are exceedances are compiled into an Air Quality Action Plan for Worcestershire ⁸, and subsequently progress is monitored and reported through annual progress reports ⁹.

2.2 What Is The 'Baseline'?

2.2.1 Current Baseline

Worcestershire's district councils have declared a total of ten Air Quality Management Areas (AQMAs) in the county, due to exceedances of the annual mean NO₂ threshold of 40µg/m³. These ten AQMAs are described in the following paragraphs.

Road transport is the dominant source of pollution in areas exceeding the NO₂ limit values in the UK. On average, local traffic contributes 60% of total UK NO_x concentrations, though urban background contributions from traffic, domestic and industry sources are also relevant ¹⁰.

⁶ Defra (2010) Air Pollution: Action in a Changing Climate [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69340/pb13378-air-pollution.pdf (Accessed 3a August 2016).

⁷ Wyre Forest District Council et al. (2009) Air Quality a strategy for Herefordshire and Worcestershire [online] available at: <https://www.herefordshire.gov.uk/environmental-protection/pollution-control/pollution-control-air-quality> (Accessed 27 August 2016).

⁸ Worcestershire Regulatory Services (2013) Air Quality Action Plan for Worcestershire. available at: <http://www.worcsregservices.gov.uk/environmental-health/pollution/air-quality/air-quality-action-plan.aspx> (Accessed 25 August 2016).

⁹ Worcestershire Regulatory Services (2015) Air Quality Action Plan Progress Report for Worcestershire April 2013 – April 2015. available at: <http://www.worcsregservices.gov.uk/environmental-health/pollution/air-quality/air-quality-action-plan.aspx> (Accessed 25 August 2016).

¹⁰ DEFRA (2011) Air Quality Plans for the achievement of EU air quality limit values for nitrogen dioxide (NO₂) in the UK [online] available at: https://uk-air.defra.gov.uk/assets/documents/no2ten/110921_UK_overview_document.pdf (Accessed 31 August 2016).

North East Worcestershire

Stoke Heath AQMA

The current area of the Stoke Heath AQMA An area encompassing parts of Redditch Road, Sherwood Road, Austin Road, Stoke Road and Hanbury Road in Stoke Heath, Bromsgrove. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Alteration to phasing of traffic light systems;
- Freight quality partnership;
- Promote flexible working arrangements; and
- Two in road bus stops on carriageway either side of central street canyon.

Lickey End AQMA

The Lickey End AQMA comprises approximately 29 residential properties along four roads emanating from the Junction 1 M42 gyratory, 2km north-northeast of Bromsgrove Town Centre. Additionally there is a slip road exiting onto the eastbound M42 below and a further slip road for westbound traffic exiting the motorway to join the gyratory. The motorway underpasses beneath the gyratory and continues onto join the M5 at junction 4a. Long term local trend data indicates highest levels of NO₂ at current relevant exposure on A38 Birmingham Road south. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Alteration to phasing of traffic light systems;
- Promote flexible working arrangements;
- Narrowing of two lanes into one causes bottleneck at top of A38 south (junction review);
- Traffic exiting Barnsley Hall Road – install no right turn restriction; and
- Turning right into Harvester PH from A38 south- install no right turn restriction.

Worcester Road AQMA

The current area of the AQMA comprises the B4091 Worcester Road single carriageway from St Peters Church at the bottom of Rock Hill up to and including the gyratory with the A448 Kidderminster/St Johns Road. The results of modelling within the Further Assessment indicate that the annual mean nitrogen dioxide objective is only being exceeded at a number of properties along the street canyon sections of Worcester Road i.e. its middle and northern sections. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Promote and support walking and cycling initiatives in Worcestershire;
- Travel planning;
- Zebra crossing at Hanover Street/Worcester road causes congestion; and
- Local and school traffic causes congestion exiting shrubbery road (junction review).

Kidderminster Road, Hagley AQMA

The current area of the Kidderminster Road, Hagley AQMA comprises the conjunction of two major A roads between a busy gyratory at the southern end of the AQMA and a busy traffic light junction at the northern end of the AQMA. It extends part way along the various arms from those two junctions. Long term local trend data indicates only three exceedences have been recorded in last seven years all at one receptor and a general downward trend is noted in the last four years.

The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Signalised junction of A491 (Stourbridge Road) with A456 (Kidderminster Road/Birmingham Road);
- Signalised pedestrian crossing outside Aston Martin Garage (A456); and
- Signalised pedestrian crossing on approach to Hagley Island (A456)

The Hagley Island (junction of A456 Kidderminster Road with A491 Stourbridge Road) – a major enhancement scheme is proposed to improve capacity at this island and integrate the signalised pedestrian crossing into a multiphased, multimodal junction arrangement.

Wyre Forest

Welchgate, Bewdley AQMA

The B4190 runs along Load Street from an easterly direction and then turns left up Welch Gate continuing on out of Bewdley in a westerly direction. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Alteration to phasing of traffic light systems;
- HGV or weight restriction on affected roads;
- Loading and unloading restrictions during peak traffic times; and
- Normal length buses block road in narrow bends.

Horsefair/Coventry Street AQMA

The Horsefair/Coventry Street AQMA extends from the Horsefair at its junction with Radford Avenue to the ring road, along the ring road in a southerly direction and extends up Coventry Street. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Loading and unloading restrictions during peak traffic times;
- Promote flexible working arrangements;
- Freight quality partnership;
- Alteration to phasing of traffic light systems; and
- Introduction of traffic signals at roundabouts.

South Worcestershire

Bridge Street/Dolday AQMA

The Bridge Street/Dolday AQMA comprises a one way gyratory system on the A44 on the eastern side of Worcester Bridge and the River Severn at the heart of Worcester City. The bridge is the only crossing in the city for vehicles crossing across the river. All traffic heading into or across the city from the west side of the river and towns such as Malvern, Hereford, Leominster on the A44 and A449 are forced by the one way system, once they cross the bridge to enter the AQMA. The results of modelling in the Further Assessment indicate 100+ people are subject to exceedences of the annual mean and the magnitude of the exceedence ranges from 8.8 to 17.5 $\mu\text{g}/\text{m}^3$ above the objective. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Improvement of signage to avoid AQMA;
- Freight quality partnership;
- Alteration to traffic light phasing; and
- Bus quality partnership.

Lowesmore/Rainbowhill AQMA

The Lowesmoor / Rainbow Hill AQMA comprises the majority of the single carriageway B4550 Astwood Road leading south west from the Green Lane mini roundabout junction, up and down Rainbow Hill and into Lowesmoor after the junction with the B4205 Tolladine Road. The distance between Green Hill and the western end of Lowesmoor on the fringes of the City centre is just over 1.5km. The results of modelling in the

Further Assessment indicate greater than 100 people are subject to exceedences of the annual mean and the magnitude of the exceedence ranges from 0.3 to 16.2 $\mu\text{g}/\text{m}^3$ above the objective. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Loading and unloading restrictions during peak times;
- Improvement of signage to avoid AQMA;
- Freight quality partnership; and
- Bus quality partnership.

St. Johns AQMA

The St. Johns AQMA was designated by Worcester City Council in September 2014. It is located within Worcester around the junction of the A44 (Bromyard Road) and B4486 (Malvern Road).

An Action Plan for the AQMA is due to be completed imminently.

Port Street, Evesham AQMA

The current area of the AQMA comprises a 0.25km section of the B4035 single carriageway from the corner of Shor St at the eastern extent up to the T junction with B4035 Waterside and Bridge Street. Following an initial review and adjustments, revised Long Term Local Trend data indicates only one exceedence of the annual average objective in five years to 2011. The latest (October 2015) Air Quality Action Plan Progress Report reports on a number of actions for improving air quality, to include:

- Alteration to phasing of traffic light systems/removal of signals at waterside junction;
- Introduction of signals at roundabouts;
- Bus quality partnership;
- Loading and unloading restrictions during peak traffic times; and
- Review of data to ensure AQMA is still relevant.

2.2.2 Future Baseline

Nationally there has been a downward trend in NO₂ pollution between 2000 and 2009 although this decline has not been as much as previously expected, with many urban areas concentrations having remained relatively static. The West Midlands is predicted to meet EU targets by 2020 ¹¹.

The growth of alternative fuel and electric vehicles is likely to reduce NO₂ emissions, as well as ensuring compliance of new diesel vehicles to emission standards. However, development and population growth could counteract some of these declines.

¹¹ Department for Environment, Food & Rural Affairs (2011) Air Quality Plans for the achievement of EU air quality limit values for nitrogen dioxide (NO₂) in the UK [online] available at: http://uk-air.defra.gov.uk/assets/documents/no2ten/110921_UK_overview_document.pdf

3. Biodiversity

Topics considered through the theme

- Nature conservation designations
- Habitats
- Species
- Geological features / geodiversity

3.1 What Is The Policy ‘Context’?

3.1.1 Internationally Established Objectives

The EU Biodiversity Strategy ¹² was adopted in May 2011 with the objective to ‘halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020’.

3.1.2 National Policy

Key messages of the NPPF include:

- Contributing to the Government’s commitment to halt the overall decline in biodiversity by minimising impacts and achieving net gains in biodiversity wherever possible;

- Promoting the ‘preservation, restoration and recreation of priority habitats, ecological networks’ and the ‘protection and recovery of priority species’ and planning for biodiversity at a landscape-scale across local authority boundaries;
- Setting criteria based policies for the protection of internationally, nationally and locally designated sites, giving weight to their importance not just individually but as a part of a wider ecological network;
- Taking account of the effects of climate change in the long term. Adopt proactive strategies to adaptation and manage risks through adaptation measures including green infrastructure (i.e. ‘a network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities’);
- Planning for ‘green infrastructure’ as part of planning for ‘ecological networks’; and
- High quality open spaces should be protected or their loss mitigated, unless a lack of need is established. ¹³

Further sustainability context is provided by a review of additional Government policy (Box 3.1).

¹² European Commission (2011) Our life insurance, our natural capital: an EU biodiversity strategy to 2020 [online] available at: http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/EP_resolution_april2012.pdf (Accessed 31 August 2016).

¹³ DCLG (2012) National Planning Policy Framework [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf (Accessed 31 August 2016).

Box 3.1: Further Government Policy

The **Natural Environment White Paper (NEWP)**¹⁴ sets out the importance of a healthy, functioning natural environment to sustained economic growth, prospering communities and personal well-being. It was in part a response to the UK's failure to halt and reverse the decline in biodiversity by 2010 and it signalled a move away from the traditional approach of protecting biodiversity in nature reserves to adopting a landscape approach to protecting and enhancing biodiversity. The NEWP also aims to create a green economy in which economic growth and the health of our natural resources sustain each other and markets, business and Government better reflect the value of nature.

The NEWP recognises that green infrastructure is 'one of the most effective tools available' to manage 'environmental risks such as flooding and heat waves'

The Government published '**Biodiversity 2020**'¹⁵, it states that the objective should be to: 'guide development to the best locations, encourage greener design and enable development to enhance natural networks'.

The **Biodiversity Offsetting Green Paper**¹⁶ was released in September 2013. Biodiversity offsets are conservation activities designed to compensate for residual losses. The Green Paper sets out a framework for exploring offsetting.

3.1.3 The Local Context

Worcestershire Biodiversity Action Plan

There is overwhelming evidence that Worcestershire, in common with the rest of the UK, has suffered losses of habitats and species. One of the main aims of the Worcestershire Biodiversity Action Plan (BAP) 2008¹⁷ is to assess how the limited resources available can best be used to protect and enhance what remains.

The Worcestershire BAP consists of 47 Action Plans: 19 habitats, 25 species and three generic action plans covering the overarching themes of biological recording and information; biodiversity education, awareness and involvement; and policy, grants and legislation.

Each plan gives an overview of the current status of the habitat or species within the county, identifies particular threats to it and current areas of work or activity being undertaken by partner organisations. The plan then presents targets for

¹⁴ Defra (2012) The Natural Choice: securing the value of nature (Natural Environment White Paper) [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf (Accessed 31 August 2016).

¹⁵ Defra (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf (Accessed 31 August 2016).

¹⁶ Defra (2013) Biodiversity Offsetting in England Green Paper [online] available at: https://consult.defra.gov.uk/biodiversity/biodiversity_offsetting/supporting_documents/20130903Biodiversity%20offsetting%20green%20paper.pdf (Accessed 31 August 2016).

¹⁷ Worcestershire Biodiversity Partnership (2008) The Worcestershire Biodiversity Action Plan 2008 [online] available at: <http://www.wyreforestdc.gov.uk/media/107645/EB054Worcestershire-Biodiversity-Action-Plan.pdf> (Accessed 31 August 2016).

maintenance, restoration, expansion or creation (as appropriate) for the conservation of that habitat or species, followed by a list of actions that the Biodiversity Partnership should take to achieve these targets.

Worcestershire Green Infrastructure Strategy 2013 – 2018¹⁸

The Strategy has been developed to drive forward the delivery of green infrastructure in the county. It sets out county-scale principles to inform plans and strategies being developed by partner organisations to enable a coherent approach to delivery across a range of initiatives.

The Strategic Objectives of the Green Infrastructure Strategy are:

- Establish a framework of principles and priorities for green infrastructure in Worcestershire to meet the multiple integrated needs of business, the environment and communities;
- Embed the benefits of green infrastructure and the services the environment provides in supporting the successful growth of Worcestershire's economy and the health and well-being of its communities;
- Synthesise existing evidence to identify needs and opportunities to inform the future planning and management of green infrastructure in Worcestershire which complements wider networks beyond Worcestershire;

- Drive the implementation, delivery and long-term maintenance of high-quality green infrastructure in the county and ensure that measures are in place by 2018 to deliver the vision; and
- Assist partners in aligning future delivery projects and their funding streams.

3.2 What Is The 'Baseline'?

3.2.1 Current Baseline

Internationally Designated Sites

Worcestershire has two sites of international nature conservation importance (see Figure 3.1), this includes:

- Bredon Hill Special Area of Conservation (SAC); and
- Lyppard Grange Ponds SAC.

Under the Habitats Regulations¹⁹ there is a legal requirement to assess whether there are any likely significant effects of plans and/ or programmes on Natura 2000 (SACs and SPAs) and Ramsar Sites. This will be undertaken as part of the Habitat Regulations Assessment (HRA) process that accompanies the development of the LTP4.

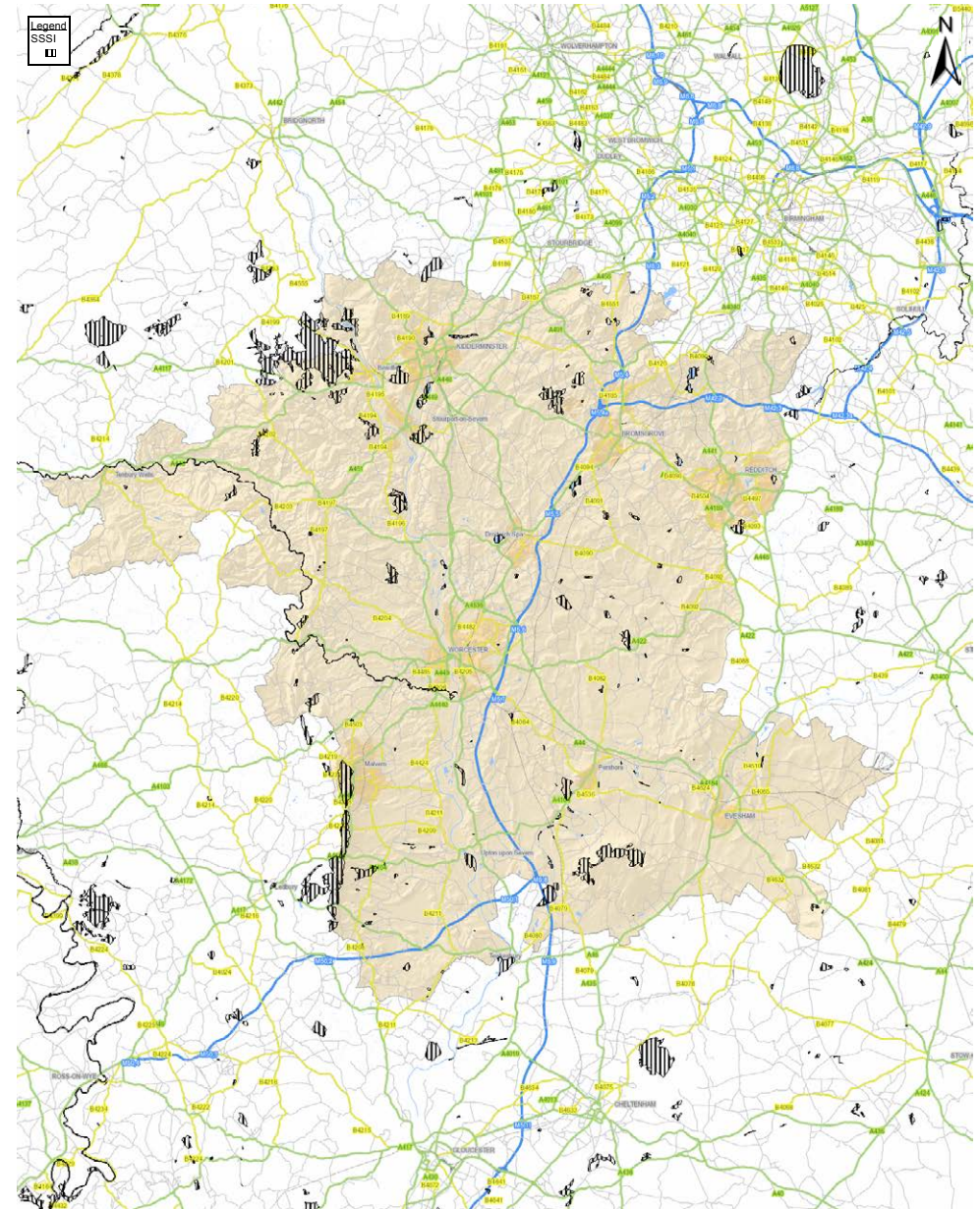
¹⁸ Worcestershire County Council (2014) Worcestershire Green Infrastructure Strategy 2013 – 2018 [online] available at: http://www.worcestershire.gov.uk/downloads/file/3780/worcestershire_gi_strategy_document_2013-2018 (Accessed 31 August 2016).

¹⁹ Conservation of Habitats and Species Regulations 2010 (SI No. 2010/490).

Nationally Designated Sites

There are 114 Sites of Special Scientific Interest (SSSI) located in Worcestershire, covering an area of 4,864 hectares. There is a reasonable distribution of SSSIs across the county, however there are large areas of SSSI on the north west county boundary just west of Bewdley and south west county boundary between Malvern and Ledbury (see Figure 3.1).

Figure 3.1: Sites Of Special Scientific Interest (SSSI) In Worcestershire



Natural England periodically assesses the condition of all SSSIs. The current condition summary of the units assessed in Worcestershire is 55.26% favourable, 38.95% unfavourable recovering, 2.8% unfavourable- no change and 2.81% unfavourable- declining. 0.18% are either partially destroyed or destroyed (Figure 3.2).

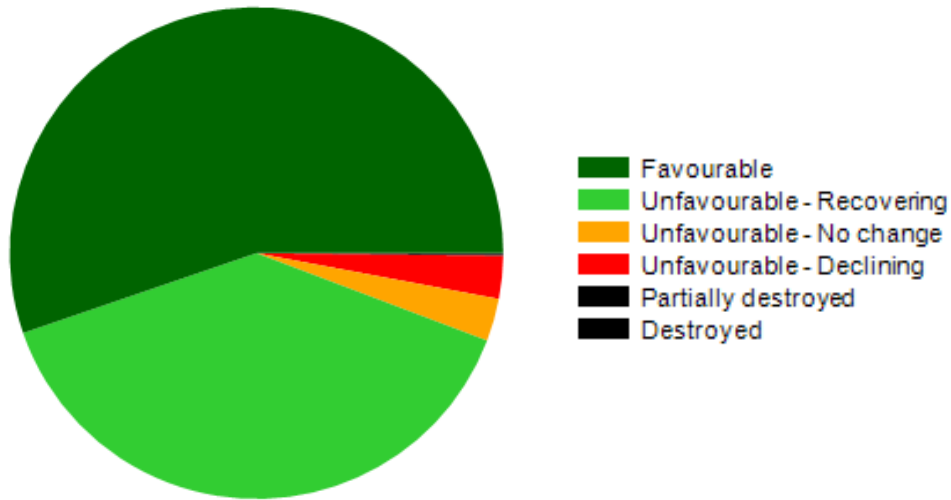


Figure 3.2: Condition Summary Of SSSI Units In Worcestershire ²⁰

National Nature Reserves (NNRs) are areas which have been designated as being among the best examples of a particular habitat and of national importance. There are four NNRs which have been designated in Worcestershire, as follows (Figure 3.4):

- Bredon Hill – Bredon Hill is a prominent outlier of the Cotswold Hills with outstanding views over the surrounding countryside. The 45 ha reserve is an internationally important site for rare invertebrates.

- Chaddesley Woods – Chaddesley Woods NNR is made up of oak woodland (believed to be a remnant of the former Royal Forest of Feckenham), areas of plantation and scrub, and grassland.
- Foster’s Green Meadows – Foster’s Green Meadows NNR is surrounded by rich hedges with field maple, wild service, spindle and elm. The largest field, known as Eades Meadow, is a hay meadow with ridge-and-furrow.
- Wyre Forest – Wyre Forest is part of one of the largest ancient lowland coppice oak woodlands in England.

Locally Designated Sites

There are currently 553 Local Sites listed in Worcestershire covering a range of habitats. Local Sites consist of Local Wildlife Sites (Figure 3.3) and Local Geological Sites (Figure 3.5).

Roadside Verge Nature Reserves

The purpose of the Roadside Verge Nature Reserve (RVNR) project is to identify, protect and manage verges of significant conservation interest. It has been estimated that 80% of Worcestershire’s botanical diversity occurs on roadside verges. Many road verges are as old, if not older than the roads themselves. Roadside verges are a haven for plants, fungi and invertebrates that are becoming increasingly scarce in the wider countryside. Some of Worcestershire’s rarest species exist on road verges, including deptford pink, tower mustard and spreading bellflower.

RVNR are designated following an ecological survey and consideration of other factors, such as road safety. There are currently 44 such designations in the county.

²⁰ Natural England SSSI condition summary [online] available at:

<https://designatedsites.naturalengland.org.uk/ReportConditionSummary.aspx?countyCode=49&ReportTitle=WORCESTERSHIRE> (Accessed 26th August 2016).

Figure 3.3: Local Wildlife Sites In Worcestershire

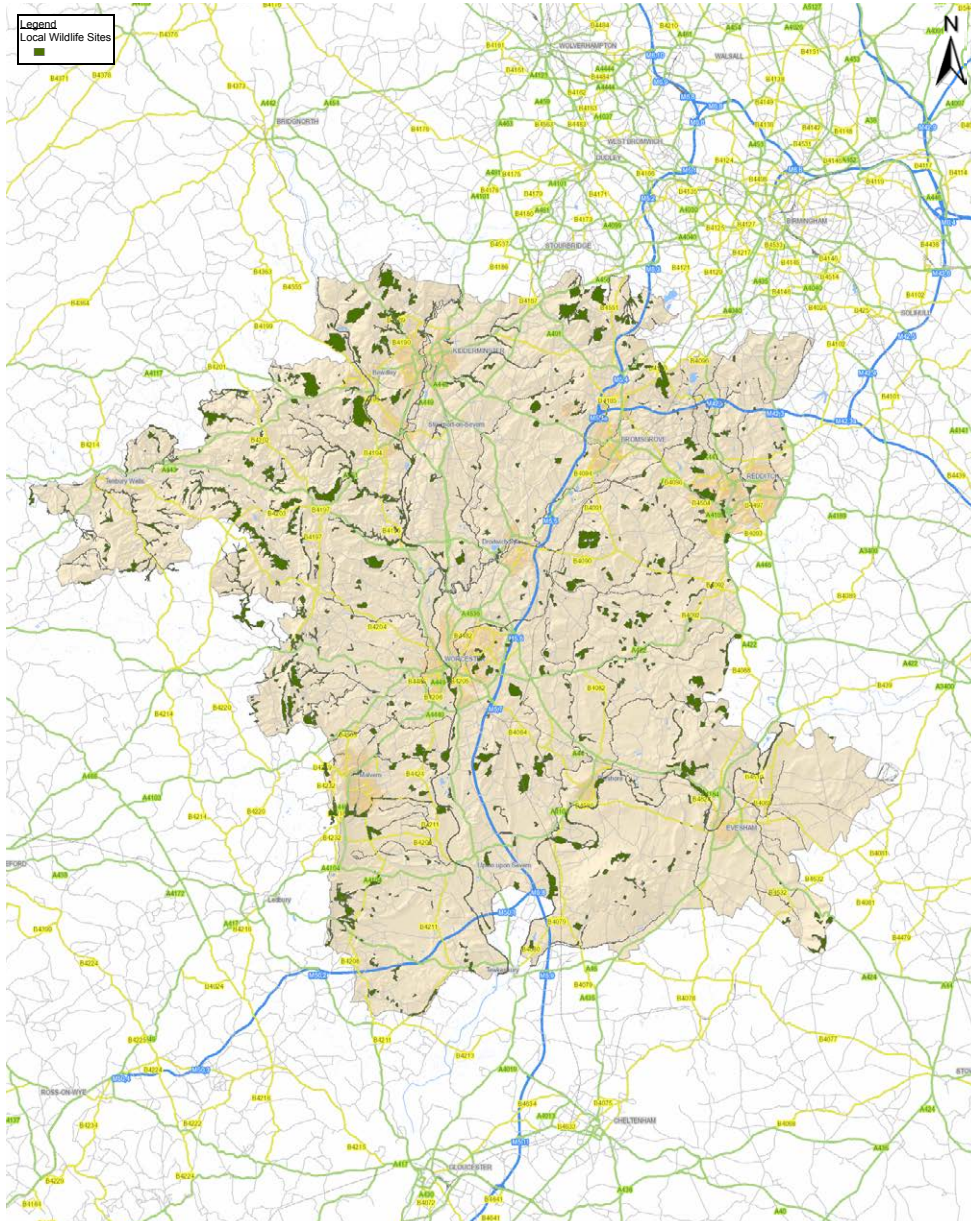
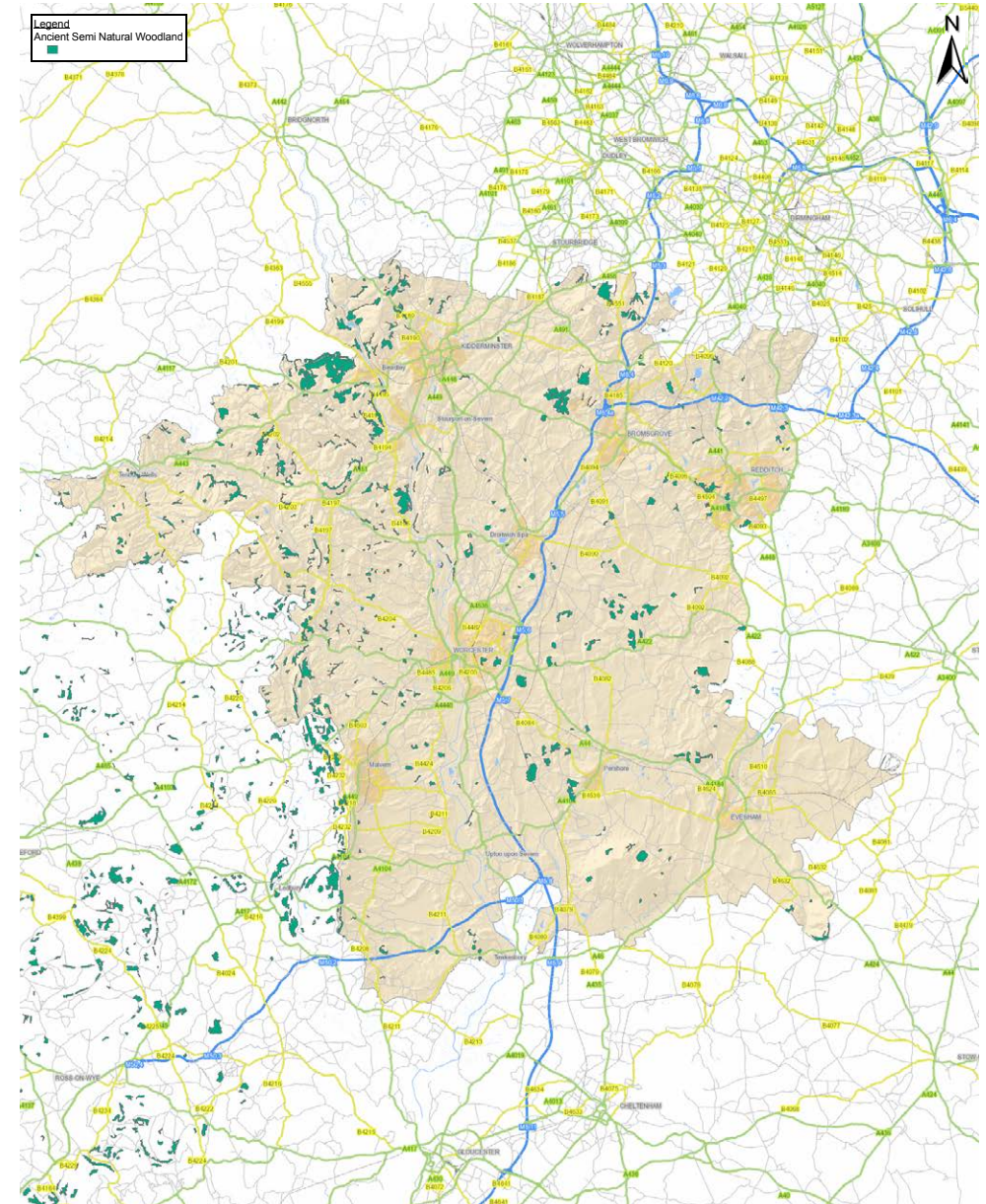


Figure 3.4: Ancient Woodland In Worcestershire



Geodiversity

Worcestershire is an area with an outstanding geodiversity spanning 680 million years. The underlying rock and soil features are clearly reflected in the landscape, natural habitats, landuse and settlement patterns.

The oldest rocks in the county are the much-altered Pre-Cambrian (pre-542 million years ago) igneous and volcanic rocks that form the Malvern Hills. These hard rocks have probably formed an area of upstanding relief for many millions of years, having been pushed up from some 3.5km below the surface.

Rocks of the Silurian Period (443-416 million years ago) in the county are world renowned, and many standard geological names have their roots within the West Midlands e.g. Ludlow and Wenlock. In the Abberley and Malvern Hills area limestones and mudstones were deposited in a shallow shelf sea and where exposed, yield many fossilised brachiopods and trilobites.

Sandstones and mudstones of the Devonian Period (416-359 million years ago) outcrop in the Teme Valley. They were formed in a hot semi-arid desert environment. West of Kidderminster, red mudstones from the upper part of the Carboniferous Coal Measures and the Wyre Forest Coalfield are found. During the deposition of the Coal Measures, England lay approximately on the equator, with the coal forming as the result of the decay of vegetation that accumulated in marshes.

Easily eroded mudstones and sandstones of Triassic (251-199 million years ago) and Jurassic (199-145 million years ago) Period floor the broad floodplain of the Severn and the Vale of Evesham. The Triassic rocks were laid down

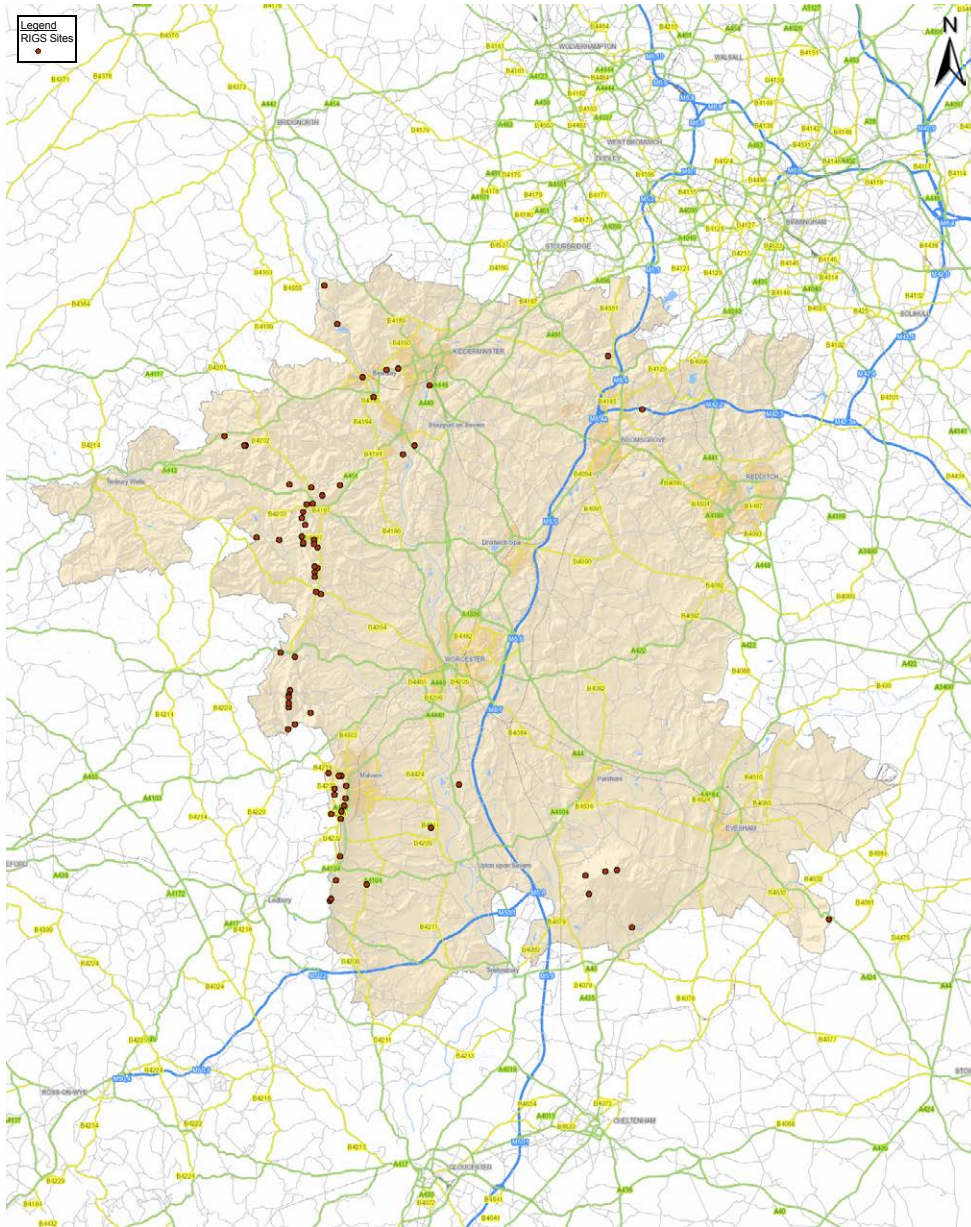
on a broad desert plain. In the early Triassic, this plain was crossed by large river systems, emanating from northern France. These sandstones of the Sherwood Sandstone Group have been quarried and used as a traditional building stone in much of the area, particularly around Bromsgrove and Kidderminster. They also form an important aquifer. The succeeding Triassic mudstones of the Mercia Mudstone Group crop out in the eastern part of the county and were laid down in a desert, dominated by dust and periodic flash floods. These rocks are overlain in the extreme east by Jurassic mudstones and thin limestones of the Lias Group deposited in a warm, shallow, tropical sea. These rocks give rise to the lower lying land adjacent to the escarpment formed by the harder Middle Jurassic limestones of the Cotswolds. Bredon Hill represents an outlying fragment of the Cotswolds and is capped by Middle Jurassic Limestones of the Inferior Oolitic Group.

More recently, Pleistocene (1.81-0.01 million years ago) sediments deposited by Ice Sheets and meltwater over the past 500,000 years, cover the land surface and take the form of terraces along the major river systems. More recent Holocene (10,000 years ago to present day) deposits occur in river valleys as river terrace deposits and alluvium. Soils are the product of the complex processes of weathering, erosion and biological interaction with the rock, sediment, river terraces and alluvium.²¹

Many of the county's features have been designated for their geodiversity resource. This includes a large number of SSSIs and Local Geodiversity Sites. The Local Geodiversity Sites present in Worcestershire are presented in Figure 3.5.

²¹ The above outline of Worcestershire's geology is from: Worcestershire Geodiversity Partnership (2006) Geodiversity Action Plan for Worcestershire

Figure 3.5: Local Geological Sites In Worcestershire



3.2.2 Future Baseline

Housing And Employment Land Allocations

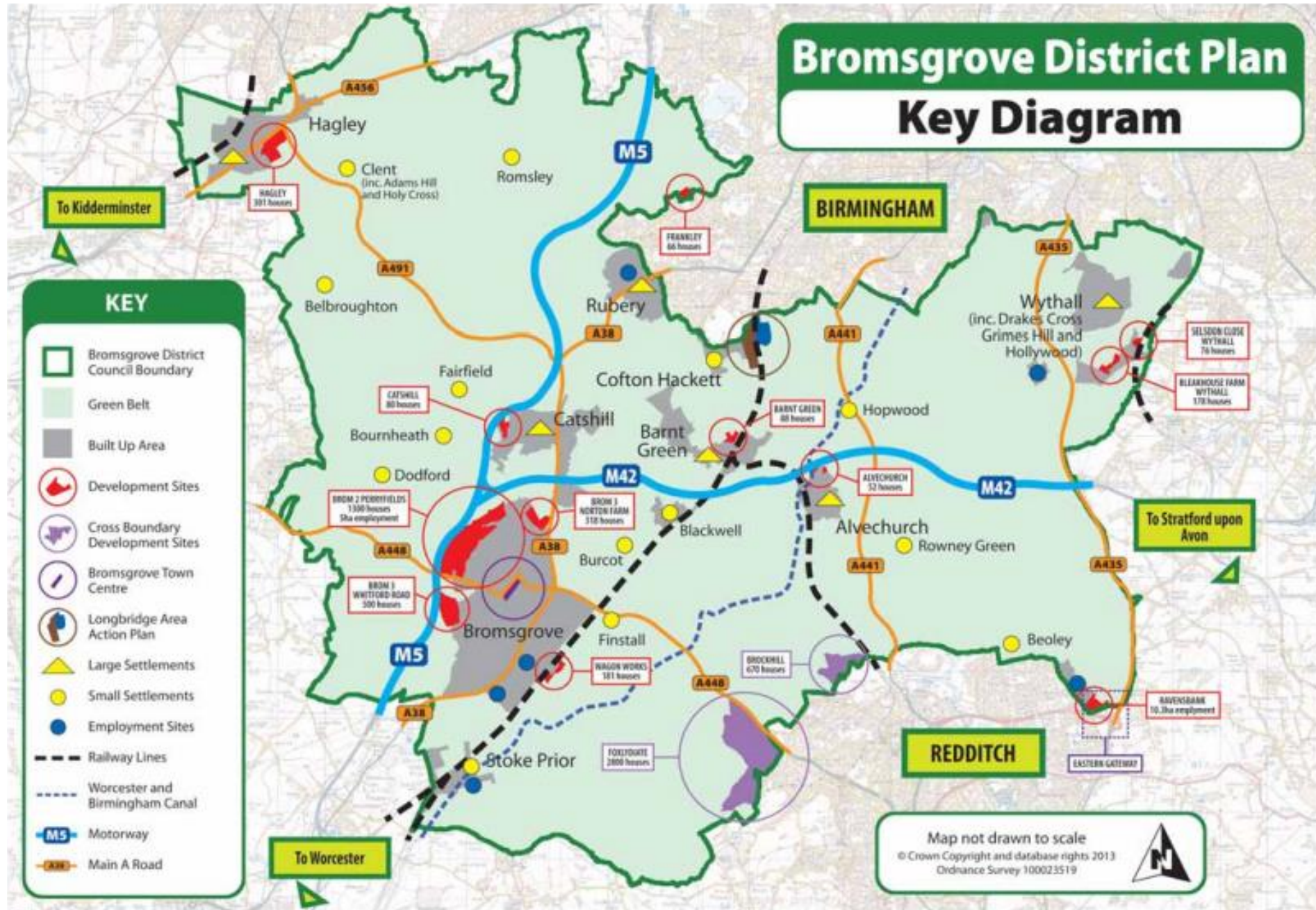
Land use change in Worcestershire has the potential affect habitats and species. In this context the current and emerging Local Plans in Worcestershire have allocations for housing and employment land. An overview of each of the district council's plans is provided below.

North East Worcestershire

The emerging Bromsgrove District Plan 2011-30 is due for adoption in March-April 2017. The Draft District Plan ²² is allocating 7,000 houses, 4,600 of these are located outside the Green Belt; in addition, Bromsgrove District Council plans to undertake a full Green Belt Review and allocate 2,400 dwellings within the Green Belt. The Plan also allocates 28 hectares for employment land. Figure 3.3 below, taken from the Plan, shows the location of proposed development sites.

²² Bromsgrove District Council (2013) Bromsgrove District Plan 2011-30 - Proposed Submission Version 2011-2030 [online] available at: <http://www.bromsgrove.gov.uk/media/748662/CD-11-BDP-Submission-Version.pdf> (last accessed 28 August 2016).

Figure 3.3: Bromsgrove District Plan 2011-30 Plan Key Diagram (showing the location of development sites)



The Borough of Redditch Local Plan No. 4²³ is due for adoption in December 2016 to January 2017, and will replace the Local Plan No. 3²⁴. The Draft Local Plan No. 4 is to make allocation for 6,400 dwellings between 2011 and 2030, and 55 hectares of employment land, this equates to around 27.5 hectares within Redditch Borough and around 5.5 hectares within Bromsgrove District at Ravensbank.

Wyre Forest

Site allocations in the Wyre Forest District are outlined in The Site Allocations and Policies Local Plan 2006 – 2026²⁵, which was adopted by Wyre Forest District Council in July 2013, and the Kidderminster Central Area Action Plan 2006 – 2026²⁶, also adopted in July 2013. The Council are currently working on a new Local Plan over the next three years, which will replace these two plans.

The Site Allocations and Policies Local Plan has allocated for the construction of 4,000 dwellings from 2006–2026 which equates to an annual build rate of 200 dwellings per annum. However, as of April 2013, 2,869 had already been supplied. Therefore only

1,131 are required to be built up until 2026. In addition, the Plan also requires the development of 44 hectares of employment land over the period, with approximately 17 hectares as of April 2013 yet to be identified. The Kidderminster Central Area Action allocates 900 dwellings within the plan period, however it is unknown how many of these have been provided already.

South Worcestershire

The administrative areas of Malvern Hills District, Worcester City and Wychavon District have joined together to produce the South Worcestershire Development Plan²⁷. This Plan was adopted in February 2016. The Plan will enable the development of nearly 300 hectares of employment land and the building of 28,400 new homes between 2006 and 2030. A significant amount of the development included in it has already taken place or planning permission has already been given. Figure 3.4, taken from the Plan, shows the location of proposed urban extensions for housing and employment.

²³ Redditch Borough Council (no date) Borough of Redditch Local Plan No. 4 [online] available at: <http://www.redditchbc.gov.uk/council/policy-and-strategy/planning-policies/borough-of-redditch-local-plan/borough-of-redditch-local-plan-no-4.aspx> (last accessed 28 August 2016).

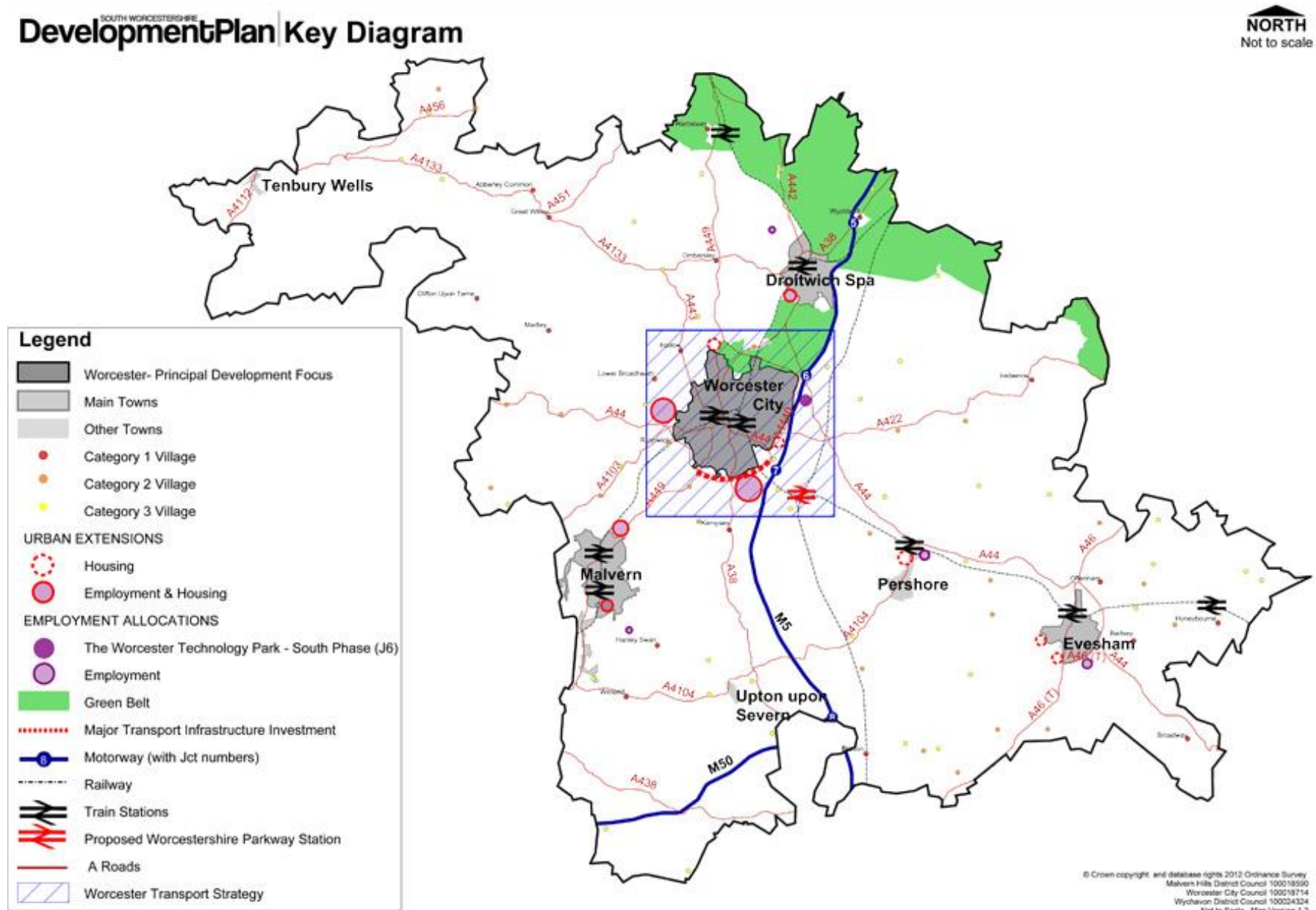
²⁴ Redditch Borough Council (2006) Borough of Redditch Local Plan No. 4 [online] available at: <http://www.redditchbc.gov.uk/council/policy-and-strategy/planning-policies/borough-of-redditch-local-plan/local-plan.aspx> (last accessed 28 August 2016).

²⁵ Wyre Forest District Council (2013) The Site Allocations and Policies Local Plan 2006 – 2026 [online] available at: <http://www.wyreforestdc.gov.uk/media/106049/Adopted-Site-Allocations-and-Policies-LP-1-.pdf> (last accessed 28 August 2016).

²⁶ Wyre Forest District Council (2013) The Kidderminster Central Area Action Plan 2006 – 2026 <http://www.wyreforestdc.gov.uk/media/106017/Kidderminster-Central-Area-Action-Plan-Adopted.pdf> (last accessed 28 August 2016).

²⁷ Worcester City Council et al. (2016) South Worcestershire Development Plan [online] available at: http://www.swdevelopmentplan.org/?page_id=12262 (last accessed 28 August 2016).

Figure 3.4: South Worcestershire Development Plan Key Diagram ²⁸ (showing the location of urban extensions)



²⁸ Worcester City Council et al. (2016) South Worcestershire Development Plan – Key Diagram [online] available at: http://www.swdevelopmentplan.org/?page_id=52 (last accessed 28 August 2016).

Green Infrastructure

The South Worcestershire Development Plan outlines provisions for Green Infrastructure, these includes areas for enhancement, restoration and creation, as of which will deliver longer term biodiversity benefits. Areas for creation in the Plan include:

- Crowle;
- Defford;
- Bickmarsh; and
- Long Marstons.

Other district council local plans, whilst they have green infrastructure policies, have not allocated sites for such provision.

Climate Change

Climate change has the potential to lead to changes in the distribution and abundance of species in Worcestershire and changes to the composition and character of habitats. There is scope for the LTP4 to help enhance ecological connections across the county to support species distribution.

4. Climate Change (Incorporating Mitigation And Adaptation)

Topics considered through the theme

- Greenhouse gas emissions
- Greenhouse gas emissions trends
- Effects of climate change
- Climate change adaptation

4.1 What Is The Policy 'Context'?

4.1.1 Internationally Established Objectives

The Carbon Plan (2011)²⁹ sets out the Government's plans for achieving the greenhouse gas emissions reductions committed to in the Climate Change Act 2008 and the first four carbon budgets. The Carbon Plan aims to reduce the UK's greenhouse gas (GHG) emissions by 80% by 2050³⁰.

Domestic transport emissions make up nearly a quarter of the UK's GHG emissions and the plan states that low carbon transport is an essential part of meeting the targets in the Carbon Plan. The Plan notes that by 2027, emissions from transport should be between 17% and 28% lower than 2009 levels.

In relation to flooding, the EU's 'Blueprint to Safeguard Europe's Water Resources'³¹ highlights the need for Member States to reduce the EU's vulnerability to floods and droughts. National water policies are primarily driven by the aims of the EC Water Framework Directive, as translated into national law by the Water Framework Regulations 2003. Key objectives include considering flood risk at all stages of the plan and development process to reduce future damage to property and loss of life.

²⁹ HM Government (2011) Carbon Plan : Delivering our low carbon future online] available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47613/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf (Accessed 31 August 2016).

³⁰ Relative to 1990 base year levels.

³¹ European Commission (2012) A Blueprint to Safeguard Europe's Water Resources [online] available at:

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0673&from=EN> (Accessed 28 August 2016).

4.1.2 National Policy

Key messages of the NPPF include:

- Support the transition to a low carbon future in a changing climate as a 'core planning principle';
- There is a key role for planning in securing radical reductions in GHG) including in terms of meeting the targets set out in the Climate Change Act 2008. Specifically, planning policy should support the move to a low carbon future through:
 - Planning for new development in locations and ways which reduce GHG emissions;
 - Actively supporting energy efficiency improvements to existing buildings;
 - Setting local requirements for building's sustainability in a way that is consistent with the Government's zero carbon buildings policy;
 - Positively promoting renewable energy technologies and considering identifying suitable areas for their construction; and
 - Encouraging those transport solutions that support reductions in greenhouse gas emissions and reduce congestion.

- Proactively planning to minimise vulnerability and increase resilience to the impacts of climate change;
- Direct development away from areas highest at risk of flooding'. Where development is necessary, it should be made safe without increasing levels of flood risk elsewhere; and
- Adapt to the effects of climate change through proactive strategies to.

Further context is provided by a review of a recent Committee on Climate Change and Department of Energy and Climate Change (DECC) guidance (Box 4.1) and a recent strategy document prepared by the Department for Transport focused on 'integrated transport' (Box 4.2).

Box 4.1: Committee On Climate Change And DECC Guidance

In the guidance document **How local authorities can reduce emissions and manage climate risk**³² planning functions are described as being a 'key lever in reducing emissions and adapting localities to a changing climate', with it considered particularly important that local authorities use these to:

- Enforce energy efficiency standards in new buildings and extensions;
- Reduce transport emissions by concentrating new developments in existing cities and large towns and/or ensuring they are well served by public transport;
- Work with developers to make renewable energy projects acceptable to local communities;
- Avoid increasing the area's risk to climate change impacts by locating new development in areas of lowest flood risk; and
- Plan for infrastructure such as low-carbon district heating networks, green infrastructure and sustainable drainage systems.

With regards to the latter point on low-carbon district heating networks, the Department of Energy and Climate Change (DECC) report.

Box 4.2: DfT Strategy For Improving Sustainable Transport Integration

This Department for Transport (DfT) '**Door to Door**' strategy³³ focuses on four core areas which we know need to be addressed so that people can be confident in choosing sustainable transport:

- Accurate, accessible and reliable information about the different transport options for their journeys;
- Convenient and affordable tickets, for an entire journey;
- Regular and straightforward connections at all stages of the journey and between different modes of transport; and
- Safe, comfortable transport facilities.

In terms of supporting 'improved connections at different stages of the journey' DfT promote:

- Investing in a high-quality cycling and walking environment; and
- Delivering more accessible transport.

In terms of transport facilities, DfT promote:

- Creating high-quality stations and interchange hubs;
- Investing in cycling and walking facilities and putting stations at the heart of the committed 'plug-in hybrid vehicle programme'; and
- Ensuring transport is part of longer-term planning and development. With regards to the latter point on low-carbon district heating networks, the Department of Energy and Climate Change (DECC) report.

³² Committee on Climate Change (2012) How local authorities can reduce emissions and manage climate risk [online] available at: <https://www.theccc.org.uk/publication/how-local-authorities-can-reduce-emissions-and-manage-climate-risks/> (Accessed 31 August 2016).

³³ Department for Transport (2013). Door to Door: A strategy for improving sustainable transport integration [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/142539/door-to-door-strategy.pdf (Accessed 31 August 2016).

In terms of adaptation, the UK response includes a national Climate Change Risk Assessment (January 2012)³⁴ and the National Adaptation Programme (July 2013)³⁵, which will be reviewed every five years. Box 4.3 discusses the new approaches to flood risk management brought about through the 2010 Flood and Water Management Act.

Box 4.3: Further Government Guidance On Flood Risk

The **Flood and Water Management Act**³⁶ highlights that alternatives to traditional engineering approaches to flood risk management include:

- Utilising the environment in order to reduce flooding, for example through the management of land to reduce runoff and through harnessing the ability of wetlands to store water;
- Identifying areas suitable for inundation and water storage to reduce the risk of flooding elsewhere;
- Planning to roll back development in coastal areas to avoid damage from flooding or coastal erosion; and
- Creating sustainable drainage systems (SuDS)³⁷

Further guidance is provided in the document **Planning for SuDs**³⁸. This report calls for greater recognition of the multiple benefits that water management can present. It suggests that successful SuDS are capable of 'contributing to local quality of life and green infrastructure'.

The NPPF sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change. NPPF and supporting planning practice guidance on Flooding and Coastal Change explain how climate change allowances should be included within flood risk assessments. This information is summarised in Box 4.4.

³⁴ DEFRA (2013), The National Adaptation Programme, Making the country resilient to a changing climate [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209866/pb13942-nap-20130701.pdf (Accessed 31 August 2016).

³⁵ DEFRA (2012), UK Climate Change Risk Assessment: Government Report [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69487/pb13698-climate-risk-assessment.pdf (Accessed 31 August 2016).

³⁶ Flood and Water Management Act (2010) [online] available at: http://www.legislation.gov.uk/ukpga/2010/29/pdfs/ukpga_20100029_en.pdf (Accessed 31 August 2016).

³⁷ The provisions of Schedule 3 to the Flood and Water Management Act 2010 came into force in October 2012 and will made mandatory for development areas in England and Wales to incorporate SuDs.

³⁸ CIRIA (2010) Planning for SuDs – making it happen [online] available at: <http://www.ciria.org/ItemDetail?iProductcode=C687&Category=BOOK> (Accessed 31 August 2016).

Box 4.4: Environment Agency Guidance On Flood Risk Assessments: Climate Change Allowances

This Environment Agency guidance '**Flood risk assessments: climate change allowances**'³⁹ sets out how Flood risk assessments should minimise vulnerability and provide resilience to the impacts of climate change. Flood risk assessments should demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account.

Making an allowance for climate change in your flood risk assessment will help to minimise vulnerability and provide resilience to flooding and coastal change in the future.

The climate change allowances are predictions of anticipated change for:

- Peak river flow by river basin district;
- Peak rainfall intensity;
- Sea level rise; and
- Offshore wind speed and extreme wave height.

They are based on climate change projections and different scenarios of carbon dioxide (CO₂) emissions to the atmosphere. There are different allowances for different epochs or periods of time over the next century.

The National Planning Practice Guidance (NPPG) refers to Environment Agency guidance on considering climate change in planning decisions which is available online:

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

This has been updated and replaces the September 2013 guidance and is designed to be used to help planners, developers and advisors implement the NPPG's policies and practice guidance on flood risk. It will help inform Flood Risk Assessments (FRA's) for planning applications, local plans, neighbourhood plans and other projects.

4.1.3 The Local Context

The Worcestershire Climate Change Strategy 2012-2020⁴⁰ aims to achieve both carbon reduction and resilience to a changing climate across a range of sectors. The Strategy's aims are to:

- Build Worcestershire's low carbon economy;
- Hit tough but critical carbon targets (reduce the county's carbon emissions by 30% from 2005 levels by 2020 and put in place measures to enable reduction by 80% by 2050);
- Adapt to inevitable climate change; and
- Empower Worcestershire's communities to take action.

³⁹ Environment Agency (2016) Flood risk assessments: climate change allowances [online] available at: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> (Accessed 19 December 2016).

⁴⁰ Worcestershire Partnership (2013) Worcestershire Climate Change Strategy 2012-2020 [online] available at: http://www.worcestershire.gov.uk/info/20235/sustainability/1092/county_strategies (last accessed 28 August 2016).

The Worcestershire Climate Change Strategy Action Plan ⁴¹ outlines actions to be taken to aid the implementation of the County wide Climate Change Strategy. In addition, the Worcestershire Climate Local Flood Risk Management Strategy ⁴² has been produced to assist in the understanding and management of flood risk in the county. The strategy is one of a number of policies, plans and proposals being developed as part of a more integrated approach to flood risk, which includes the different responsible organisations working better together to manage flood risk for the benefit of communities and businesses in the county.

4.2 What Is The 'Baseline'?

4.2.1 Current Baseline

Carbon Dioxide Emissions

Figure 4.1 shows that between 2005 and 2012 Worcestershire has consistently had higher transport per capita emissions than the national average; though it has dropped by 0.5 tonnes per CO₂ over this time.

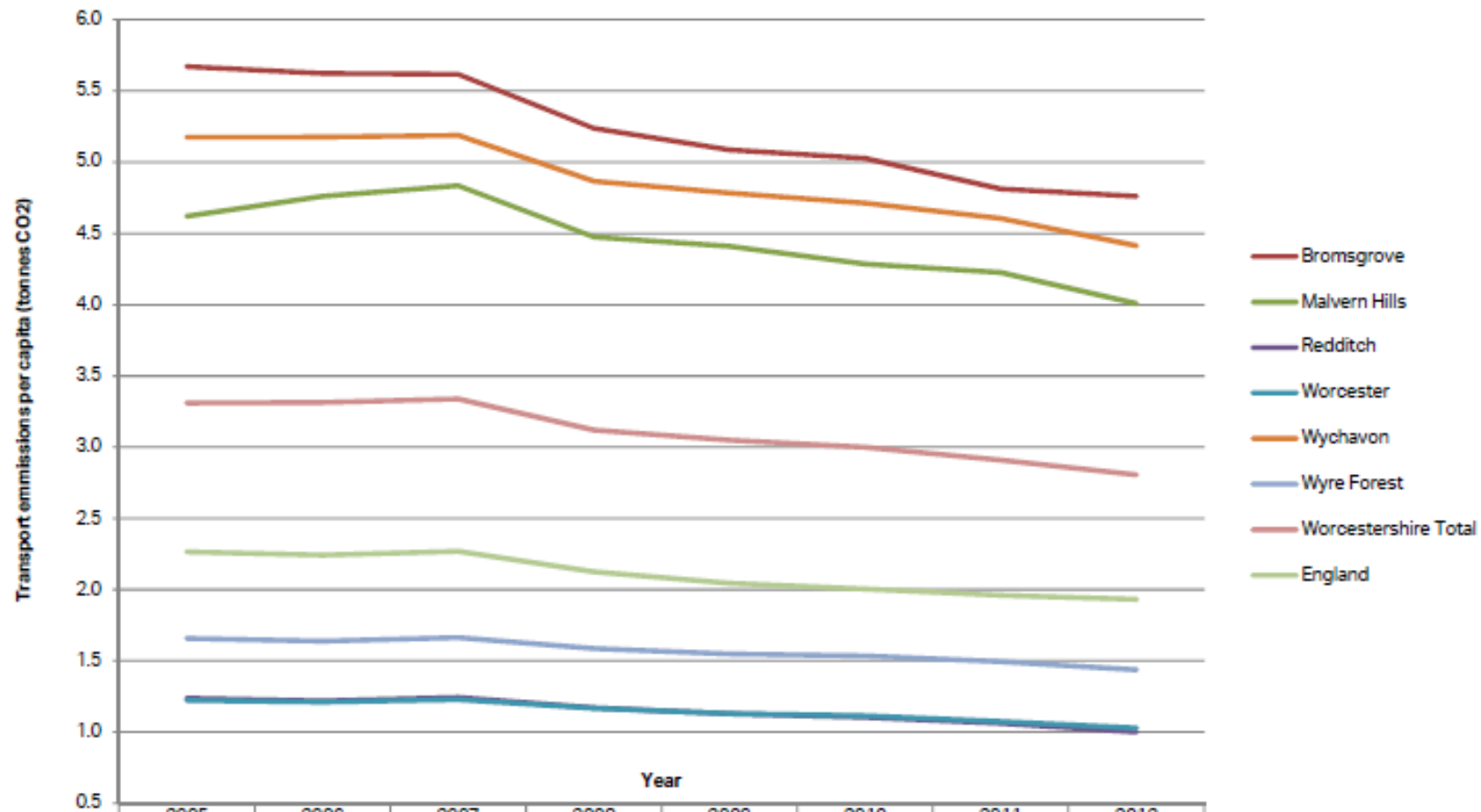
There are though significant differences between the districts, with Worcester, Redditch and Wyre Forest following below the national average, and Bromsgrove, Wychavon and Malvern Hills far exceeding the national average. For example the figure for Bromsgrove is 2.9 tonnes of CO₂ per annum higher in 2012 than the English average. However, all three of the districts exceeding the national average have seen a faster decline in emissions than those below the national average.

In 2012, transport accounted for 37.8% of total GHG emission in Worcestershire, this is higher than the national rate of 27.1%.

⁴¹ Worcestershire Partnership Climate Change Task Group (2013) Worcestershire Climate Change Strategy Action Plan [online] available at: http://www.worcestershire.gov.uk/info/20235/sustainability/1092/county_strategies (last accessed 28 August 2016).

⁴² Worcestershire County Council (2015) Worcestershire Climate Local Flood Risk Management Strategy 2015 – 2021 [online] available at: http://www.worcestershire.gov.uk/info/20236/flood_risk_management/1046/plans_policies_and_strategies/2 (last accessed 28 August 2016).

Figure 4.1: Per Capita CO2 Emissions From Transport ⁴³



	2005	2006	2007	2008	2009	2010	2011	2012
Bromsgrove	5.7	5.6	5.6	5.2	5.1	5.0	4.8	4.8
Malvern Hills	4.6	4.8	4.8	4.5	4.4	4.3	4.2	4.0
Redditch	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0
Worcester	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0
Wychavon	5.2	5.2	5.2	4.9	4.8	4.7	4.6	4.4
Wyre Forest	1.7	1.6	1.7	1.6	1.5	1.5	1.5	1.4
Worcestershire Total	3.3	3.3	3.3	3.1	3.0	3.0	2.9	2.8
England	2.3	2.2	2.3	2.1	2.0	2.0	2.0	1.9

⁴³ Department of Energy and Climate Change (2012) Official statistics: Local Authority carbon dioxide emissions [online] available at: <https://www.gov.uk/government/publications/local-authority-emissions-estimates> (accessed 28 August 2016)

Flood Risk

Significant areas of flood risk are present in Worcestershire. Whilst flooding from major watercourses in urban areas (such as the River Severn through Bewdley, Upton-upon-Severn, Stourport-on-Severn, and Worcester City; the River Avon through Evesham and the River Teme through Tenbury) is a significant issue, the Worcestershire Local Flood Risk Strategy highlights that the majority of flood events in recent years have been caused by intense rainfall leading to surface water run-off and ordinary watercourse flooding. This is opposed to flooding from watercourses flowing through urban areas ⁴⁴.

The most significant flooding event in recent years occurred in June and July of 2007, which resulted in widespread flooding from a number of different sources. It was particularly significant in terms of its impact on people, properties, businesses, infrastructure and the environment in Worcestershire with over 4,700 properties being internally flooded. The Local Flood Risk Management Strategy states an estimated cost to Worcestershire of around £6.4 million per week during summer 2007 ⁴⁵.

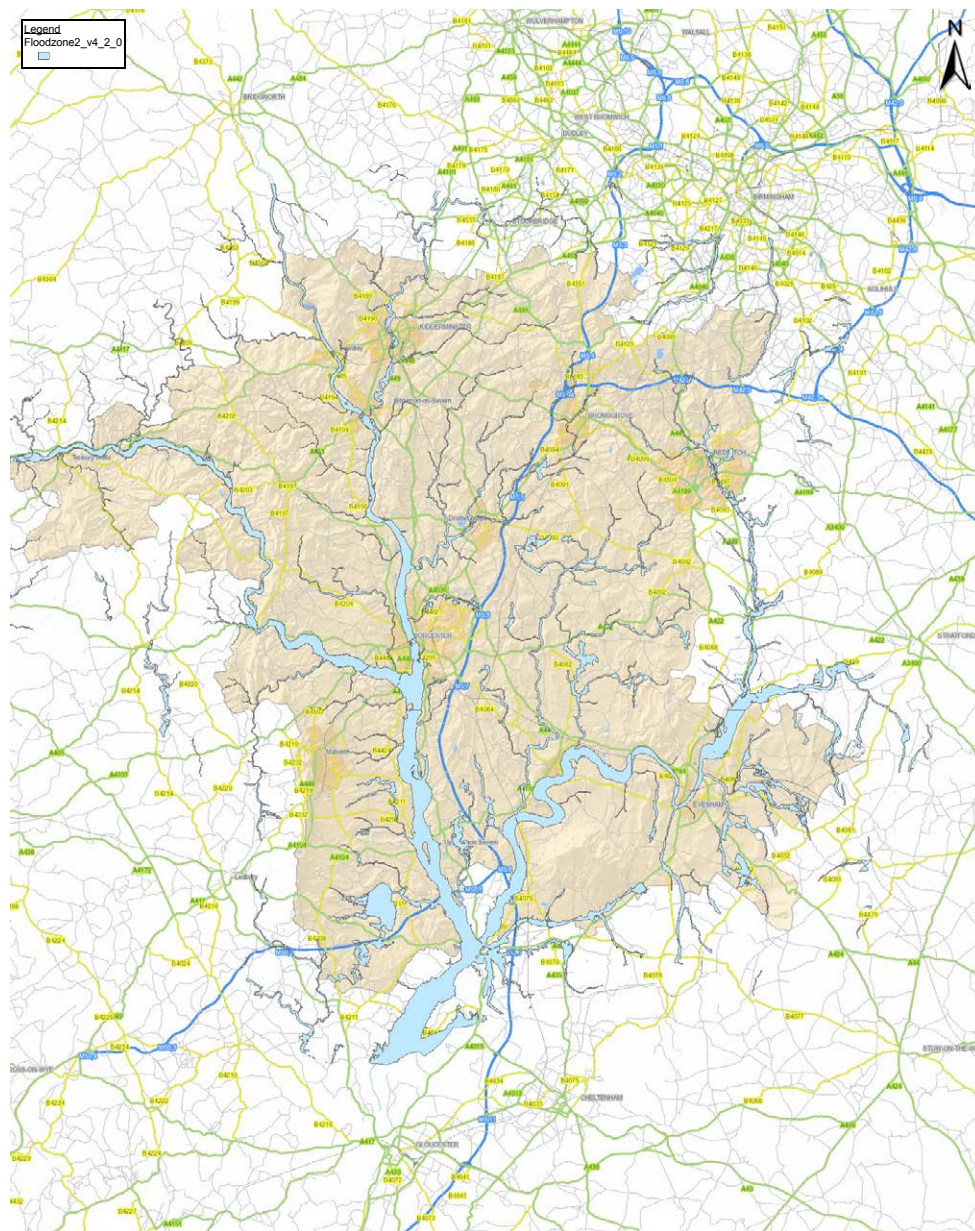
For fluvial risk, it should be noted that there is a need to include a 70% allowance for climate change (peak river flows) to inform the location, impacts and design of a transport scheme. For example, to improve flood risk resilience, the Environment Agency would expect new or improved highway infrastructure to be sited above the 1% plus climate change (70%) flood level plus an appropriate freeboard allowance.

Figure 4.2 provides a Flood Zone map for flooding from rivers in Worcestershire, denoting the location of Flood Zone 2 and higher in the county. As highlighted by the map, in general, the areas at greatest risk are those near to the River Severn, River Avon and the River Teme and their associated tributaries.

⁴⁴ Worcestershire County Council (2015) Worcestershire Climate Local Flood Risk Management Strategy 2015 – 2021[online] available at: http://www.worcestershire.gov.uk/info/20236/flood_risk_management/1046/plans_policies_and_strategies/2 (accessed 28 August 2016).

⁴⁵ Ibid

Figure 4.2: Flood Zone Map



4.2.2 Future Baseline

Carbon Dioxide Emissions

In terms of climate change mitigation, per capita emissions are likely to continue to decrease as energy efficiency measures, renewable energy production and new technologies become more widely adopted (e.g. improvements in vehicle fleet fuel efficiency and the increasing use of alternative fuel and electric vehicles etc.). However the delivery of the forecast new homes and employment land in Worcestershire may cause total net emissions to increase.

Flood Risk

Climate change has the potential to increase the occurrence of extreme weather events in the county, and therefore increase the likelihood and also severity of flooding. This enhances the need for resilience and adaptation.

The outcome of research on the probable effects of climate change in the UK was released in 2009 by the UK Climate Projections (UKCP09) team. UKCP09 gives climate information for the UK up to the end of this century and projections of future changes to the climate are provided, based on simulations from climate models. Projections are broken down to a regional level across the UK and are shown in probabilistic form, which illustrate the potential range of changes and the level of confidence in each prediction.

As highlighted by the research, the effects of climate change for the West Midlands by 2050 for a medium emissions scenario ⁴⁶ are likely to be as follows:

- The central estimate of increase in winter mean temperature is 2.1°C and an increase in summer mean temperature of 2.6°C; and
- The central estimate of change in winter mean precipitation of an increase in 13% and a summer mean precipitation decrease of 17%.

⁴⁶ UK Climate Projections (2014) West Midlands 2050s Medium Emissions Scenario [online] available at: <http://ukclimateprojections.metoffice.gov.uk/23767?emission=medium> (accessed 28 August 2016)

5. Land, soil and water resources

Topics considered through the theme

- Soils resources
- Minerals
- Waste management
- Water bodies (rivers, lakes, groundwater etc.)
- Water availability
- Water quality

5.1 What Is The Policy 'Context'?

5.1.1 Internationally Established Objectives

Soil

The EU's Soil Thematic Strategy ⁴⁷ presents a strategy for protecting soils resources in Europe. The main aim of the strategy is to minimise soil degradation and limit associated detrimental effects linked to water quality and quantity, human

health, climate change, biodiversity, and food safety. It sets out the following: a proposed legislative framework for the protection and sustainable use of soil, in order to integrate soil protection into national and EU policies; measures to improve knowledge of soil functions; and measures to increase public awareness. It also seeks to establish rational land use planning practices at all levels of government to ensure the sustainability of soils, consistent with a "precautionary principle" used by the EU in establishing environmental policy.

Waste

The EU's Thematic Strategy on the Prevention and Recycling of Waste is long-term strategy which aims to ensure that Europe becomes a recycling society that seeks to avoid waste and which uses waste as a resource ⁴⁸. The strategy proposes that approaches to waste management are modernised and that they promote more and better recycling.

The EU's Waste Framework Directive ⁴⁹ provides the legislative framework for the collection, transport, recovery and disposal of waste. The directive also requires member states to take appropriate measures to encourage the prevention or reduction of waste production.

⁴⁷ European Commission (2006) Soil Thematic Policy [online] available at: http://ec.europa.eu/environment/soil/three_en.htm (Accessed 28 August 2016).

⁴⁸ European Commission (2011) Thematic Strategy on the Prevention and Recycling of Waste [online] available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0013:FIN:EN:PDF> (Accessed 28 August 2016).

⁴⁹ European Commission (2006) Waste Framework Directive [online] available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0098&from=EN> (Accessed 28 August 2016).

Water

The EU's 'Blueprint to Safeguard Europe's Water Resources'⁵⁰ highlights the need for Member States to reduce pressure on water resources, for instance by using green infrastructure such as wetlands, floodplains and buffer strips along watercourses. This would also reduce the EU's vulnerability to floods and droughts.

National water policies are primarily driven by the aims of the EC Water Framework Directive, as translated into national law by the Water Framework Regulations 2003. Key objectives include improving the quality of rivers and other water bodies to 'good ecological status' by 2015; considering flood risk at all stages of the plan and development process in order to reduce future damage to property and loss of life; and incorporating water efficiency measures into new developments.

The Directive drives a catchment-based approach to water management. In England there are 83 water catchments and it is Defra's intention is to establish a 'framework for integrated catchment management' across England⁵¹. The Environment Agency is currently seeking to establish 'Significant Water Management Issues' within catchments with a view to presenting second River Basin Management Plans to ministers in 2015⁵². The Plans will seek to deliver the objectives of the WFD namely:

- Enhance the status and prevent the further deterioration of aquatic ecosystems and associated wetlands which depend on aquatic ecosystems;
- Promote the sustainable use of water;
- Reduce the pollution of water, especially by 'priority' and 'priority hazardous' substances; and
- Ensure the progressive reduction of groundwater pollution.

5.1.2 National Policy

Soils

Key messages of the NPPF include:

- Protecting and enhancing soils taking into account the value of best and most versatile agricultural land;
- Preventing new or existing development from being 'adversely affected' by the presence of 'unacceptable levels' of soil pollution or land instability and be willing to remediate and mitigate 'despoiled, degraded, derelict, contaminated and unstable land, where appropriate'; and
- Encouraging the effective use of land' through the reuse of land which has been previously developed, 'provided that this is not of high environmental value'.

⁵⁰ European Commission (2012) A Blueprint to Safeguard Europe's Water Resources [online] available at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0673&from=EN> (Accessed 28 August 2016).

⁵¹ Department for Food, the Environment and Rural Affairs (2013) Catchment Based Approach: Improving the quality of our water environment [online] available at: <https://www.gov.uk/government/publications/catchment-based-approach-improving-the-quality-of-our-water-environment> (Accessed 28 August 2016).

⁵² Environment Agency (2014) Public dialogue on Significant Water Management Issues [online] available at: <https://www.gov.uk/government/publications/public-dialogue-on-significant-water-management-issues> (Accessed 28 August 2016).

In **Safeguarding our Soils: A strategy for England**⁵³, a vision is set out for the future of soils in the country. An element of this vision is the condition of soils in urban areas, which are to be ‘sufficiently valued for the ecosystem services they provide and given appropriate weight in the planning system’. Good quality soils in urban areas are recognised as being ‘vital in supporting ecosystems, facilitating drainage and providing urban green spaces for communities’. That planning decisions take sufficient account of soil quality is a concern of the report, in particular in cases where ‘significant areas of the best and most versatile agricultural land are involved’. Preventing the pollution of soils and addressing the historic legacy of contaminated land is another element of the reports vision.

In terms of future trends, the report notes that pressures on soils and competition for land is likely to increase in future as a result of population growth, As a result, the effects of these trends and the ‘changing demands on our soils’ needs to be better understood and it must be ensured that ‘appropriate consideration is given to soils in the planning process’.

Waste

The Waste Management Plan for England was published in December 2013⁵⁴. The plan aims to achieve the objectives of the revised Waste Framework Directive, namely:

“...to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use.”

Water

The Water White Paper⁵⁵ sets out the Government’s vision for a more resilient water sector, where water is valued as the precious resource it is. It states the measures that will be taken to tackle issues such as poorly performing ecosystems, and the combined impacts of climate change and population growth on stressed water resources.

Commitments are made in the White Paper to ‘encourage and incentivise water efficiency measures’ on the demand side. Through these measures and the demand management measures set out in Water Resource Management Plan’s for water companies, the Government aspires to reduce average demand to 130 litres per head, per day by 2030.

⁵³ Defra (2009) Safeguarding our Soils: A strategy for England [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69261/pb13297-soil-strategy-090910.pdf (Accessed 28 August 2016).

⁵⁴ Defra (2013) Waste Management Plan for England [online] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265810/pb14100-waste-management-plan-20131213.pdf (Accessed 28 August 2016).

⁵⁵ Defra (2011) Water for life (The Water White Paper) [online] available at <http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf>

The avoidance of pollution is also a consideration in the White Paper, which led to a Government consultation on a national strategy on urban diffuse pollution in 2012. The consultation report ⁵⁶ notes that pollutants affecting failing waterbodies can be broken down into a number of categories including point source pollution and diffuse pollution. Transport infrastructure can contribute to diffuse pollution to waterbodies (e.g. untreated stormwater runoff from roads).

The Environment Agency guidance **Groundwater Protection: Principles and Practice (GP3)** ⁵⁷ describes the Environment Agency's approach to the management and protection of groundwater in England and Wales. It provides a framework to manage and protect groundwater. This framework takes account of the government's sustainable development strategy and the water strategies of both Defra and the Welsh Government.

5.1.3 The Local Context

Soils

Worcestershire County Council's Planning for Soils in Worcestershire ⁵⁸ was developed to raise awareness of the importance of soils and to provide technical guidance to Local Planning Authorities with a view to policy preparation for the management and protection of Worcestershire's soil resource. The paper aims to support the strategic consideration of soils by

identifying emerging best practice and makes recommendations on how policy can best serve the sub regional interests and as a background paper to inform the development of the Waste Core Strategy, Minerals Core Strategy and Local Development Frameworks.

Waste

The Waste Core Strategy Local Plan for Worcestershire was adopted in November 2012 ⁵⁹. It covers planning for waste management in Worcestershire in the period 2012 to 2027. The Strategy notes that at present all of county's waste is transported by road, however water transportation can be commercially viable in the county, as shown through the use of the River Severn for freight transportation between Ryall and Ripple mineral workings. However it acknowledges that use of rail and canals is potential is limited or not economically viable at present.

Water

There are six Catchment Abstraction Management Plans (CAMS) which cover Worcestershire. These detail how the Environment Agency manages water resources, existing and future abstraction licences and water availability within river catchments. The Environment Agency's Water Resources Strategy Regional Action Plan for the Midlands covers water resources and flood

⁵⁶ Defra (2012) Tackling water pollution from the urban environment: Consultation on a strategy to address diffuse water pollution from the built environment [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82602/consult-udwp-doc-20121120.pdf (Accessed 28 August 2016).

⁵⁷ Environment Agency (2013) Groundwater Protection: Principles And Practice (GP3) [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297347/LIT_7660_9a3742.pdf (Accessed 19 December 2016).

⁵⁸ Worcestershire County Council (2011) Planning for Soils in Worcestershire [online] available at: http://www.worcestershire.gov.uk/downloads/file/6751/planning_for_soil_research_paper (Accessed 28 August 2016).

⁵⁹ Worcestershire County Council (2012) Waste Core Strategy for Worcestershire available at: http://www.worcestershire.gov.uk/downloads/file/940/waste_core_strategy_local_plan (Accessed 28 August 2016).

risk management in the Severn and Humber River basins and their sub-catchments ⁶⁰. Any new development, including new transport infrastructure, would need to be considered in light of the management objectives for these catchment where relevant.

‘Planning for Water in Worcestershire’ ⁶¹ highlights the water issues facing the County and provides examples of best practice for managing/planning water resource in the future. The document provides an assessment of the following topic areas:

- Water quality;
- Water resources and infrastructure; and
- Flood risk.

5.2 What Is The ‘Baseline’?

5.2.1 Current Baseline

Soil

The agricultural land classifications for Worcestershire are shown in Figure 5.1. The Agricultural Land Classification classifies land into five grades (plus ‘non-agricultural’ and ‘urban’), where Grades 1 to 3a are the ‘best and most versatile’ land and Grades 3b to 5

are of poorer quality. It should be noted that much of the data is from prior to 1976 when the distinction between Grades 3a and 3b was introduced.

In terms of the location of the best and most versatile agricultural land in the county, the majority of agricultural land in the county is Grade 3; however there are significant areas of Grade 1 and 2 associated with the floodplains of the main rivers in the county.

Waste

Approximately 1.59 million tonnes of waste is produced in Worcestershire each year. This comprises municipal, commercial and industrial, construction and demolition, hazardous waste, clinical and radioactive ⁶². As of 2010, 39% is recycled, the rest going to landfill ⁶³.

No data has been identified as to how much of this waste is attributable to the transport sector, however there are targets for reductions in waste from construction and demolition sector. The Waste Core Strategy also notes that all waste is transported by road.

⁶⁰ Environment Agency (2014) Abstraction licensing strategies (CAMS process) - Shropshire Herefordshire Worcestershire and Gloucestershire (map area 8) [online] <https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process#shropshire-herefordshire-worcestershire-and-gloucestershire-map-area-8> (Accessed 28 August 2016)

⁶¹ Worcestershire County Council (2011) Planning for Water in Worcestershire [online] available at: http://www.worcestershire.gov.uk/downloads/file/6750/planning_for_water_research_paper (Accessed 28 August 2016).

⁶² Worcestershire County Council (2012) Waste Core Strategy for Worcestershire [online] available at: http://www.worcestershire.gov.uk/downloads/file/940/waste_core_strategy_local_plan (Accessed 28 August 2016).

⁶³ Of Household, Commercial, Industrial (HCI) waste managed in Worcestershire. From Table 10 in the Waste Core Strategy for Worcestershire.

Minerals

Worcestershire has a number of mineral sites, many of which are located in the floodplains of the county's main rivers, and are predominantly for sand and gravel ⁶⁴.

An emerging Minerals Local Plan is currently being developed for Worcestershire and a full draft is due for consultation in late 2016; this will replace the 1997 Hereford and Worcester Minerals Local Plan, whose policies are dated and need replacing ⁶⁵.

Water

Worcestershire is part of the Severn River Basin District, which covers the third largest river in England and Wales. In addition the River Avon and the River Teme also flow through the county.

The Environment Agency monitor all rivers for water quality, as part of the Water Framework Directive (WFD). In terms of WFD the River Severn River Basin Management Plan (RBMP) ⁶⁶ details that the Severn River Basin District has:

- 21% good ecological status or potential; and
- 95% good chemical status.

The RBMP notes that rainwater draining from roads and pavements carries many pollutants. These include: metals, vehicle emissions, silt, grit, bacteria from animal faeces and oil. When developing new infrastructure sustainable drainage

systems should be utilised to remove silt and minimise other chemicals to prevent polluting run-off; as well as incorporating green and blue infrastructure into regeneration schemes where possible.

The county contains a number of groundwater source protection zones (SPZ). These are shown in Figure 5.2. Groundwater SPZs include wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The SPZs are particularly focused to the north of the county around Kidderminster and Bromsgrove. The M42 and M54 junction is within an SPZ, as are many A roads and railways around Kidderminster and Bromsgrove.

5.2.2 Future Baseline

Future development of land has the potential to take place on greenfield land with resulting loss of agricultural land and/or potential sterilisation of mineral resources.

In terms of water quality, the requirements of the Water Framework Directive should lead to continued improvements to water quality in watercourses, as well as planning policy in regards to the introduction of sustainable drainage systems in new development. Water quality is also likely to continue to be affected by pollution incidents in the area, the presence of non-native species and physical modifications to water bodies.

⁶⁴ Worcestershire County Council (no date) Minerals Local Plan Interactive Map [online] available at: <http://gis.worcestershire.gov.uk/Website/MineralsLocalPlan/> (Accessed 29 August 2016).

⁶⁵ Worcestershire County Council (no date) Emerging Minerals Local Plan [online] available at: http://www.worcestershire.gov.uk/info/20015/planning_policy_and_strategy/250/emerging_minerals_local_plan (Accessed 29 August 2016).

⁶⁶ Environment Agency (2015) Part 1: Severn river basin district river basin management plan (2015 update) [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/501290/Severn_RBD_Part_1_river_basin_management_plan.pdf (Accessed 29 August 2016).

Figure 5.1: Agricultural Land Classifications

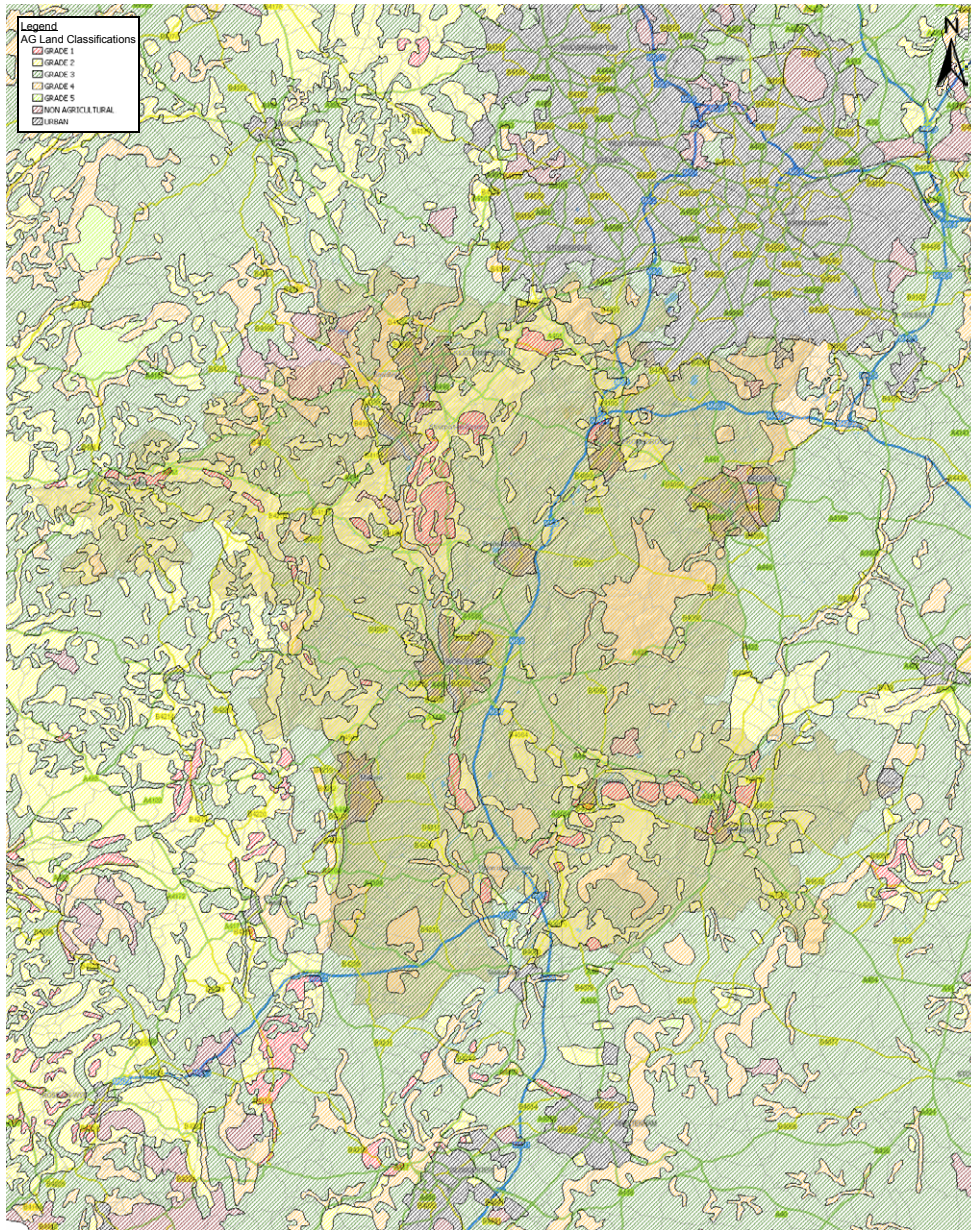
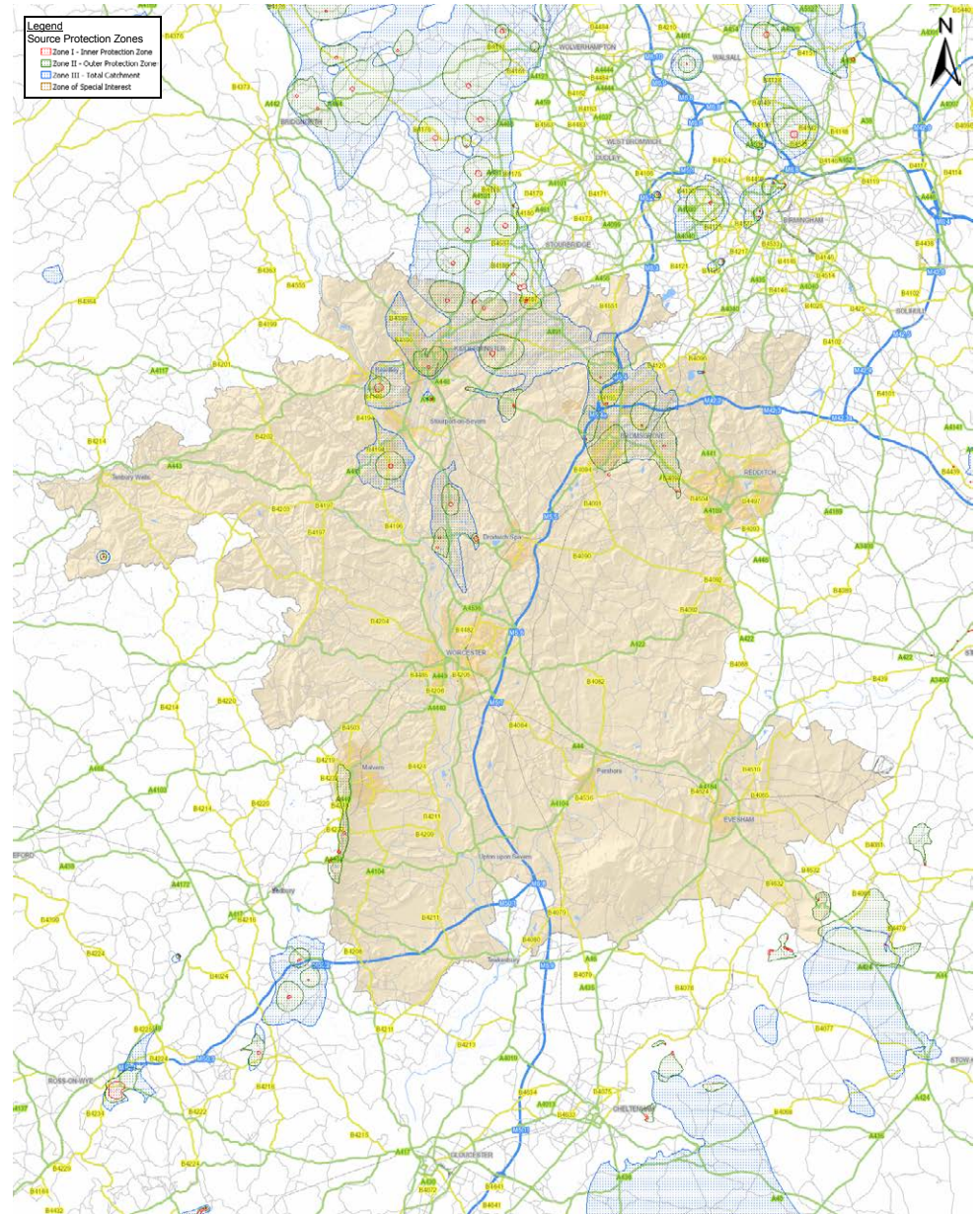


Figure 5.2: Source Protection Zones (SPZs)



6. Historic Environment And Landscape

Topics considered through the theme

- Historic environment assets (designated and non-designated sites and areas)
- Areas of Outstanding Natural Beauty
- Other landscape designations

6.1 What Is The Policy 'Context'?

6.1.1 Internationally Established Objectives

The European Landscape Convention (ELC) came into force in the UK in March 2007. The ELC defines landscape as: 'An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.' It recognises that the quality of all landscapes matters – not just those designated as 'best' or 'most valued'. Among other things, the ELC commits all signatories to establishing and implementing policies aimed at landscape protection, management and planning / integrating landscape into town planning, cultural, environmental, agricultural, social and economic policies.

6.1.2 National Policy

Key messages of the NPPF include:

Protect and enhance valued landscapes. Heritage assets should be recognised as an 'irreplaceable resource' that should be conserved in a 'manner appropriate to their significance', taking account of 'the wider social, cultural, economic and environmental benefits' of conservation, whilst also recognising the positive contribution new development can make to local character and distinctiveness.

Set out a 'positive strategy' for the 'conservation and enjoyment of the historic environment', including those heritage assets that are most at risk.

Considerable weight should be given to conserving landscape and scenic beauty in Areas of Outstanding Natural Beauty (AONB) ⁶⁷, which have the highest status of protection in relation to landscape and scenic beauty.

Consider the effects of climate change in the long term, including in terms of landscape. Adopt 'proactive strategies' to adaptation and manage risks through adaptation measures including well planned green infrastructure.

Further sustainability context is provided by a review of: the 'heritage at risk' register produced by Historic England (Box 6.1); and Government's vision and strategic aims in relation to the historic environment (Box 6.2).

⁶⁷ AONBs are designated under the National Parks and Countryside Act 1949 to conserve and enhance natural beauty.

Box 6.1: Historic England Policy

Heritage at Risk ⁶⁸ lists every heritage asset currently considered to be at risk in the UK according to local planning authority. Heritage assets are split into a number of categories namely; buildings, places of worship, scheduled monuments, registered parks and gardens, registered battlefields, protected wreck sites and Conservation Areas.

Box 6.2: Other Government Policy

The Government's Statement on the Historic Environment for England ⁶⁹ sets out its vision for the historic environment. It calls for those who have the power to shape the historic environment to recognise its value and to manage it in an intelligent manner in light of the contribution that it can make to social, economic and cultural life. Also of note is the reference to promoting the role of the historic environment within the Government's response to climate change and the wider sustainable development agenda.

6.1.3 The Local Context

Two AONBs are partially located in Worcestershire:

- The Cotswolds AONB; and
- The Malvern Hills AONB.

The Cotswolds AONB Management Plan 2013-18 ⁷⁰ promotes an AONB that:

- Retains its remarkable visual unity and scenic diversity;
- Is richer in nature, and where the historic heritage is conserved; is home to vibrant communities supported by a sustainable local economy;
- Provides a warm welcome and high-quality experience for everyone seeking inspiration, tranquillity and to be active outdoors; and
- Is adapting successfully to a changing climate and economic conditions.

Part of the Management Plan relates to development and transport. This incorporates Objective CE06 which states:

“By 2014 national and local development management and transport authorities and agencies have policies and guidance to make decisions which conserve and enhance the special qualities of the AONB, maintain local distinctiveness, provide services and support a buoyant rural economy.”

⁶⁸ Historic England (2016) Heritage at Risk [online] available at: <https://historicengland.org.uk/advice/heritage-at-risk/> (Accessed 30 August 2016).

⁶⁹ HM Government (2010) The Government's Statement on the Historic Environment for England [online] available at: http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/reference_library/publications/6763.aspx (Accessed 30 August 2016).

⁷⁰ Cotswolds Area of Outstanding Natural Beauty(2013) Cotswolds AONB Management Plan 2013-2018 [online] available at: http://www.cotswoldsaonb.org.uk/management_plan/index.html (Accessed 30 August 2016).

The Malvern Hills AONB Management Plan 2014-2019 ⁷¹ has a vision for 2040 with objectives grouped around the following themes:

- Landscape;
- Natural environment;
- Historic environment; and
- Forestry and farming.

A section of the Management Plan relates to Transport and Accessibility. This includes Objective TR01 which states:

“To reduce the impact of the private car whilst promoting a more sustainable approach to accessibility management.”

There are also a number of transport related policies within the Management Plan, as well as a Highway Design guide which has been produced for the AONB ⁷².

6.2 What Is The ‘Baseline’?

6.2.1 Current Baseline

Landscape/Townscape

As shown in Figure 6.1 parts of two AONBs are located within Worcestershire: the Cotswolds AONB and the Malvern Hills AONB. Both AONBs are located in the South Worcestershire Strategy Area.

Cotswolds AONB

The Cotswolds AONB is located within six counties (Worcestershire, Gloucestershire, Oxfordshire, Warwickshire, Wiltshire and Somerset), however the majority sits within Gloucestershire. Within Worcestershire, there are two areas of the Cotswolds AONB to the south east of the county, close to Evesham, as shown in Figure 6.1.

The AONB contains a rich mosaic of historical, social, economic, cultural, geological, and ecological features. Associated with these features, the area has many significant qualities, including:

- The high wolds – a large open elevated landscape with commons, ‘big’ skies and long distance views;
- Internationally important flower-rich limestone grasslands;
- Internationally important ancient broadleaved woodland;
- The tranquillity of the area and its dark skies.
- The Cotswold escarpment, and
- Historic field patterns defined by dry stone walls and hedges.

Two particular natural resources – the high-quality building stone and the water supply from deep limestone aquifers – are distinctive to the AONB.

⁷¹ Malvern Hills AONB Partnership (2014) Malvern Hills Area of Outstanding Natural Beauty Management Plan 2014-2019 [online] available at: <http://www.malvernhillsaonb.org.uk/wp-content/uploads/2015/02/FinalLowResManPlan2014-19.pdf> (Accessed 30 August 2016).

⁷² Malvern Hills AONB Partnership and WSP UK Ltd (2011) Malvern Hills Area of Outstanding Natural Beauty Guidance on Highway Design [online] available at: http://www.malvernhillsaonb.org.uk/wp-content/uploads/2015/02/HIGHWAYSpolicyLOW_002.pdf (Accessed 30 August 2016).

The Cotswolds AONB Management Plan notes that the AONB has a high level of accessibility due to the road network, however this has resulted in both positive and negative consequences. Negatively, much of traffic now uses the AONB as a “short cut” between surrounding motorways which serve the major cities. Positively, the routes provide accessibility for tourists, who contribute approximately £1 billion annually to the local economy. The management plan notes that nearly one in eight households is without a car and many other people do not have access to a car during the day. This means they are heavily dependent on the frequency and quality of public and/or community transport. In addition, the use of minor roads by lorries and other large vehicles, causes problems for residents and visitors and can impact on the landscape.

Malvern Hills AONB

The Malvern Hills AONB is located within Worcestershire and Herefordshire, and a small proportion within Gloucestershire. Within Worcestershire it is located to the south-west of the county, by the town of Malvern, as shown in Figure 6.1.

The Malvern Hills AONB has many significant qualities, including:

- The Malvern Hills: a high, dramatic ridge that is visible from the Severn Vale and from the rolling hills and valleys to the west;
- A distinctive and varied geology, with a variety of different rock types including granites, diorites, volcanic lavas, limestones, sandstones, mudstones and shales;
- This gives rise to a unique array of landscapes and natural habitats;

- A wide variety of landscape types in a relatively small area. Assessments of the area’s landscape character identify ten distinct landscape types. Woodland and grassland in varying mixes are the most prevalent;
- A distinctive combination of landscape elements that include orchards, parklands, ridgelines, ponds, quarries, hedgerows and watercourses;
- A wide variety of wildlife habitats and species, many of which are nationally rare;
- A large number of sites that have been designated for their special characteristics. These include 15 Sites of Special Scientific Interest (SSSIs), one Local Nature Reserve and many other special and key geological and wildlife sites;
- An historic landscape of ancient unenclosed commons, varied field boundary patterns and designed parks and gardens;
- A rich and distinctive historic environment including Bronze Age burial grounds, Iron Age hill forts, moated sites and industrial architecture;
- Distinctive villagescapes, including conservation areas, listed buildings and local features that define a ‘spirit of place’ in the settlements;
- Thriving and active communities with a low deprivation index that reflects the area’s prosperity and the availability of employment;

- A history of recreation and tourism that continues today, with people coming to enjoy the hills, spas and the tranquillity of the rural landscapes; and
- Open access in many places over the hills and commons, providing opportunities for bracing walks with fine views.

The Malvern Hills AONB Management Plan notes that the AONB has good accessibility by a wide range of modes of transport, this includes the M5 and M50 motorways, as well as several main roads which cut through or skirt the Malvern Hills, in addition there is a significant network of rural lanes, which can sometimes be heavily used by visitor traffic. The AONB is also served by four rail stations within or close to the AONB. There has been a rationalisation of many local bus services the frequency and reach of the local bus network is now in decline, particularly in more sparsely populated rural areas. As bus services have declined, the provision of community transport services has increased significantly to meet local demand. The Malvern Hills AONB Management Plan highlights the following key issues associated with transport:

- Impacts of car traffic – Extensive road access and car parking has resulted in access to the Malvern Hills AONB being car dominated;
- Poor facilities for walkers and cyclists – There is a shortage of targeted provision for walkers and cyclists, including safer routes and integrated public transport services;
- Access to public transport – the public transport system is at risk with reductions in some bus services. One result is significant isolation for people who do not have access to a car; and

- Unsympathetic and inappropriate road improvement design – The character of the AONB can be damaged by unsympathetic road design and street furniture.

Other Landscape Designations

Other landscape designations include the Green Belt, which is associated within the area surrounding Birmingham to the north east of the county, and north east of Worcester (as shown in Figure 6.2); and Areas of Great Landscape Value, of which the majority of the western part of the county is designated (as shown in Figure 6.3).

Areas of Great Landscape Value are landscapes of regional importance that are designated for their high landscape quality, with strong and distinctive characteristics which make them particularly sensitive to development. It should be noted though that these were set out in previous Local Plans in Worcestershire, which are in the process of being replaced.

Figure 6.1: Areas of Outstanding Natural Beauty (AONB)

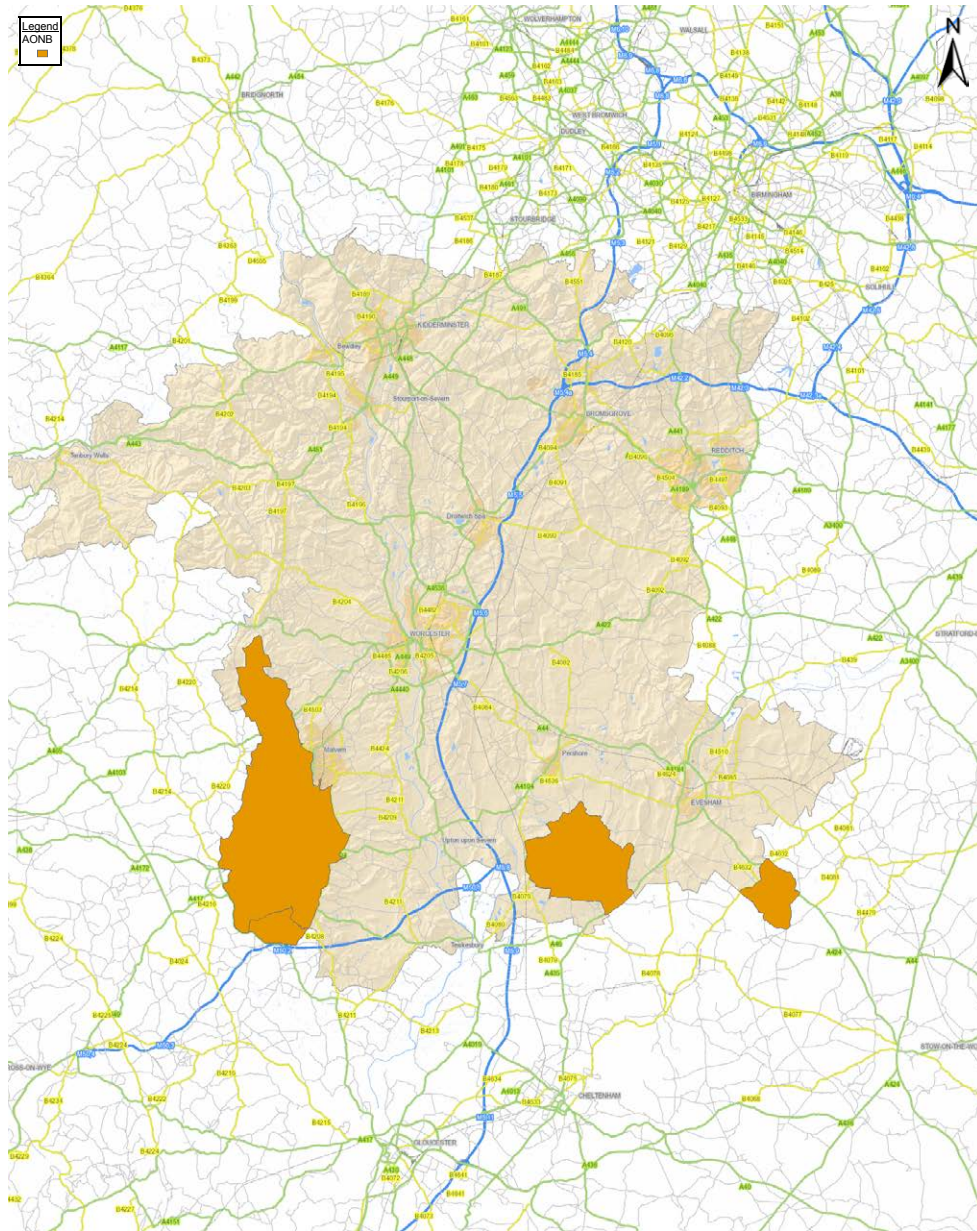


Figure 6.2: Green Belt

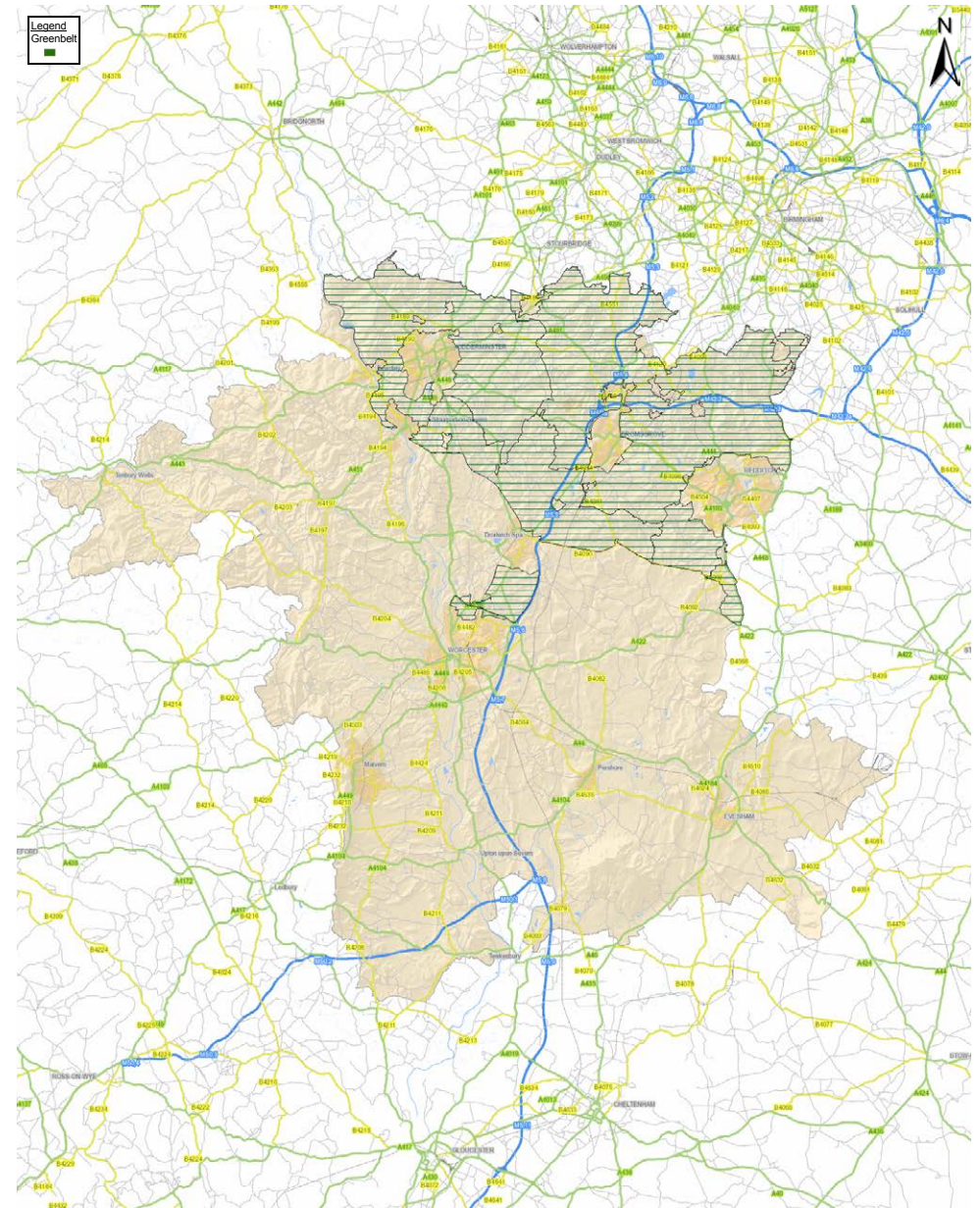
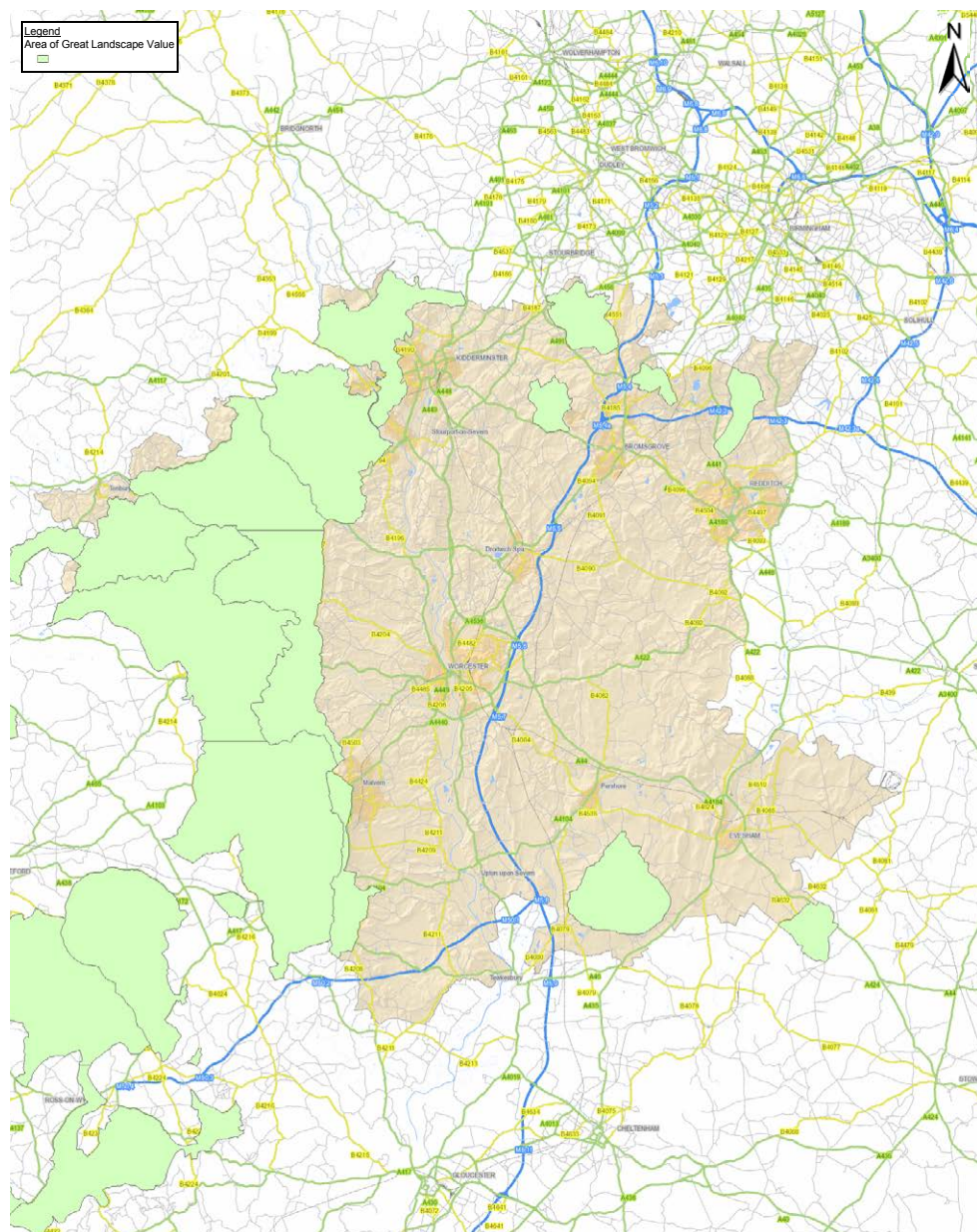


Figure 6.3: Areas of Great Landscape Value



Historic Environment

Worcestershire has a rich historic environment. Reflecting the historic evolution of the county, numerous features and areas of historic environment interest in the county are recognised through historic environment designations. These include statutory listed buildings and scheduled monuments, which are nationally designated, and conservation areas, which are designated at the local level. Historic England is the statutory consultee for certain categories of listed building consent and all applications for scheduled monument consent. The historic environment is protected through the planning system, via conditions imposed on developers and other mechanisms.

Table 6.1 provides a breakdown of the number of statutory historic environment designations⁷³ present within the three LTP4 Strategy Areas, as well as sites and structures ‘at risk’. Figure 6.3, 6.4 and 6.5 subsequently highlight the location of conservation areas, scheduled monuments and listed buildings in the county.

Table 6.1: Number Of Historic Environment Designations And Sites And Structures Deemed To Be ‘At Risk’ In The Three Strategy Areas

Historic Designation	North East Worcestershire	South Worcestershire	Wyre Forest
Scheduled Monuments	22	149	9
Listed Buildings	638	5,047	689
Registered Parks and Gardens	2	15	1
Conservation Areas	14	105	17
Historic Battlefields	0	2	0
Sites and structures ‘at risk’	10	43	3

⁷³ Historic England (2016) National Heritage List for England [online] available at: <https://historicengland.org.uk/listing/the-list/> (Accessed 30 August 2016).

It should be noted that not all of Worcestershire's historic environment resource is subject to statutory designations, and non-designated features comprise a large part of what people have contact with as part of daily life – whether at home, work or leisure. For example, in relation to transport, although not listed, many features and areas along the road and rail network are of historic interest, and which are seen as important by local communities. Examples of these in the plan area are likely to include undesignated structures and open spaces and the wider historic landscape and townscape. Undesignated actual or potential archaeological finds in the area are also of significance. In this context, across Worcestershire as a whole, the Worcestershire Historic Environment Record lists 54,000 records of Worcestershire's archaeology and historic environment, including archaeological sites, historic buildings, monuments and landscape features.

6.2.2 Future Baseline

New and/or upgraded transport infrastructure and associated development in the county has the potential to affect the fabric and setting of cultural heritage assets as well as causing incremental but small changes in landscape and townscape character and quality. This includes from the loss of landscape features and visual impact. There may also be potential effects on landscape/townscape character and quality in the vicinity of the road network due to an incremental growth in traffic flows. In particular, the growth of freight traffic within AONBs is a significant concern noted within the AONB Management Plans.

Transport schemes can also have positive effects on heritage features and landscapes, particularly if they divert or reduce road traffic in the vicinity of a heritage feature for example or support high quality design which reflects the historic interest of a feature or area.

There are likely to be small scale and incremental changes in tranquillity in and around the county, affected by changes in the levels of light and noise pollution. This could occur in the vicinity of the proposed strategic allocations.

Figure 6.4: Location Of Conservation Areas In Worcestershire

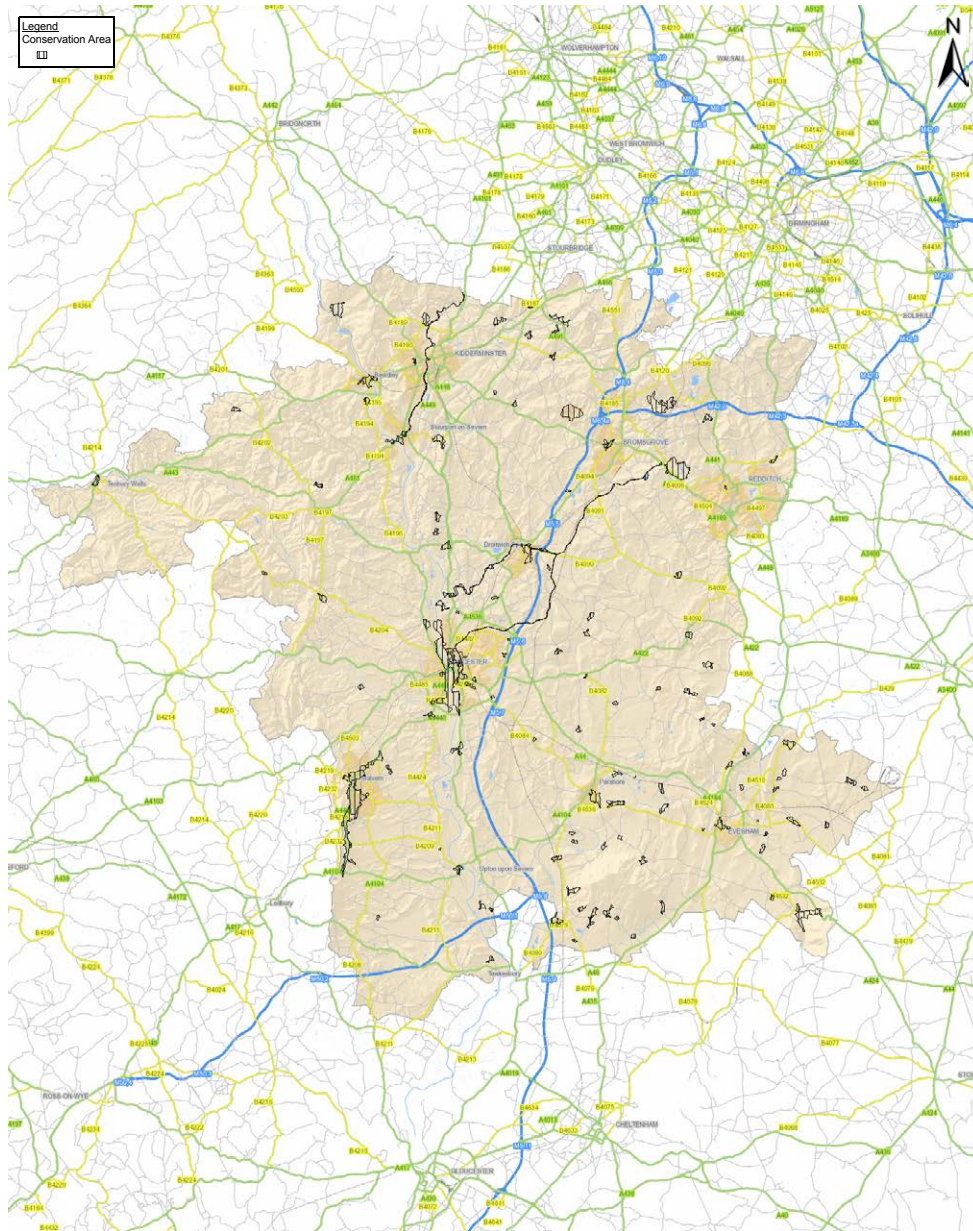


Figure 6.5: Location Of Scheduled Monuments In Worcestershire

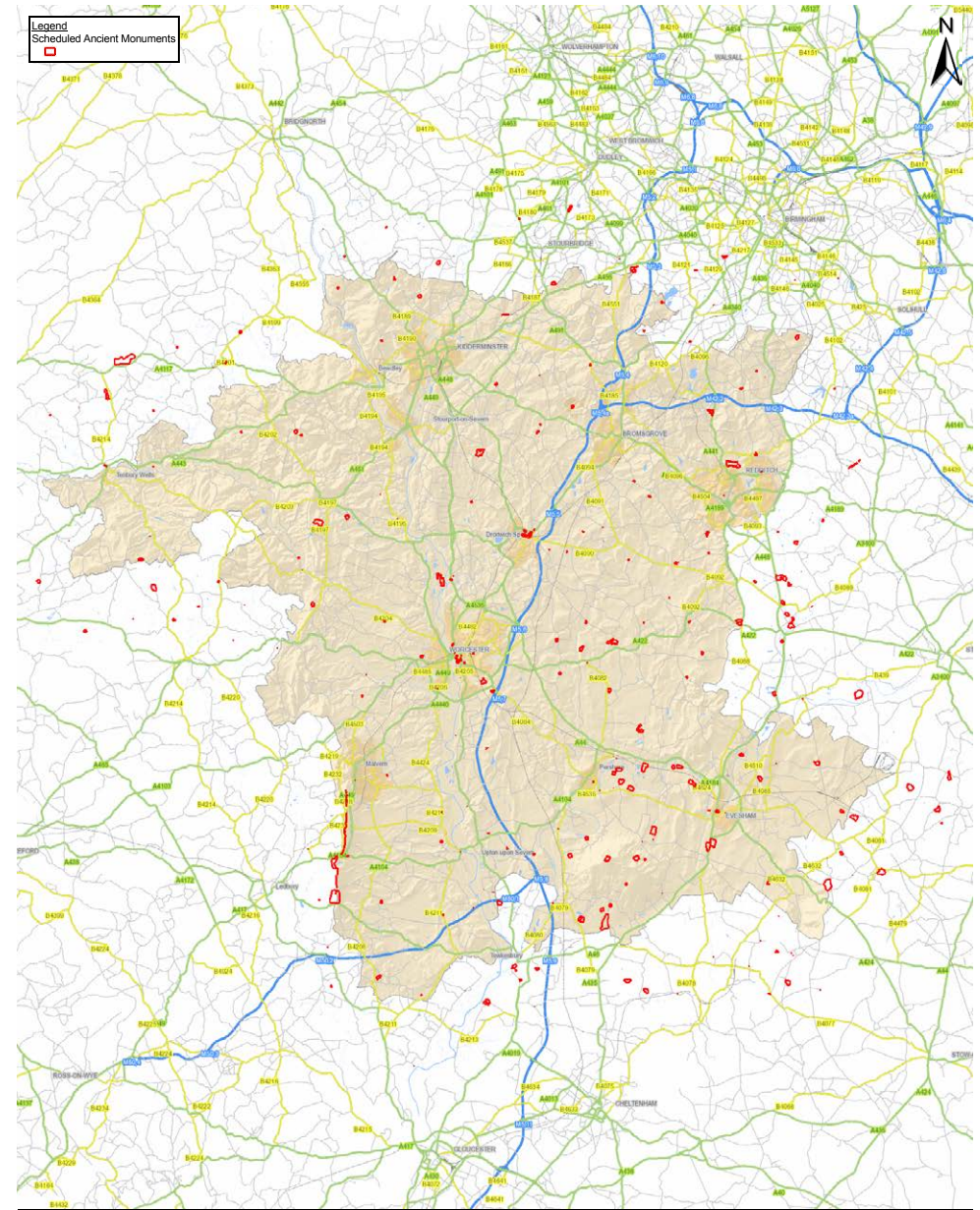
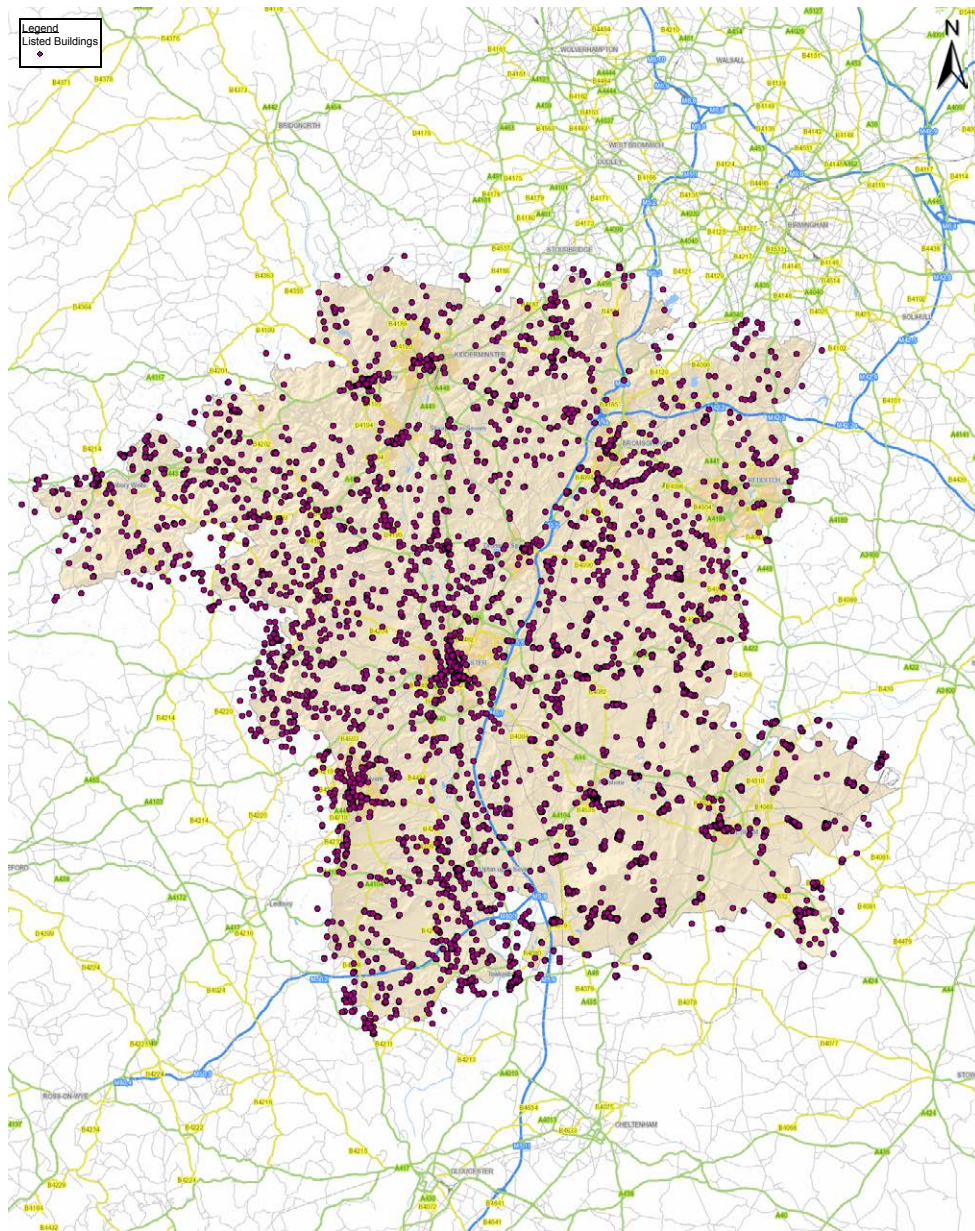


Figure 6.6: Location Of Listed Buildings In Worcestershire



7. Population And Communities

Topics considered through the theme

- Population Structure
- Age Structure
- Deprivation

7.1 What Is The Policy 'Context'?

7.1.1 Internationally Established Objectives

In 2010, the European Union published its strategy for achieving growth up until 2020 ⁷⁴. This strategy focuses on smart growth, through the development of knowledge and innovation; sustainable growth, based on a greener, more resource efficient and more competitive economy; and inclusive growth, aimed at strengthening employment, and social and territorial cohesion.

7.1.2 National Policy

Key messages of the NPPF include:

- The planning system can make a contribution to building a strong, responsive economy by 'ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure';
- Capitalise on 'inherent strengths', and to meet the 'twin challenges of global competition and of a low carbon future';
- Support new and emerging business sectors, including positively planning for 'clusters or networks of knowledge driven, creative or high technology industries';
- Support competitive town centre environments and only consider edge of town developments where they have good access and will not threaten the viability of town centres;

⁷⁴ European Commission (2010) Europe 2020 - A European strategy for smart, sustainable and inclusive growth [online] available at: <http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%2007%20-%20Europe%202020%20-%20EN%20version.pdf> (Accessed 31 August 2016).

- The social role of the planning system involves ‘supporting vibrant and healthy communities’;
- The planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities;
- Promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship;
- Ensure that developments create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion. Places should contain clear and legible pedestrian routes, and high quality public spaces, which encourage the active and continual use of public areas; and
- Ensuring that there is a ‘sufficient choice of school places’ is of ‘great importance’ and there is a need to take a ‘proactive, positive and collaborative approach’ to bringing forward ‘development that will widen choice in education’.

Boxes 7.1, 7.2 and 7.3 provide an overview of the Government’s approach to growth and the supply of housing, which are both directly relevant to transport planning.

Box 7.1: The Local Growth White Paper

The Local Growth White Paper notes that Government interventions should support investment that will have a long term impact on growth, working with markets rather than seeking to create artificial and unsustainable growth. In some cases this means focusing investment at areas with long term growth challenges, so that these areas can undergo transition to an economy that responds to a local demand. Places that are currently successful may also wish to prioritise activity to maximise further growth by removing barriers, such as infrastructure constraints. However, the White Paper also emphasises that: ‘This does not mean that every place will grow at the same rate or that everywhere will, or will want to, become an economic powerhouse. Long term economic trends make differences in economic performance inevitable and these can and do change over time’. Specific examples of areas where it makes sense for Government intervention to tackle market failures include: investment in infrastructure; tackling barriers such as transport congestion and poor connections; other support to areas facing long term growth challenges where this can help them manage their transition to growth industries; and strategic intervention where it can stimulate private sector investment in new green technology in strategic locations. Finally, the White Paper identifies that economic policy should be judged on the degree to which it delivers strong, sustainable and balanced growth of income and employment over the long-term. More specifically, growth should be: broad-based industrially and geographically, ensuring everyone has access to the opportunities that growth brings (including future generations), whilst also focused on businesses that compete with the best internationally.

Box 7.2: Implications Of An Ageing Population

The Select Committee on Public Service and Demographic Change report **Ready for Ageing?**⁷⁵ warns that society is underprepared for the ageing population. The report says that ‘longer lives can be a great benefit, but there has been a collective failure to address the implications and without urgent action this great boon could turn into a series of miserable crises’. Key projections about ageing include 51% more people aged 65 and over and 101% more people aged 85 and over in England in 2030 compared to 2010; and a 90% increase in people with moderate or severe need for social care for the same time period. Organisations involved in urban planning will need to adjust to an older population and will have an important role to play in preventing the social isolation of older citizens. The report says that the housing market is delivering much less specialist housing for older people than is needed. Central and local government, housing associations and house builders need urgently to plan how to ensure that the housing needs of the older population are better addressed and to give as much priority to promoting an adequate market and social housing for older people as is given to housing for younger people. The report notes that “if the country had an adequate supply of suitably located, well-designed, supported housing for older people, this could result in an increased release onto the market of currently under-occupied family housing, expanding the supply available for younger generations”. It recommends that local government should ensure better housing provision for older people by both encouraging private market provision and by making specific mention of older people’s needs when drawing up Local Plans.

Box 7.3: Transport Needs For Older People

The 2012 DfT report **Resource guide for Local Authorities: Transport solutions for older people**⁷⁶ identifies a number of barriers that older people face in using transport systems. It notes that local transport plans (LTPs) offer “the opportunity to tackle these barriers in a clear and systematic way. Any improvements will benefit not just older people but improve access for many other members of the community”. The resource guide covers a wide range of transport issues facing older people including affordability (given many older people are likely to be on fixed incomes) and accessibility in terms of providing transport options to destinations older people need to access. The guide also notes that nationally the number of older people in rural areas has increased at a faster rate than in urban areas, particularly those aged over 85. It goes on to notes that “a lack of frequent, accessible public transport is a particular concern for people living in rural areas. It may, therefore, be necessary to consider alternative transport solutions and innovative means of service delivery to help maintain access to key health, shopping and leisure facilities”.

⁷⁵ Select Committee on Public Service and Demographic Change (2013) Ready for Ageing? [online] available at: <http://www.publications.parliament.uk/pa/ld201213/ldselect/ldpublic/140/140.pdf> (Accessed 31 August 2016).

⁷⁶ Department for Transport (2012) Resource guide for Local Authorities: Transport solutions for older people [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4478/transport-solutions-for-older-people.pdf (Accessed 31 August 2016).

7.1.3 The Local Context

Worcestershire Partnership have produced a Sustainable Community Strategy for 2011 to 2021⁷⁷, this outlines the priorities for Worcestershire, which are:

- A skilled and prosperous economy;
- An environment that is cherished and resilient; and
- Improving health & well-being.

7.2 What Is The ‘Baseline’?

7.2.1 Current Baseline

According to the most recent census data available, in 2011 the total population of Worcestershire was 566,169⁷⁸; with mid-year estimates for 2014 of 575,421⁷⁹. Population growth of Worcestershire was significantly less than that for England, as shown in Table 7.1.

Population growth by district and LTP4 Strategy Area, as shown in Table 7.2, shows the largest population growth in North East Worcestershire (6.60% - Bromsgrove; and 6.86% – Redditch), with the lowest growth experienced in Wyre Forest (1.02%). Within South Worcestershire, Worcester has had higher population growth (5.80%) than either Malvern Hills (3.41%) and Wychavon (3.53%).

Table 7.1: Population Growth (2001-2011)⁸⁰

Date	Worcestershire	West Midlands	England
2001	542,107	5,267,308	49,138,831
2011	566,169	5,601,847	53,012,456
Population increase 2001-2011	4.44%	6.35%	7.88%

Table 7.2: Population Growth Of Districts And LTP4 Strategy Areas Within Worcestershire (2001-2011)⁸¹

Date	North East Worcestershire		South Worcestershire			Wyre Forest
	Bromsgrove	Redditch	Malvern Hills	Worcester	Wychavon	
2001	87,837	78,807	72,172	93,353	112,957	96,981
2011	93,637	84,214	74,631	98,768	116,944	97,975
Population increase 2001-2011	6.60%	6.86%	3.41%	5.80%	3.53%	1.02%

⁷⁷ Worcestershire Partnership (2013) A Single Sustainable Community Strategy for Worcestershire [online] available at: http://www.swdevelopmentplan.org/wp-content/uploads/2013/05/single_SCS.pdf (Accessed 30 August 2016).

⁷⁸ Office for National Statistics (ONS) (2011) Neighbourhood Statistics [online] available at: <http://www.neighbourhood.statistics.gov.uk/dissemination/> (Accessed 30 August 2016).

⁷⁹ Worcestershire County Council (no date) District Profiles [online] available at: <http://atlas.worcestershire.gov.uk/IAS/profiles/profile?profileId=36&geoTypeId=> (Accessed 30 August 2016).

⁸⁰ Ibid

⁸¹ Office for National Statistics (ONS) (2011) Neighbourhood Statistics [online] available at: <http://www.neighbourhood.statistics.gov.uk/dissemination/> (Accessed 30 August 2016).

As highlighted by Table 7.3, the age structure of Worcestershire has an older age profile than is seen across England. Within Worcestershire the age structure varies between districts and LTP4 Strategy Areas, as shown in Table 7.4.

The older age profile noted at a county level is noticeable in many of the districts except for Redditch and Worcester; within these districts there is a higher percentage of the population within the working age and child age brackets.

Table 7.3: Age Structure (2011) ^{82, 83}

Age Group	Worcestershire	England
0-15	100,667 (17.7%)	10,022,836 (18.9%)
16-24	58,357 (10.3%)	6,284,760 (11.9%)
25-44	139,545 (24.7%)	14,645,152 (27.5%)
45-59	117,825 (20.8%)	10,276,902 (19.4%)
60+	149,775 (26.5%)	11,832,806 (22.3%)

The Index of Multiple Deprivation (IMD) is the official measure of relative deprivation for counties, districts and neighbourhoods in England. The Index of Multiple Deprivation ranks every area in England from most deprived (score of 1) to least deprived (score of 356). Data for Worcestershire and its districts is shown in Table 7.5.

Table 7.4: Age Structure of Districts And LTP4 Strategy Areas Within Worcestershire (2014) ⁸⁴

Age Group	North East Worcestershire		South Worcestershire			Wyre Forest
	Bromsgrove	Redditch	Malvern Hills	Worcester	Wychavon	
0-15	17.5%	19.7%	16.0%	18.5%	16.8%	17.1%
16-29	14.8%	16.9%	13.4%	20.7%	13.8%	14.9%
30-44	17.3%	20.8%	14.6%	20.4%	16.5%	17.4%
45-64	28.6%	26.4%	29.4%	24.4%	29.5%	27.2%
65+	21.9%	16.2%	26.6%	16.0%	23.5%	23.4%

⁸² ONS (2001) Census 2001, Age Structure, 2001 (KS02).

⁸³ ONS (2011) Census 2011, Age Structure, 2011 (KS102EW).

⁸⁴ Worcestershire County Council (no date) District Profiles [online] available at: <http://atlas.worcestershire.gov.uk/IAS/profiles/profile?profileid=36&geoTypeid=> (Accessed 30 August 2016).

Table 7.5: Average IMD Score Of Districts And Ltp4 Strategy Areas Within Worcestershire ⁸⁵

LTP4 Strategy Area	District	IMD 2010 Rank	IMD 2015 Rank	Change in Rank 2010-15
N/A	Worcestershire	281	279	-2
North East Worcestershire	Bromsgrove	223	193	-30
	Redditch	144	141	-3
South Worcestershire	Malvern Hills	117	131	14
	Worcester	229	194	-35
	Wychavon	124	119	-5
Wyre Forest	Wyre Forest	110	111	1

As highlighted by the above, Wyre Forest is ranked as the most deprived district in the county. The districts ranked as least deprived in the county are Worcester and Bromsgrove.

All of the districts in Worcestershire, with the exception of Malvern Hills and Wyre Forest, are ranked as "more deprived" according to IMD 2015 than they were in the IMD 2010 figures. Changes in the rankings are particularly prevalent in the districts of Bromsgrove and Worcester.

In relation to car or van availability the Office of National Statistics data shown in Table 7.6 reports that Redditch and Worcester have the highest percentages of no car or van ownership, while Bromsgrove and Wychavon have the lowest.

Table 7.6: Car Or Van Availability Of Districts Within Worcestershire ⁸⁶

LTP4 Strategy Area	District	Cars Or Vans In Household (%)				
		None	One	Two	Three	Four or more
N/A	Worcestershire	16.6	40.3	32.1	7.9	3.2
North East Worcestershire	Bromsgrove	12.5	37.3	37.0	9.5	3.8
	Redditch	20.3	40.8	29.8	6.7	2.5
South Worcestershire	Malvern Hills	13.5	39.1	33.8	9.5	4.2
	Worcester	22.4	43.7	27.1	5.2	1.6
	Wychavon	12.9	38.4	35.0	9.6	4.2
Wyre Forest	Wyre Forest	18.4	42.1	29.6	7.1	2.7

7.2.2 Future Baseline

The population of Worcestershire is envisaged to grow by 42,000 people between the period 2014 and 2030, to reach 617,000 people by 2030 ⁸⁷. This will increase demand for new housing and employment opportunities in the area which will also increase demand for travel on the county's transport networks. As well as population growth, the demographic profile of Worcestershire is likely to continue to age.

⁸⁵ Worcestershire County Council (no date) District Profiles [online] available at: <http://atlas.worcestershire.gov.uk/IAS/profiles/profile?profileId=36&geoTypeId=> (Accessed 30 August 2016).

⁸⁶ ONS (2011) Car or van availability [online] available at: <http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/2011censuskeystatisticsforenglandandwales/2012-12-11#car-or-van-availability> (Accessed 30 August 2016).

⁸⁷ ONS (2016) Subnational Population Projections for Local Authorities in England: Table 2 [online] available at: <http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2> (Accessed 30 August 2016).

8. Health and well-being

Topics considered through the theme

- Health indicators
- Health inequalities
- Road traffic accidents

8.1 What Is The Policy ‘Context’?

8.1.1 Internationally Established Objectives

A World Health Organization’s (WHO) report ‘Transport, Environment and Health’⁸⁸ considers the relationship and effects of transport on health (as well as the environment given that it can have a profound influence on communities’ and individuals’ health). The report explores the more well-known links between, for instance, air quality and respiratory problems. It also examines other, sometimes more subtle health effects of transport, such as sleep disturbance caused by noise experienced by people living close to highways, railways and airports. The role of active travel in helping to address obesity issues, often caused by increasingly sedentary lifestyles, is also discussed.

8.1.2 National Policy

Key messages include:

- The social role of the planning system involves ‘supporting vibrant and healthy communities’;
- A core planning principle is to ‘take account of and support local strategies to improve health, social and cultural wellbeing for all’;
- The planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities’;
- Promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship;
- Set out the strategic policies to deliver the provision of health facilities;

⁸⁸ World Health Organization (2000) Transport, environment and health [online] available at: http://www.euro.who.int/__data/assets/pdf_file/0003/87573/E72015.pdf (Accessed 30 August 2016).

- Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities; and
- Planning policies should aim to avoid noise from giving rise to significant adverse impacts on health and quality of life.

Several studies (described briefly in Boxes 8.1 and 8.2) provide further context on health and well-being with particular relevance to transport planning.

Box 8.1: Further Policy In Relation To 'Health'

Fair Society, Healthy Lives⁸⁹ ('The Marmot Review') investigated health inequalities in England and the actions needed in order to tackle them. Subsequently, a supplementary report was prepared providing additional evidence relating to spatial planning and health on the basis that there is: 'overwhelming evidence that health and environmental inequalities are inexorably linked and that poor environments contribute significantly to poor health and health inequalities'.

It highlights three main policy actions to ensure that the built environment promotes health and reduces inequalities. These should be applied on a universal basis, but with a scale and intensity that is proportionate to the level of disadvantage. Specifically, these actions are to:

- Fully integrate the planning, transport, housing, environmental and health systems to address the social determinants of health in each locality;
- Prioritise policies and interventions that both reduce health inequalities and mitigate climate change by: improving active travel; improving good quality open and green spaces; improving the quality of food in local areas; and improving the energy efficiency of housing; and
- Support locally developed and evidence-based community regeneration programmes that remove barriers to community participation and action; and reduce social isolation.

The increasing role that local level authorities are expected to play in producing health outcomes is well demonstrated by recent Government legislation. **The Health and Social Care Act 2012** transfers responsibility for public health from the NHS to local government⁹⁰, giving local authorities a duty to improve the health of the people who live in their areas. This will require a more holistic approach to health across all local government functions.

⁸⁹ The Marmot Review (2011) The Marmot Review: Implications for Spatial Planning [online] available at: <https://www.nice.org.uk/media/default/About/what-we-do/NICE-guidance/NICE-guidelines/Public-health-guidelines/Additional-publications/Spatial-planning/the-marmot-review-implications-for-spatial-planning.pdf> (Accessed 30 August 2016).

⁹⁰ Upper tier and unitary local authorities.

Box 8.2: Walking And Cycling

The NHS National Institute of Health and Clinical Excellence (NICE) have published guidance on **Local measures to promote walking and cycling**.⁹¹ The evidence presented in this report suggests that 'effective support' from local councils plays a key role in increasing rates of walking and cycling. The report emphasises that increasing the numbers of people who walk and cycle, and how often, can reduce the health costs associated with air pollution and inactivity. Relevant recommendations made in the report include:

- Ensure local, high-level strategic policies and plans support and encourage both walking and cycling;
- Develop coordinated, cross-sector programmes to promote walking and cycling for recreation as well as for transport, based on a long-term vision of what can be achieved, taking account of the needs of the whole population; and
- Address infrastructure issues that may prevent people from wanting to walk.

8.1.3 The Local Context

Worcestershire County Council have produced a technical research paper 'Planning for Health in Worcestershire'⁹². This states that health impacts on many aspects of people's day-to-day lives and requires the application of best practice in a range of areas, including:

- Planning for better built and natural environments and living conditions, to prevent people becoming ill in the first place;

- Ensuring that there are facilities in place and means of getting to those facilities for those who do become ill; and
- Providing a healthy environment for those people who do fall ill to recuperate in.

8.2 What Is The 'Baseline'?

8.2.1 Current Baseline

As shown in Table 8.1, general health across Worcestershire is broadly favourable, and comparable to the rest of England. Some 34.9% and 46.5% of people reported that they were in 'very good' and 'good' health. Likewise, the proportion of people reporting that they had 'fair', 'bad' or 'very bad' health is also comparable.

There is a slight variation between districts, with a higher percentage of individuals in Bromsgrove reporting 'very good' health compared to Worcestershire in general, whilst Wyre Forest has higher levels of 'fair' and 'bad' health compared to Worcestershire averages.

⁹¹ National Institute for Health and Care Excellence (2012) Walking and cycling: local measures to promote walking and cycling as forms of travel or recreation [online] available at: <https://www.nice.org.uk/guidance/ph41/chapter/1-recommendations> (Accessed 30 August 2016).

⁹² Worcestershire County Council (2015) Planning for Health in Worcestershire Technical Research Paper [online] available at: http://www.worcestershire.gov.uk/downloads/file/5775/planning_for_health_in_worcestershire_technical_research_paper (Accessed 30 August 2016).

Table 8.1: General health ⁹³

	Very good health (%)	Good health (%)	Fair health (%)	Bad health (%)	Very bad health (%)
England	47.2	34.2	13.1	4.2	1.2
Worcestershire	46.5	34.9	13.5	4.0	1.2
Bromsgrove	49.1	33.4	12.7	3.7	1.1
Malvern Hills	45.6	35.1	14.1	3.9	1.4
Redditch	46.8	34.9	13.0	4.2	1.2
Worcester	47.4	34.9	12.8	3.8	1.0
Wychavon	46.4	35.6	13.3	3.7	1.0
Wyre Forest	43.6	35.2	15.2	4.6	1.4

The 2015 public health profile ⁹⁴ for Worcestershire shows that life expectancy is 79.8 for men and 83.5 for women; above the national average of 79.4 and 83.1, respectively. Life expectancy is 8.1 years lower for men and 5.8 years lower for women in the most deprived areas of Worcestershire than in the least deprived areas. Local priorities in Worcestershire include older people and management of long term conditions, mental health and wellbeing, obesity, and alcohol.

Each year in Worcestershire there are around 1,500 personal injury road traffic accidents. These accidents result in some 2,000 casualties ⁹⁵.

Figure 8.1 below provides a health summary for Worcestershire, with comparisons with the rest of England.

⁹³ ONS (2013) General Health in England and Wales [online] available at:

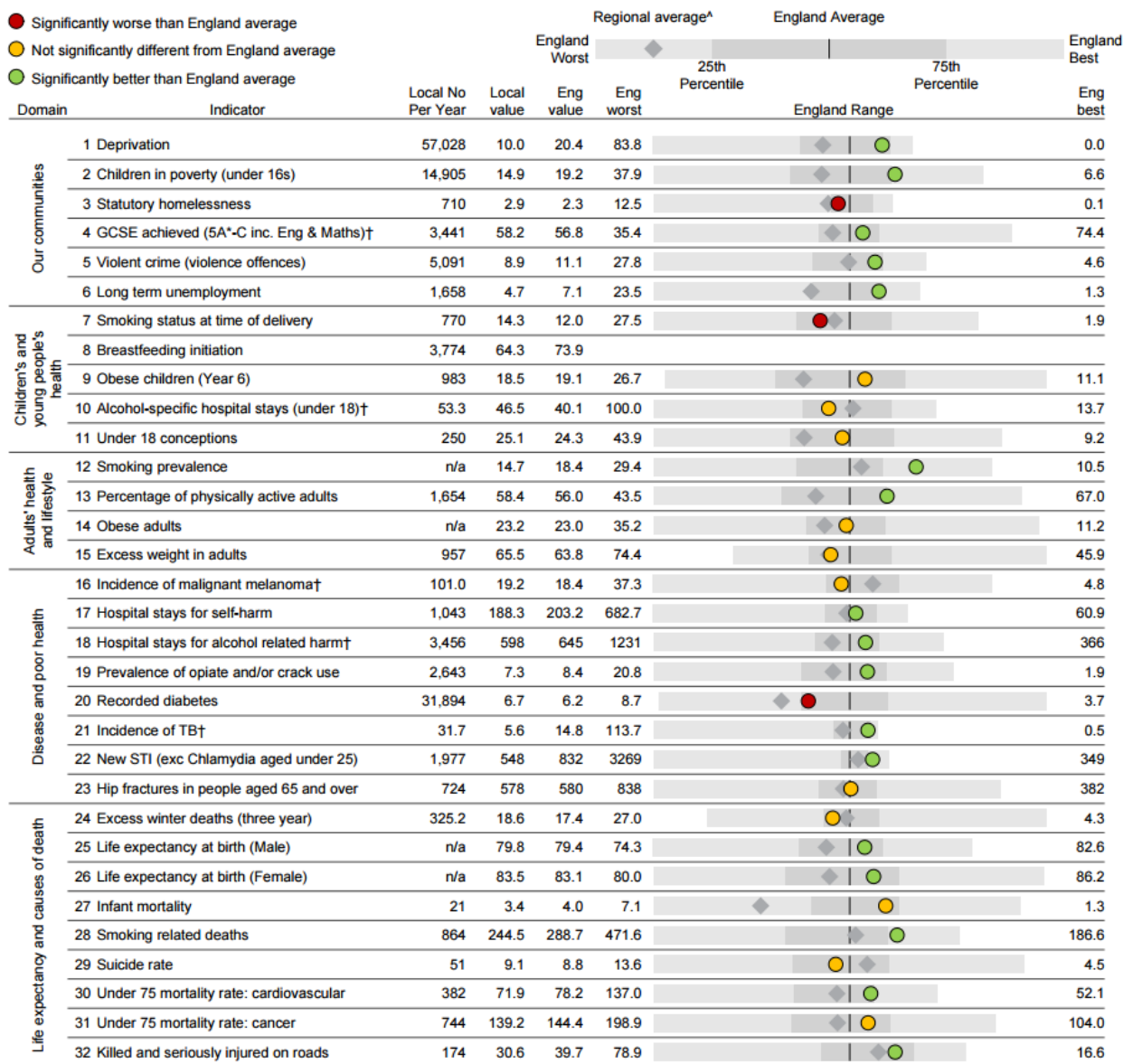
<http://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/articles/generalhealthinenglandandwales/2013-01-30> (Accessed 30 August 2016).

⁹⁴ Public Health England (2015) Health Profile 2015 [online] available at: <http://www.apho.org.uk/resource/view.aspx?RID=50215®ION=50154&LA=50145&SPEAR=> (Accessed 30 August 2016).

⁹⁵ Worcestershire County Council (no date) Accident Studies [online] available at: http://www.worcestershire.gov.uk/info/20007/travel_and_roads/569/accident_studies (Accessed 30 August 2016).

Figure 8.1: Health Summary for Worcestershire (extract from Worcestershire Health Profile 2015 ⁹⁶)

The chart below shows how the health of people in this area compares with the rest of England. This area's result for each indicator is shown as a circle. The average rate for England is shown by the black line, which is always at the centre of the chart. The range of results for all local areas in England is shown as a grey bar. A red circle means that this area is significantly worse than England for that indicator; however, a green circle may still indicate an important public health problem.



⁹⁶ Public Health England (2015) Worcestershire Health Profile 2015 [online] available at: <http://www.apho.org.uk/resource/view.aspx?RID=50215&SEARCH=worcestershire&SPEAR=> (Accessed 5 September 2016).

8.2.2 Future Baseline

The population of Worcestershire is predicted to grow and age in the future. In this context accessibility to existing and new health and community facilities is likely to become increasingly important.

Obesity is seen as an increasing issue by health professionals, and one that will contribute to significant health impacts on individuals, including increasing the risk of a range of diseases, including heart disease, diabetes and some forms of cancer. Transport planning will play a key role in encouraging active transport choices (e.g. walking and cycling) as well as accessibility to sports and recreation facilities.

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