



3 Environmental Baseline

3.1 Introduction

3.1.1 In order to be able to forecast and monitor the effect of the LTP on the environment it is necessary to have a picture of the existing environmental baseline in Shropshire. It is necessary to understand the key environmental problems and opportunities and the likely evolution of the environment without the LTP.

3.1.2 This chapter sets out the current state of Shropshire's environment under the following Shropshire SEA topic areas.

- Local air quality;
- Greenhouse gases;
- Landscape;
- Townscape and heritage;
- Biodiversity (flora and fauna);
- Soil and geology;
- Water quality, resources and flooding;
- Human health & population;
- Material assets.

3.1.3 The current state of each aspect of the environment is described in detail in the following sub-sections and is summarised in Table 3.20 which shows the environmental objectives, indicators, baseline position, likely trend or evolution without the LTP and relevant data sources. Additional maps showing environmental baseline information are provided in .

3.2 Air Quality

SEA Objective: Reduce air pollution in line with National Air Quality Objectives

Baseline

3.2.1 The standard of local air quality affects human health (nitrogen dioxide, for example, is a respiratory irritant), ecosystems (for example, nitrogen dioxide can be absorbed by plants and may lead to species loss), as well as speeding up the process of erosion of buildings. Air quality is one factor taken into account in the Outdoor Living Deprivation Index (see Figure 7 in Appendix 2). Transport is a major contributor to poor air quality and associated health problems such as asthma. Traffic produces 70% of carbon monoxide emissions, 48% of all nitrogen oxide emissions and 22% of particulates in Britain.

3.2.2 Under the Environment Act 1995, local authorities are required to carry out an air quality review and assessment. National standards exist for a full range of pollutants (Benzene, 1,3 – butadiene, Carbon monoxide, Lead, Nitrogen dioxide, PM10 and Sulphur dioxide). If a local authority's assessments show that the national standards are unlikely to be met, the authority should designate the relevant areas as Air Quality Management Areas (AQMA).

3.2.3 The two pollutants of concern in some areas of Shropshire are PM10 and NO₂. The national objectives that should be have been met by 2005 for these are outlined in Table 3.1. In order to comply with the EU Directive the objective of 40 µg/m³ NO₂ (annual mean level) should be met by 2010.



Table 3.1 National Air Quality Objectives (Source: National Air Quality Strategy 2000)

Particles (PM10) (gravimetric)	50 µg/m ³ Not to be exceeded more than 35 times per year	24 Hour Mean
	40 µg/m ³	Annual Mean
Nitrogen dioxide	200 µg/m ³ Not to be exceeded more than 18 times per year	1 Hour Mean
	40 µg/m ³	Annual Mean

3.2.4 Several rounds of Air Quality Review and Assessment have been undertaken in Shropshire since 1998. These assessments highlighted a small number of localised sites in the County where levels of NO₂ were predicted to exceed national standards in 2005 and for which AQMA's have been established. Traffic is the main cause of the high NO₂ levels in these AQMA's. These include three areas in Shrewsbury, at Bayston Hill, Heathgates and the town centre, a small site affecting one property by the A5 near Oswestry, and a site in Bridgnorth town centre.

3.2.5 The current and predicted annual mean NO₂ levels within the AQMA's and projected levels in 2010 (if no intervention action is taken) are set out in Table 3.2. Where the annual mean objective is exceeded this is highlighted in bold.

Table 3.2 Current and predicted annual mean NO₂ concentrations at sites in AQMA's

AQMA/ location	X(m)	Y(m)	Monitored data NO ₂ diffusion tube monitoring results (µg/m ³)				Modelled data- NO ₂ annual mean concentrations (µg/m ³)		
			2003	2004	2005	2010	2004	2005	2010
Bridgnorth AQMA									
Whitburn Street West				44.5				43.4	
Pound Street				46.2				45.1	
Shrewsbury Bayston Hill AQMA									
A49 Bayston Hill, opposite Three Fishes	348726	308959	41.1	31.8	36.2	26.0			
Shrewsbury Heathgates AQMA									
Ditherington Road, Heathgates	350255	314367	40.4	30.9	35.3	25.3	31.2	30.3	26.1
Whitchurch Road, Heathgates	350533	314786	40.4	31.9	31.1	26.1	28.5	27.6	23.9
Heathgates Roundabout	350375	314590	38.7	30.3	-	24.8	29.9	29.0	25.0
Heathgates Public House (façade)	350436	314607		26.6	28.5	21.7	31.6	30.7	26.4
Shrewsbury Town Centre AQMA									
82/83 Frankwell	348669	312957		27.9	30.1	22.8	25.9	25.2	21.9

AQMA/ location	X(m)	Y(m)	Monitored data NO2 diffusion tube monitoring results (µg/m3)				Modelled data- NO2 annual mean concentrations (µg/m3)			
Abbey Foregate	349981	312430	36.1	29.4	30.6	24.0	43.6	42.5	36.1	
Abbey Foregate/Monkmoor Road	350103	312378	-	27.6	35.2	22.6	38.7	37.8	32.1	
Brittania Inn, Castle Foregate	349461	313133	-	36.1	37.9	29.5	32.6	31.8	27.3	
Castle Foregate (opposite Royal Mail)	349432	313100	54.0	41.5	-	33.9	36.6	35.7	30.5	
Castle Gates	349396	312742	43.5	35.0	37.8	28.6	30.2	29.4	25.4	
Coleham Head	349682	312311	46.7	31.2	32.7	25.5	25.7	25.1	21.8	
Dogpole	349330	312503	41.1	32.3	33.5	26.4	38.6	37.6	32.2	
English Bridge	349540	312348	39.0	37.6	38.9	30.7	44.0	42.7	36.1	
Frankwell	348803	312855	-	-	-	-	44.6	43.5	37.1	
Frankwell/Drinkwater Street	348719	312952	36.8	25.7	-	21.0	28.3	27.6	23.9	
Samaritons	349667	312347	37.6	30.9	31.7	25.3	28.4	27.7	23.9	
Severn Steps	349235	312900	-	37.5	35.5	30.6	32.8	31.9	27.5	
Smithfield Road	349060	312759	-	-	-	-	33.7	32.8	28.2	
St Michaels Gate	349609	313375	31.5	26.8	26.3	21.9	25.2	24.6	21.4	
Station Hotel, Castle Foregate	349400	312954	-	57.6	83.2	47.1	74.0	73.1	66.2	
The Albert, Smithfield Road	349283	312889	-	32.2	37.4	26.3	34.4	33.5	28.8	
Welsh Bridge (Smithfield Rd/ Victoria Ave)	348891	312721	47.0	35.2	38.2	28.2	30.4	29.6	25.4	

3.2.6 The projected impacts on air quality of preventing any further traffic growth or achieving a reduction in traffic levels in the AQMAs, and the impacts of changing park and ride buses to electric hybrid vehicles are shown in 3.2.6. This shows that even a 50% reduction in traffic would not ensure that the 2010 NO₂ objective would be met at Castle Foregate.



Table 3.3 Impacts on air quality of traffic reductions

Location	X(m)	Y(m)	2010 No growth	2010 No growth 10% reduction	2010 No growth 20% reduction	2010 No growth 50% reduction	2010 No growth (+ Bus improvements)
Shrewsbury - Heathgates							
Ditherington Road, Heathgates	350255	314367	18.9	17.7	17.0	11.1	N/A
Whitchurch Road, Heathgates	350533	314786	16.0	15.0	14.5	7.9	N/A
Heathgates Roundabout	350375	314590	17.5	16.4	15.8	9.6	N/A
Heathgates Public House (façade)	350436	314607	19.2	18.0	17.2	11.3	N/A
Shrewsbury Town Centre AQMA							
Frankwell/Drinkwater Street	348719	312952	20.4	19.3	18.6	15.7	18.7
WelshBridge	348891	312721	24.3	23.0	22.2	20.0	22.4
Castle Foregate (opposite Royal Mail)	349432	313100	27.3	25.4	24.3	20.2	25.6
Dogpole	349330	312503	29.2	27.2	26.0	21.6	27.5
Castle Gates	349396	312742	22.0	20.8	20.0	16.8	20.1
St Michaels Gate	349609	313375	17.7	16.9	16.4	14.0	16.8
82/83 Frankwell	348669	312957	18.2	17.3	16.8	14.3	16.9
Brittania Inn, Castle Foregate	349461	313133	24.0	22.5	21.6	18.1	22.6
Severn Steps	349235	312900	24.3	22.8	21.9	18.3	22.3
The Albert, Smithfield Road	349283	312889	25.6	24.0	23.0	19.3	23.7
Station Hotel, Castle Foregate	349400	312954	64.2	60.8	58.5	48.7	59.8
Frankwell	348803	312855	34.1	31.6	30.1	24.8	30.1
Smithfield Road	349060	312759	25.0	23.4	22.5	18.8	22.5
Coleham Head	349682	312311	20.9	19.9	19.3	17.8	18.9
EnglishBridge	349540	312348	34.8	32.6	31.3	27.5	29.5
Samaritons	349667	312347	22.9	21.6	21.0	19.0	20.4
Abbey Foregate	349981	312430	34.7	32.4	31.0	27.1	27.4
Abbey Foregate/Monkmoor Road	350103	312378	30.9	28.9	27.8	24.5	24.9

3.3 Climatic Factors

SEA Objective: Reduce greenhouse gas emissions

3.3.1 Climate change is recognised as one of the greatest, if not, the greatest threat facing the world today. The world is warming and there is evidence of changing weather patterns and thawing of the arctic sea ice. Human activity is partly responsible and latest predictions suggest that the effects will be earlier and sharper than previously thought. Concentrations of greenhouse gases (e.g. CO₂ and NO_x) have risen by 50% in the last 200 years.

3.3.2 Transport is a major contributory factor to the build up of greenhouse gases and its contribution is increasing. Between 1990 and 2002, total UK greenhouse gas emissions declined 10 per cent but greenhouse gas emissions from transport industries were 47 per cent higher in 2002 than in 1990. Despite technological advances, transport is the fastest growing greenhouse gas emission sector. In Shropshire, transport is the biggest single contributor to greenhouse gas emissions.

3.3.3 In response to national targets and international agreements, policies to mitigate the damaging effects of climate change have been developed. The policies are being driven by a number of national targets and international agreements for reducing the output of greenhouse gases (Greenhouse Gas Emissions). In summary these are:

- Kyoto: The UK is committed to reducing a basket of greenhouse gases to levels 12.5% below those in 1990 by 2008-12
- The UK Governments have set a unilateral target to reduce carbon dioxide to 20% below 1990 levels by 2010
- Royal Commission on Environmental Pollution: Stated in a recent report that the UK should aim to achieve 60% cuts in carbon dioxide emissions by 2050

3.3.4 Shropshire County Council (SCC) is one of 24 pilot local authorities in the UK leading on an innovative approach to understanding the local contribution to global carbon dioxide pollution and developing an action plan to reduce these emissions. This approach is called Councils for Climate Protection (CCP) and is being sponsored by DEFRA.

3.3.5 If current levels of climate change are maintained it is expected Shropshire will see:

- Higher annual mean temperatures (up to +2 to +3.5°C by 2080): high summer temperatures and summer droughts
- Around half the number of freezing winter nights by 2050.
- Increased winter rainfall, and so more frequent flooding (see earlier).

3.3.6 A lot of this is currently already occurring. Climate Change is expected to have serious impacts on:-

- Agriculture: as cultivation zones for different crops shift with changing climatic patterns.
- Biodiversity: Niches disappear and imbalances between predator and prey appear.
- Property at risk from an increasing frequency of violent weather events, flooding and subsidence.
- Health: there are also expected to be many direct and indirect consequences for the health of the population, which will need to be both understood and addressed.

3.3.7 The initial stage of the Councils for Climate Protection (CCP) programme established a baseline of estimated emissions in Shropshire. An inventory of all of Shropshire's greenhouse gas emissions has been undertaken demonstrating that estimated equivalent carbon dioxide emissions from the community for the



calendar year 2000 were 2.3% lower than in 1990. The decrease is misleading however, as in Shropshire these figures derive from the low consumption levels in the early 1990s. The second half of the 1990s has generally seen a rise in equivalent carbon dioxide emissions in Shropshire.

Table 3.4 Greenhouse gas emissions by sector in Shropshire, 2000 (Source SCC)

Sector	Equiv CO2 (tonnes)	Equiv CO2 (%)	Energy (GJ)
Residential	507,327	33.8	6,854,412
Commercial (inc. corporate)	33,210	8.9	1,476,508
Industrial	52,539	3.5	678,393
Waste	63,738	4.2	
Transport	744,367	49.6	11,050,511
Total	1,501,182	100	20,344,669

Table 3.5 Greenhouse gas emissions from the transport sector in Shropshire, 2000 (Source: SCC)

Road Transportation	Equiv CO2 (tonnes)	Equiv CO2 (%)	Energy (GJ)
Petrol	445,761	29.7	6,709,149
Diesel	298,106	19.9	4,333,674
LPG	500	0.0	7,688
Total Transportation	744,367	49.6	11,050,511

3.3.8 The government has a target that 10% of the UK's electricity should come from renewable sources by 2010 and an aspiration that this should rise to 20% by 2020.

3.3.9 An assessment of the potential to generate electricity from renewable energy sources was carried out by the Shropshire Energy Team (now the Marches Energy Agency) in 1997. A regional renewable assessment was also completed by Halcrow in 2001. These produced estimates of the practical renewable energy resource in Shropshire and indicated that the County has biomass, landfill gas, waste, small scale hydro, solar and wind resources. The potential wind resource is very great but there are a number of reasons why this resource cannot be fully exploited: much of the best wind resource in the County lies within protected areas, there are limits to the amount of electricity generation the County's network can absorb and there are issues of loss of visual amenity.

3.3.10 At the moment, there is little exploitation of any of the renewable energy resources in the County to generate electricity. Until recently, renewable energy schemes were confined to landfill gas and micro-hydro schemes, but recently, wood heat, biogas solar thermal, solar electricity and ground-source heat pumps have made an appearance in the County. However, we still have a long way to go before we can say that a significant proportion of our energy comes from renewable sources. There is, however, a large potential market for heat generated from the utilisation of the renewable energy resources in Shropshire.

3.4 Landscape

SEA Objective: To protect and enhance the character of the landscape and minimise adverse development in particularly sensitive areas

3.4.1 The term “landscape” in this section, considers the visual and cultural rather than the ecological value. It also means a sense of place. Shropshire’s landscape plays an important role in the quality of life of local people and is one of the main reasons that Shropshire is an attractive place to visit, so contributes to the local economy (see Figure 1, Figure 2 and Figure 3 in Appendix 2).

3.4.2 The beauty of Shropshire's landscapes lies in their diversity and tranquillity. Shropshire Hills Area of Outstanding Natural Beauty (AONB) is recognised nationally through its designation for the exceptional quality and character of its landscape. The AONB covers a quarter of Shropshire and also extends into the Borough of Telford & Wrekin (part of the Severn Valley and The Wrekin). The area contains several broad landscape areas including two Environmentally Sensitive Areas – Clun and the Shropshire Hills – which together cover three quarters of the AONB.

3.4.3 Understanding the basic character of a particular landscape is the essential starting point for developing policies to conserve that unique character. The Countryside Agency’s Countryside Character map recognises seven different character areas in Shropshire. The following tables describe these areas, indicating their key characteristics and existing pressures on the landscape.

Table 3.6 Key characteristics and pressures on landscape character areas in Shropshire (Source: Countryside Agency/SCC)

Landscape Area	Key Characteristics	Pressure on the landscape
Oswestry Uplands	<ul style="list-style-type: none"> Intricate pattern of flat-topped hills and steep sided valleys. Small fields, many trees and strong hedges. Many limestone quarries. Parklands nestle around Oswestry. 	<ul style="list-style-type: none"> Agricultural intensification is creeping further up the hills. Some marginal land is unmanaged. Small native woodlands often go unmanaged and some conifer plantations are poorly designed. Characteristic hazel hedges are declining.
Shropshire, Cheshire and Staffordshire Plain	<ul style="list-style-type: none"> Gently rolling plain interrupted by sandstone ridges. Strong field patterns, dominated by dairying and arable land. Meres, mosses and small ponds scattered throughout. Boundaries are hedges with many hedgerow trees. Buildings are timber framed, red brick or warm local stone. 	<ul style="list-style-type: none"> Agricultural intensification is destroying small meadows, heathlands and ponds. Hedges are being "managed to death". They are cut too early, too often and too hard. Few new hedgerow trees are being planted. Development pressures change the character of small towns and villages.
Shropshire Hills	<ul style="list-style-type: none"> Dominant SW-NE ridges, scarps and valleys. Steep, rounded hills. 	<ul style="list-style-type: none"> Agricultural intensification leading to “improved” pasture on slopes and amalgamation of fields. Conifer woodlands can be very geometric.



Landscape Area	Key Characteristics	Pressure on the landscape
	<ul style="list-style-type: none"> Prominent landmark hills. Small fields give way to arable land in dales. Prehistoric Hill Forts, Medieval castles and other border defensive works. 	<ul style="list-style-type: none"> Riverside trees are not being well managed. Conversion of farm buildings into dwellings has not always been appropriate. Development pressures are affecting the character of small settlements. Traditional orchards are being neglected and lost. Moorland is over-grazed or poorly managed. There is pressure for hill top communications masts.
Clun and North-West Herefordshire Hills	<ul style="list-style-type: none"> Rolling rounded hills divided by narrow valleys Small, wooded, enclosed upper valleys, broadening to flat-bottomed intensively farmed lower valleys Irregular field patterns around settlements contrasting with large rectilinear fields Hill Forts, mottes and planned boroughs. 	<ul style="list-style-type: none"> Geometric conifer plantations can dominate There is variability in hedgerow quality Intensive arable land moves higher up slopes associated with large farm buildings Unsympathetic conversion of redundant farm buildings Grazing pressure along rivers is leading to loss of trees.
Herefordshire Lowlands	<ul style="list-style-type: none"> Wide river valleys. Intensive arable farming and low hedges. Historic parks. 	<ul style="list-style-type: none"> Agricultural intensification with loss of hedges, trees and meadows. Neglect of parklands and conversion to arable. Conversion of redundant farm buildings.
Teme Valley	<ul style="list-style-type: none"> Small, narrow valley dissecting gently rolling plateau. Hop fields. Enclosed pasture in valleys. Sparsely populated, scattered hamlets. 	<ul style="list-style-type: none"> Agricultural intensification with loss of hedges, trees and meadows. Conversion of redundant farm buildings. Decline and loss of orchards.

3.4.4 Shropshire County Council has undertaken a countywide landscape character assessment of rural areas. It is planned that the County Council will prepare a Supplementary Planning Document on Landscape jointly with the district and borough councils in Shropshire, to be used as a material planning consideration in all relevant planning applications in the County.

3.4.5 Data on a range of environmental issues from policy objective to specific development can be provided as there is a character description for each Landscape Description Unit and each landscape type. The data will provide information on potential sensitivity to development, cultural type and management vision, for example a statement indicating whether a particular Landscape Description Unit needs strengthening.

3.4.6 The potential significant transport effects on the landscape are:

- Traffic and parking reduce the perceived quality of the landscape
- New transport infrastructure projects either adding to, or detracting from the quality of the landscape
- Landscape features are subject to the cumulative effects of air pollution
- Street lighting resulting in light pollution
- Road improvement schemes in rural areas have an urbanising influence with associated signage, lighting and kerbs
- Benefits to many landscape features through reduced traffic and improved public transport

3.5 Cultural Heritage

SEA Objective: Protect, conserve and enhance the region's diverse historic environment and manage change in such a way that respects local character and distinctiveness

3.5.1 The Regional Planning Guidance for the West Midlands identifies the need to conserve and enhance the region's diverse historic environment and manage change in such a way that respects local character and distinctiveness.

3.5.2 Shropshire's historic environment is one of the county's greatest assets with features ranging from; prehistoric monuments, structures of the industrial revolution, historic townscapes to fields and gardens, castles to mansions (see Figure 4 in Appendix 2). All of which combine to create a rich and diverse historic landscape. Well known features include Offa's Dyke, Wroxeter Roman City and the Ironbridge Gorge and the towns of Ludlow and Shrewsbury. However, there are many less well known sites also with great significance. The historic environment is a major contributor to the county economy through tourism and contributing to an attractive place for people to come to live and work. Table 3.7 shows the numbers of designated historic buildings and areas in Shropshire.

Table 3.7 Numbers of designated historic areas and buildings in Shropshire

Type of Historic Area/ Building	No.
Listed Buildings	
Grade I	99
Grade II*	457
Grade II	6152
Total	6708
EH Register of Historic Parks and Gardens	
Grade I	1
Grade II*	4
Grade II	24
Total	29
EH Register of Battlefields (Battle of Shrewsbury, 1403)	1
Scheduled Monuments	448
Conservation Areas	112



3.5.3 Due to a complex mix of development pressures and a lack of maintenance and resources Shropshire currently has 41 listed buildings from the 556 buildings in the top two categories of listed building (Grade I and II*), which on the 'at risk' register (BAR register, English Heritage).

3.5.4 In response to criteria set out by English Heritage, SCC is currently preparing a Historic Landscape Characterisation Project. The Historic Landscape Characterisation Project is carried out within two national frameworks – the Countryside Agency's Countryside Character Map and English Heritage's Atlas of Settlement Diversity. The project aims to fill the gap in understanding of the wider historic landscape, and the archaeological merit, so that separate and rarely mapped places have on the overall understanding of the landscape.

3.5.5 The Historic Landscape Characterisation Project is expected to be completed for Shropshire by mid 2006. The objectives are to provide *“strategic information for development plans, detailed data for development control; helping to assess environmental impact of major developments; influencing the character and location of landscape change and development; contributing to rural and urban planning and development policies”* (English Heritage).

3.5.6 The potential significant effects of transport on this historic environment include:

- Damage to historic roadside buildings by traffic vibration, in particular heavy goods vehicles
- Damage to historic buildings (particularly stone) from the effects of air pollution
- Damage to historic buildings by accidental collisions
- Loss of historic bridges due to road widening.
- The ambience of Conservation Areas can be adversely affected by the presence of traffic and inappropriately placed street furniture
- Cultural monuments may be severed from their setting due to the intrusion of vehicles including those of people visiting the monument.

3.6 Biodiversity (Flora and Fauna) and Soil

SEA Objective: To maintain and enhance the populations and natural ranges of species and the quality and extent of wildlife habitats and ecosystems in Shropshire

SEA Objective: Protect and improve soil quality and soil retention

3.6.1 Understanding the effects of transport on biodiversity requires an understanding of how ecosystems function. An ecosystem approach, supported by the Convention on Biological Diversity (1992), considers biodiversity as a whole rather than “islands” of designated sites.

3.6.2 The interaction of biodiversity and the road network is significant with, for example, a quarter of the UK badger population being killed annually and between thirty and seventy million birds.

3.6.3 The Shropshire Biodiversity Action Plan, published in November 2002 sets out the priorities for biodiversity conservation in Shropshire. The aim is to conserve not only what is rare or endangered but what is familiar, locally distinctive and special to the Shropshire community.

3.6.4 The Shropshire Biodiversity Action Plan includes individual action plans for a range of both habitats and species relevant to the county. The list of individual action plans are not definitive, and will be expanded as priorities change. In response to the UK agenda, *Biodiversity Challenge: the Shropshire Response* listed over 300 species of 'conservation concern'. These include internationally important and nationally rare or

threatened species. Of these, 33 were designated 'priority species' for Shropshire. These 'Action Plans' look at population trends for these species, and state the current action taken to reverse any downward trends. Shropshire currently has 4 'schedule 8' type plant species (Wildlife & Countryside Act 1981), which are classified as the most protected (see Figure 5 in Appendix 2).

3.6.5 In addition to the 24 species identified in Action Plans and following the guidance from the UK Biodiversity Challenge, 15 Habitat Action Plans have been prepared for Shropshire. Shropshire woodlands have traditionally formed part of the local economy, and are one of the regions most significant areas for woodland cover. It is the objective of the West Midlands Regional Forestry Framework (WMRFF) to significantly increase regional woodland cover within the region.

Table 3.8 Key issues for biodiversity in Shropshire

<i>Key Characteristics</i>	<i>Key issues in Shropshire</i>
<ul style="list-style-type: none"> • Wide range of rock types and topography • Meeting point for species of several different geographical ranges • 15 distinct bio-geographical elements recognised within the county flora • Large range of flora • Wide diversity of habitats: from the wetlands of the Meres and Moses to the ancient woodland of Wyre Forest, the Wrekin and the Ercall. 	<ul style="list-style-type: none"> • Impact of the reform of the Common Agricultural Policy (CAP) • Developing national rural policy • Effects of climate change • Changes in agri-environment schemes • Meeting the needs of the community, developers and visitors whilst maintaining the unique qualities of the landscape • Developing technology and its impact on the landscape.

3.6.6 The extent of Shropshire's biodiversity is reflected in the number of statutory and non-statutory sites designated for nature conservation: 4 National Nature Reserves (NNRs), 110 Sites of Special Scientific Interest (Sites of Special Scientific Interest) of which 14 are RAMSAR sites, and 573 non-statutory Wildlife Sites. These combined cover 6% of Shropshire's land area. The Shropshire Hills Area of Outstanding Natural Beauty (AONB) covers 23.2%. (Further details can be seen on Figure 1 and Figure 2 in Appendix 2).

Table 3.9 Nature Conservation Designations in Shropshire

Designation	Number of hectares under designation	Percentage of county
National Nature Reserves (NNR)	1,658	0.5
Sites of Special Scientific Interest (SSSI) (includes Ramsar sites and cSACs)	8,715	2.5
Wildlife Sites	c. 10,000	2.9
Area of Outstanding Natural Beauty (AONB)	80,916	23.2

3.6.7 As well as these areas there are 698 Ancient Woodlands, 2 Environmentally Sensitive Areas, 10 Local Nature Reserves, 24 Shropshire Wildlife Trust Nature Reserves and 128 Regionally Important Geological Sites. (All data includes Telford & Wrekin).

3.6.8 Shropshire has six (candidate) Special Areas of Conservation (cSACs) covered by European legislation (Natura 2000). These are detailed in the table below and shown on Figure 1 (Appendix 2). Brown Moss and The Stiperstones & The Hollies lie solely in Shropshire, whilst the other four are partly situated within the County.



Table 3.10 Natura 2000 sites in Shropshire (Source: Joint Nature Conservation Committee)

EU Code	Name	Country	Local Authority	Grid Ref	Area (ha)
UK0030100	Brown Moss	E	Shropshire	SJ561394	32.03
UK0030250	River Clun	E	Herefordshire; Shropshire	SO393754	14.93
UK0012810	The Stiperstones and The Hollies	E	Shropshire	SJ375006	601.46
UK0013595	West Midlands Mosses	E	Cheshire; Shropshire; Staffordshire	SK026282	184.18
UK0012912	Fenns, Whixall, Bettisfield, Wem and Cadney Mosses	EW	Shropshire; Wreccsam/Wrexham	SJ487364	949.2
UK0030252	River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid	EW	Cheshire; Ddinbych/Denbighshire; Gwynedd; Shropshire; Sir y Fflint/Flintshire; Wreccsam/Wrexham	SJ423503	1308.93

3.6.9 Any of these Natura 2000 sites that are affected by development resulting from the Local Transport Plan would be required to be subject to an “appropriate assessment” under the Habitat Regulations.

3.6.10 English Nature has carried out an annual report on the condition of the Sites of Special Scientific Interest (SSSI’s) throughout the country. The condition of Shropshire’s SSSI’s is summarised below in Table 3.11 this table also shows the regional and national SSSI condition data for comparison purposes:

Table 3.11 Condition of Shropshire SSSI’s (Source: English Nature, 2004)

	% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
Shropshire	66.21	27.07	39.14	29.16	4.35	0.28
West Midlands	64.98	35.21	29.77	29.70	4.97	0.35
England	64.75	45.44	19.31	21.92	13.24	0.10

3.6.11 It can be seen that Shropshire has a higher percentage of area meeting the PSA target than the regional and national averages. Shropshire has significantly less area considered to be unfavourable and declining, and has a higher percentage of land recovering from an unfavourable status. However, the percentage area considered favourable is significantly less in Shropshire than both the regional and national figures. There is a range of reasons for unfavourable conditions in Shropshire’s Sites of Special Scientific Interest. These include over/under grazing, drainage, moor burning and inappropriate stock feeding.

3.6.12 Potential significant impacts of transport on flora and fauna are:

- Wildlife casualties through collisions with motor vehicles
- Land take and associated habitat loss through new transport infrastructure schemes
- Fragmentation/severance of habitats through new schemes, increased traffic etc

- Changes in air quality, water quality, noise, vibration, light emissions, dust deposition as a result of construction and operation.
- Increase in disturbance to wildlife populations (e.g. traffic noise)
- Creation of barriers to movement
- Hydrological changes affecting surface and groundwater
- Changes to soil
- Inappropriate grass cutting regimes on verges
- Spread of invasive species (e.g. Japanese Knotweed spread by verge regime)
- Creation of habitats
- Curbing spread of invasive species

Shropshire County Council currently has a shortage of data concerning soil and geology. This is an area where detailed information is likely to improve with the use of a soil map, which the Council are currently preparing. The potentially significant transport related impacts on soil may include:

- New transport infrastructure schemes removing soil
- Old infrastructure schemes being returned to soil

3.6.13 The impact of transport on soil is not considered to be significant and a specific indicator has not been established.

3.7 Water

SEA Objective: To mitigate potentially adverse effects on water quality from new or extended development on water quality and water resources, and minimise the susceptibility of land use activities to flooding

3.7.1 Three aspects of water are considered below:

- Water resources
- Water quality
- Flooding

Water Resources

3.7.2 In Shropshire, water resources are more plentiful than in some other regions of England but this relative wealth is vital to support the natural character of the county's streams, rivers and lakes. New developments will create extra demands for water, therefore availability of local resources needs to be considered carefully in the planning process.

3.7.3 Summary of water resources in Shropshire:

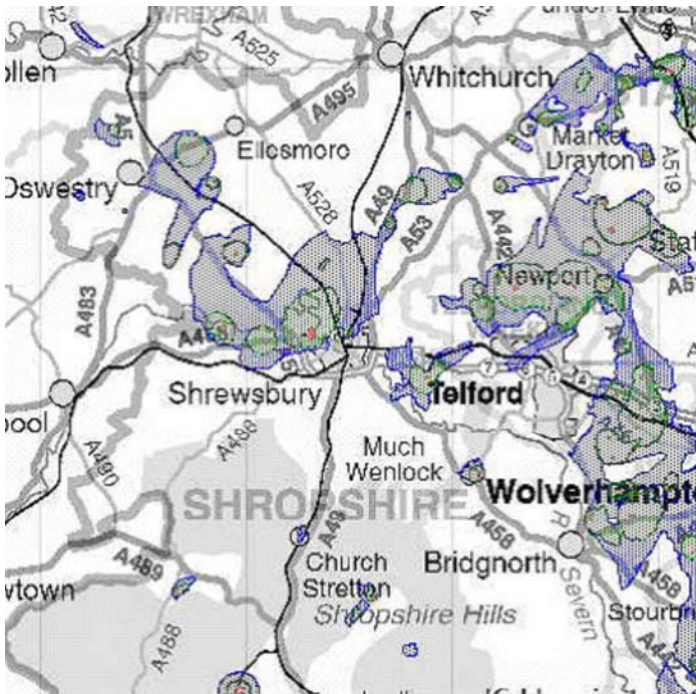
- Rivers: The main rivers in the County are the Severn and its tributaries and the Teme and its tributaries.
- Lakes and pools: These are numerous. The larger ones exist at Ellesmere and Bomere and are part of the internationally important Meres and Mosses complex.
- Water supply intakes: Water is extracted by Severn Trent Water at Shelton, Shrewsbury and Hampton Loade near Bridgnorth
- Reservoirs: Chelmarsh, Bridgnorth (South Staffordshire Water plc).
- Shropshire Groundwater Scheme: The Environment Agency operates a series of boreholes in order to top up flows in the Severn. These extract large quantities of water stored naturally underground in the



permo-triassic sandstone formation underlying much of North Shropshire. The scheme consists of a number of boreholes linked by pipelines to outfalls on the rivers Perry, Roden, Tern and Severn.

- Key habitats: Water habitats are numerous and widespread. Shropshire Wildlife Trust hold information on special wildlife sites in the County. The River Teme (whole length) is the largest. Numerous other Sites of Special Scientific Interest exist.
- Canals: Shropshire Union Canal and the Montgomery Canal are managed by British Waterways.
- Groundwater supplies: Groundwater is also an extremely important asset in Shropshire - many communities in the county are supplied with drinking water from groundwater sources (wells and boreholes). Numerous boreholes serving individual properties exist. Approximately 31 groundwater sources are utilised by Severn Trent Water for water supplies throughout the County. In North Shropshire a scheme has been developed where groundwater is used to maintain flows in the River Severn during very dry periods.

Figure 3.1 Groundwater Sources in Shropshire (Source: Environment Agency)



3.7.4 Key Water resource issues in Shropshire

- Impact of water abstraction.
- Protection of high-quality water resources, compliance with water quality objectives and EU standards.
- Protection of existing high-quality riverine and other wetland habitats.
- Flood plain management and flood alleviation schemes.

3.7.5 Water Quality

3.7.6 Both the construction and use of transport infrastructure can affect the quality of water. Roads with flows of between 15,000 and 30,000 vehicles per day have a moderate impact on water quality while roads with flows of below 15,000 vehicles per day have a minor impact.

3.7.7 Water quality is of fundamental importance. The River Severn and its tributaries are used extensively for a wide variety of purposes; the most important being water supply. The River Severn is a major source of water for Shropshire and also parts of west England, as far as Bristol. Generally, the quality of water courses in the county is fairly good. Quality is measured by chemical and biological sampling methods undertaken by the Environment Agency (EA).

3.7.8 River Quality Objectives (RQOs) are used in England and Wales as targets for water quality in 40,000 kilometres of rivers. The targets are based on our need to rely on rivers for water supplies, recreation, fisheries and our enjoyment of wildlife.

3.7.9 Shropshire's river stretches have been allocated a Grade from A to F to signify the quality of a particular stretch of water. Table 3.12 below indicates the numbers of stretches in each category. The results are based on an examination of the chemistry of the river.

Table 3.12 River quality (chemistry) of rivers in Shropshire (2000-2002) (Source: Environment Agency)

Grade	No. of river stretches	% of total
A (Very Good)	26	24
B (Good)	57	52
C (Fairly Good)	20	18
D (Fair)	4	4
E (Poor)	2	2
F (Bad)	0	0
Total	109	

3.7.10 River quality sampling are analysed for three determinants of organic pollution: ammonia, biochemical oxygen demand (BOD), and dissolved oxygen.

3.7.11 The likely uses and characteristics of a river stretch classified Grade A (Very Good) are very good salmonid fisheries, cyprinid fisheries and natural ecosystems, whilst Grade E (Poor) areas signifies low grade abstraction for industry and, due to discharges of organic pollution, absent or sporadically present fish, and impoverished ecosystems.

3.7.12 Shropshire has 94% of its rivers classified between 'very good' and 'fairly good', similar to the national average. 2% of Shropshire's rivers are classified as of 'poor' standard compared to 5% nationally. River stretches in Shropshire classified as poor are:

- Shropshire Union (Montgomery), A5 road to Morton farm, Morton, Oswestry.
- MAD BK, Cuckoo Oak to Culvert exit, Haldane, Bridgnorth.

3.7.13 Shropshire has no river stretches classified as "bad". Nationally the biological and chemical quality of rivers has improved since 1990. This is due to a number of factors including a major clean-up of discharges from industry and sewage-treatment works.



3.7.14 Transport has the following implications on water quality:

- Pollution from traffic may enter the groundwater directly, may move slowly within the groundwater to emerge eventually in surface water, may run off the land, or may be deposited from the atmosphere
- Increases in traffic may lead to increases in water pollution
- Maintenance activities and road use can contribute to the build up of sediment in watercourses

Flooding

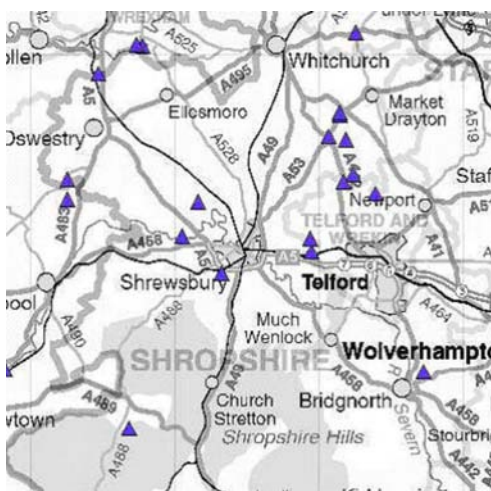
3.7.15 Too much water also causes great problems in Shropshire at times (see Figure 6 in Appendix 2). Certain localities in the county are at risk from flooding. In Shrewsbury for example, development over the years has encroached on to the flood plain and there are approximately 400 residential and commercial properties at risk from flooding, as well as major transport routes through the town. Downstream, a small part of Ironbridge and properties in Bridgnorth are also at risk.

3.7.16 The imperviousness of road surfaces and use of piped road drainage increases the rate of water flow to receiving water courses and therefore would contribute to flooding in storm conditions. This is a cumulative effect.

3.7.17 Local authorities are working with the Environment Agency to ensure that new development is not at risk from flooding and also does not increase the risk for others. Increased frequency of recent floods has highlighted the need to look at alleviate the effects. The EA has recently completed a £6 million scheme to protect the Frankwell area of Shrewsbury, which will protect a number of properties. The flood defences also consist of innovative temporary flood barriers deployed at the English Bridge, in Shrewsbury, which will protect a number of further properties. Shrewsbury and Atcham Borough Council's Local Plan states that no development will be permitted within areas of potential flood risk unless it is demonstrated that adequate preventative measures have been taken.

3.7.18 Flooding is likely to become more of an issue in future years.

Figure 3.2 High Flow Rivers in Shropshire (Source: Environment Agency)



3.7.19 The impacts of transport on flooding include:

- Piped road drainage
- Road surfaces are impermeable and, hence increase the risk of flash flooding.

3.8 Human Health & Population

3.8.1 Human health and population covers the areas:

- noise
- accidents
- physical fitness
- security
- accessibility

3.8.2 (See Figure 7, Figure 8 and Figure 10 in Appendix 2).

Noise

Objective: To minimise noise levels

3.8.3 The impact of noise on quality of life is increasing. Noise is a less obvious form of pollution because people learn to live with gradual change. Noise does not just cause annoyance, it can affect people's health.

3.8.4 The main generator of background noise in Shropshire is traffic. The majority of Shropshire is rural and it should be noted that smaller volumes and changes to volumes of traffic are more noticeable in tranquil areas.

3.8.5 A Shropshire People's Panel survey in 2004 asked respondents "How would you rate the following types of noise in your local area?". Road traffic was considered to be by far the greatest source of problem noise. 8% of respondents considered it to be a serious problem and 18% considered it to be a slight problem.

Accidents

Objective: To reduce death and serious injury from accidents

3.8.6 Reducing deaths from accidents is one of the targets set in the Government's health strategy, 'Our Healthier Nation' while reducing road accident deaths and casualties is one of the targets in the Government's 10 Year Plan for Transport.

3.8.7 There are approximately 50 accidental deaths per year in Shropshire, the largest cause being road traffic accidents (56%).

3.8.8 The national target is to reduce accidental death rates by 20% by the year 2010. Whilst rates from accidental death in the County are similar to the national rate current trends show that achieving these targets will be challenging in Shropshire.



Table 3.13 Accidental deaths in Shropshire 2000-2002 (Source: Death Statistics, National Statistics and Directorate of Public Health, Shropshire PCT)

	Average annual number of accidental deaths	ASDR per 100,000 population	95% confidence interval		Statistical difference to national
			Lower limit	Upper limit	
Bridgnorth	11	16.0	10.1	21.9	Similar
North Shropshire	14	23.1	15.6	30.6	Similar
Oswestry	6	15.2	7.8	22.6	Similar
Shrewsbury and Atcham	16	15.0	10.5	19.5	Similar
South Shropshire	6	14.7	7.2	22.2	Similar
Shropshire County	53	16.7	13.9	19.5	Similar
England & Wales	10,906	16.5	16.3	16.6	

3.8.9 Mortality rates are presented as Age-Standardised Death Rates, which are calculated to take into account differences in age structures and allow for direct comparisons between different areas.

3.8.10 The number of road accidents resulting in death or serious injury has reduced in Shropshire in recent years due to improvements in road safety. In 2004 there were 22 people killed and 181 people seriously injured on Shropshire roads. This compares to an average of 399 people killed or seriously injured between 1994 and 1998.

Physical Fitness

Objective: To protect and enhance human health

3.8.11 Physical fitness levels have a major impact on the occurrence of obesity and circulatory diseases (coronary heart disease, stroke and other related conditions). The national trend is for an increase in obesity, The proportion of the people who are obese has increased from 6% of men and 8% of women in 1980 to 22% of men and 23% of women in 2002. Current trends show this increase to due to continue. Indicators show that 11% of men and 15% of women are obese in Shropshire, double the 1980 levels (2001 West Midlands Adult Survey) – a big increase but significantly lower than the national average. Levels reflect the national trend in increasing obesity from teens and early twenties to middle age.

3.8.12 Circulatory diseases account for just under 45% of all deaths in Shropshire County and a third (33%) of all premature deaths (i.e. those occurring before the age of 75). There are a number of current initiatives. The Coronary Heart Disease National Service Framework (CHD NSF) is a ten-year programme, which aims to reduce premature death from heart disease by promoting faster, fairer access to high quality services.

3.8.13 Bridgnorth, North Shropshire and Oswestry have premature death rates for circulatory diseases, which are similar to the national average. The overall County rate and those for Shrewsbury & Atcham and South Shropshire are significantly lower than the average for England and Wales.

Table 3.14 Premature deaths from circulatory diseases in Shropshire 2000-2002 (Source: Death Statistics, National Statistics and Directorate of Public Health, Shropshire PCT)

	Average annual number of deaths	ASDR per 100,000 population	95% confidence interval		Statistical difference to national
			Lower limit	Upper limit	
Bridgnorth	63	96	82	109	Similar
North Shropshire	76	111	97	126	Similar
Oswestry	47	102	85	119	Similar
Shrewsbury and Atcham	107	96	85	106	Lower
South Shropshire	45	74	61	87	Lower
Shropshire County	336	96	90	102	Lower
England & Wales	61,202	109	109	110	

3.8.14 Current trends indicate that Shropshire will meet the national target of reducing premature deaths from circulatory diseases by 40% by 2010.

3.8.15 National trends show a decline in overall levels of people walking and/or cycling, and increasing travel by car (National Travel Survey, DoT, 2002). The 1998 Health Survey for England shows that about two-thirds of men and three-quarters of women reported less than 30 minutes moderate activity on at least five days per week. There are no overall local comparisons. Local information for children was compiled in the Health Survey for England 2002. This shows only 71% of 12 year olds exercise for more than 30 minutes a day.

Security

Objective: To reduce the fear of crime

3.8.16 Fear of crime is an important aspect of quality of life and is linked to the quality of the environment. In line with the Crime and Disorder Act 1998, each district in Shropshire established a Community Safety Partnership, their role being to identify local crime and disorder problems, determining priorities, producing strategies and monitoring progress.

3.8.17 Shropshire has relatively low levels of crime deprivation. There are very low levels in areas in the south of the county, particularly the south west of the county and within rural areas of the northwest. Higher levels of deprivation occur within urban areas and towards the eastern parts of the county.

3.8.18 Table 3.15 shows crime rates in Shropshire.

Table 3.15 Crime rates in Shropshire 2001-2004 (Source: Crime and Substances Misuse Audit 2004, Shropshire C&D Partnership)

	2001/2002	2002/2003	2003/2004	% Change 2001/02-2003/04
	Rate per 1000 Pop*	Rate per 1000 Pop*	Rate per 1000 Pop*	
Bridgnorth	53.6	49.6	46.4	-13.4



	2001/2002	2002/2003	2003/2004	% Change 2001/02-2003/04
	Rate per 1000 Pop*	Rate per 1000 Pop*	Rate per 1000 Pop*	
North Shropshire	61.1	64.3	61.1	0.0
Oswestry	63.1	61.1	67.0	6.2
Shrewsbury & Atcham	86.5	92.5	93.9	8.6
South Shropshire	44.0	54.9	47.8	8.6
Shropshire	66.0	69.2	68.2	3.3

3.8.19 The crime rates for Shropshire in 2003/2004 are lower than those regionally and nationally in each of the main crime types. Shrewsbury & Atcham has consistently higher crime rates per 1000 population than anywhere else in the county. Violence against the person in Shrewsbury & Atcham is the only crime type in Shropshire which has a higher rate than the corresponding figure for West Mercia. Bridgnorth was the only district to experience a decrease in recorded crime over the three year period (-13.4%), South Shropshire has lower recorded crime rates by type compared with the rest of Shropshire, apart from theft of vehicles.

3.8.20 Despite the crime statistics which show that Shropshire is a relatively low crime area, there appears to be a high fear of crime amongst the public which impacts on the way that people live. The following tables describe the perceived fear of crime in Shropshire's five districts. It can be seen that the overall fear of crime statistics are higher after dark, especially for the Oswestry and Shrewsbury & Atcham Districts.

Table 3.16 2004 Fear of crime statistics (Source: Crime and Substance Misuse Audit, 2004, Shropshire C&D Partnership)

	Bridgnorth	Oswestry	Shrewsbury & Atcham	North Shropshire	South Shropshire
% feeling safe or very safe while walking in their local area during the day	93.5	90.4	89.0	91.3	92.0
% feeling fairly safe or very safe while walking in their local area after dark	70.1	58.1	59.1	62.3	72.4

3.8.21 Fear of crime is higher amongst young people (aged 11-16) with 84.4% feeling safe or very safe in the day and 51% feeling fairly safe or very safe at night.

Accessibility

SEA Objective: To improve accessibility to essential services

3.8.22 The term accessibility is used to describe the ease with which people can get to the places they need to go, such as places of work, learning, health care, food shopping and leisure and exercise. Poor accessibility can have a significant impact on people's quality of life and their life chances.

3.8.23 Levels of accessibility are generally determined by:

- **The location of services and opportunities** - e.g. services and facilities that are available very locally and can be accessed by foot tend to be much more accessible than those which are more distant from communities and need to be accessed using motorised transport
- **The availability of a means of transport**- e.g. people who have ready access to a flexible and rapid means of transport such as a private car tend to find it easier to access services and facilities than those people who rely upon public transport
- **Other barriers such as information, cost, levels of personal mobility etc.**

3.8.24 One of the transport dilemmas of recent decades is that accessibility for many people has improved, due to increased car ownership, better infrastructure and reduced overall costs of car use. Improved personal mobility has enabled access to a wider choice of facilities. However this increased mobility has also often led to a decline in local services accessible by foot, and the loss of public transport services. The result has been a widening of the accessibility gap. While car users have better accessibility, those without access to private transport have fewer opportunities locally and find it much more difficult to travel independently to the places they need to go to.

3.8.25 As a rural county accessibility in Shropshire is relatively poor in comparison with more urban areas.

3.8.26 A detailed assessment of accessibility in Shropshire has been undertaken. Some of the results are shown below in Table 3.17, Table 3.18 & Table 3.19. This identifies the % of all households, or those from high risk groups, who are able to reach key destinations such as work, doctors and hospitals within set periods of time, by using public transport or by making reasonable length trips by foot. A fuller analysis of current accessibility is provided in the LTP.

Table 3.17 Accessibility data 1

Destination	Indicator	Time Period	% within 30 minutes	% within 60 minutes
Access to sixth form colleges	% of 16 to 19 year olds	0800 - 0900	41.6	52.1
Access to FE colleges	% of households without access to a car	1800 – 2100	50.5	86.9
Access to hospitals (acute services)	% of people aged 65+	0900 – 1100	14.2	43.5
Access to major towns centres	% of households	0900 – 1200 (Sat)	29.4	64.7

Table 3.18 Accessibility data 2

Destination	Indicator	Time Period	% within 15 minutes	% within 30 minutes
Access to GP / health clinic	% of households	0800 – 0900	62.9	80.2
Access to market towns	% of households	0900 – 1200 (Sat)	41.5	73.1
Access to market towns	% of children aged between 11 – 18 years	0900 – 1200 (Sat)	36	68.6
Access to supermarkets	% of households	1400 – 1700		71.6



Table 3.19 Accessibility data 3

Destination	Indicator	Time Period	% within 20 minutes	% within 40 minutes	% within 60 minutes
Access to key employment destinations	% of people of working age	0730 – 0900	51.6	75.1	79.5
Access to all leisure centres	% of Households	1400 - 1600	56.5	77	
Access to a public library	% of Households	1500 - 1700	53.5	78.3	

3.9 Material Assets

SEA Objective: To maximise efficient use of materials and greater use of recycled and waste materials

3.9.1 The construction and maintenance of highway infrastructure is a major user of material assets (aggregates) and creator of waste materials.

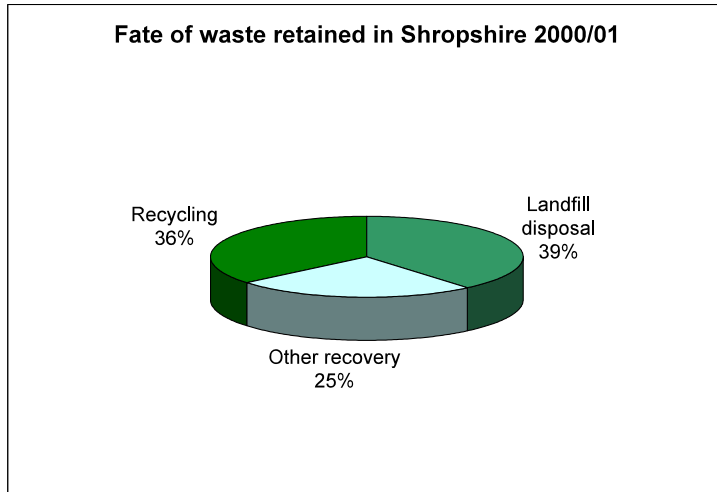
3.9.2 Aggregates are a finite resource and the maintenance of highways demands a constant supply. This demand is likely to increase with the development of new infrastructure. Shropshire County Council is, therefore, a major user of aggregates. Because aggregates are a finite resource, affects are permanent and cumulative.

3.9.3 During 2004/05 approximately 0.14 million tonnes (mt) of aggregates were consumed in road maintenance work by contractors working for the County Council in its role as Highway Authority. If construction of a Shrewsbury North West Relief Road (NWRR) proceeds, it would require approximately 0.1mt of aggregates.

3.9.4 Waste disposal also has transport implications in terms of the amount of waste that needs to be transported, combined with the distance between waste generators and waste disposal sites.

3.9.5 Shropshire Waste Management strategy sets out policies to minimise the generation of waste and maximise local opportunities to re-use, recycle and recover value from waste. There is scope to use secondary and recycled materials in place of aggregates in highway schemes.

Figure 3.3 Current waste management (Shropshire Waste Local Plan 2004)

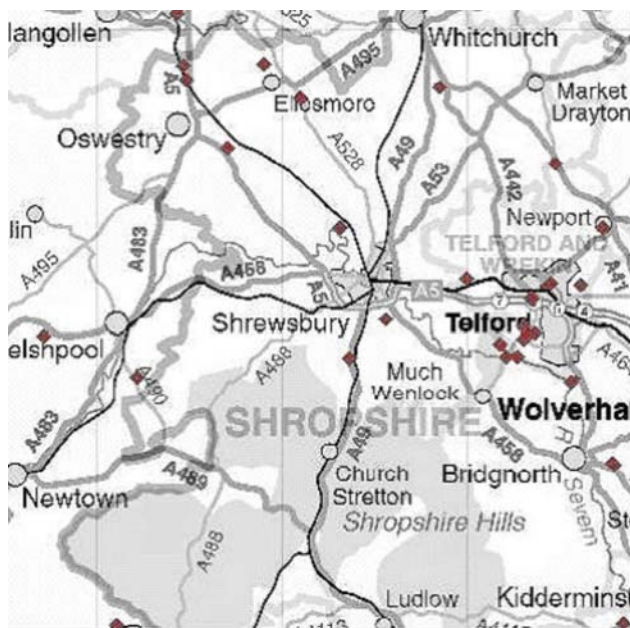


3.9.6 A number of key conclusions can be drawn from the assessments of current waste management in Shropshire

- The existing pattern of waste management in Shropshire is heavily dependant on waste disposal to landfill sites, taking a range of controlled waste. See the Figure 3.4 below;
- Relatively little waste is currently recycled or recovered locally;
- Significant additional capacity is needed immediately to recycle and recover value from waste;

Significant additional capacity will soon be needed to dispose of waste generated in the Plan area.

Figure 3.4 Existing Landfill Sites in Shropshire (Source: Environment Agency)





3.9.7 On 22nd October 2004 Shropshire County Council adopted its Waste Local Plan (WLP).

3.9.8 The Plan details current trends in waste management in the county, current waste arising and capacity by waste stream, relevant legislation concerning future waste management, key objectives for the county and a list of sites which, in principle, are suitable for waste management in the future. The Shropshire WLP takes into account the basic principals of future waste management, namely the implementation of Best Practicable Environmental Option (BPEO), regional self-sufficiency, the proximity principal and the waste hierarchy. The future of waste management is directly influenced by European and national legislation.

3.9.9 Implications of transport on waste are:

- Production of waste from highway maintenance activities
- Increase in the use of fuel to transport waste to landfill

3.10 Evolution of Environment

3.10.1 In this section we set out our assessment of the likely evolution of each aspect of the environment in Shropshire without the Local Transport Plan. Evidence for the assumed trends, such as continued traffic growth, is presented in the analysis section of the Local Transport Plan.

3.10.2 The assessment given relates to the likely evolution in relation to the objectives for each topic set out in Table 2.1. The assessment score has been made using the seven-point scale set out below:

+++	Largely beneficial
++	Moderately beneficial
+	Slightly beneficial
0	Neutral (overall significant positive and negative effects are balanced)
-	Slightly adverse
--	Moderately adverse
---	Largely adverse

Local Air Quality

3.10.3 Due to reductions in background levels of NO₂ and reductions in emission rates per vehicle, the predictions are that if traffic growth rates continue along recent trends, that levels of NO₂ would reduce, as indicated in Table 3.2. However, should traffic levels or levels of congestion rise significantly, or a significant change in the type of vehicles used in Shropshire should occur, then air quality levels could deteriorate.

Assessment: slightly beneficial

Climatic Factors

3.10.4 There is an upward trend in greenhouse gas emissions from activities in the community. Without Local Transport Plan interventions, traffic volume are likely to increase and, with the trend towards bigger vehicles and faster average speeds, carbon dioxide emissions from transport are likely to continue to rise. Impacts of climate change are likely to be cumulative and permanent.

Assessment: moderately adverse

Landscape

3.10.5 When considering the characteristics of Shropshire, landscape plays a key role in providing Shropshire with a unique identity. If current trends continue, landscape character will continue to be diminished with development pressures, additional traffic and no further traffic or parking management measures. Road changes linked to new development are likely to bring uncharacteristic signage and pavement treatments.

Assessment: slightly adverse

Townscape & Heritage

3.10.6 The high value historic environment is one of the county's greatest assets. This is a major attractor to tourism for the County which is a major contributor to the economy of the county both to small villages and local trade.

3.10.7 Wider economic and social changes have resulted in major developments in housing, retail, transport and industry, all of which have adversely affected our historic resource in both urban and rural areas. If unchecked such pressures can cumulatively have a devastating effect. We are set to see a continued increase in this development growth.

3.10.8 Without a LTP current trends will continue to bring further traffic growth. We will see continued damage to historic buildings by traffic vibration (in particular heavy goods vehicles); damage to historic buildings (particularly stone) from the effects of air pollution and damage to historic buildings by accidental collisions. The ambience of historic buildings and Conservation Areas will also be adversely affected by the increased presence of traffic.

Assessment: slightly adverse

Biodiversity

3.10.9 The interaction of biodiversity and the road network is significant with, for example, a quarter of the UK badger population being killed annually and between thirty and seventy million birds.

3.10.10 To allow current trends to continue in terms of traffic growth and new development, we will see significant impacts of transport on flora and fauna including:

- Wildlife casualties through collisions with motor vehicles
- Land take and associated habitat loss through new transport infrastructure schemes
- Fragmentation / severance of habitats through new schemes, increased traffic etc



- Changes in air quality, water quality, noise, vibration, light emissions, dust deposition as a result of construction and operation
- Increase in disturbance to wildlife populations (e.g. traffic noise)
- Creation of barriers to movement
- Hydrological changes affecting surface and groundwater
- Changes to soil
- Inappropriate grass cutting regimes on verges
- Spread of invasive species (e.g. Japanese Knotweed spread by verge regime)
- Creation of habitats
- Curbing spread of invasive species

Assessment: slightly adverse

Water

3.10.11 There are three issues to be considered with water; resources, quality and flooding. Without action being taken, we could see a number of threats that will have a negative effect on how much water is available (both too little and too much), the quality of the water (especially if mainstream drinking source), and risk of damage to the environment, to infrastructure and ourselves through flooding.

3.10.12 Key impacts on the environmental baseline from additional traffic will include:

- Pollution from traffic may enter the groundwater directly, may move slowly within the groundwater to emerge eventually in surface water, may run off the land, or may be deposited from the atmosphere
- Increases in traffic may lead to increases in water pollution
- Maintenance activities and road use can contribute to the build up of sediment in watercourses

3.10.13 In Shrewsbury for example, development over the years has encroached on to the flood plain and there are approximately 400 residential and commercial properties at risk from flooding, as well as major transport routes through the town. Downstream, a small part of Ironbridge and properties in Bridgnorth are also at risk. The imperviousness of road surfaces and use of piped road drainage increases the rate of water flow to receiving water courses and therefore would contribute to flooding in storm conditions. This is a cumulative effect with flooding likely to become more of an issue in future years.

Assessment: slightly adverse

Human Health and Population

Noise

3.10.14 As traffic levels rise, with no action taken we will see a rise in people's health adversely effected by noise. This could result in a wide variety of medical conditions having an impact potentially on lost work days, on additional NHS resources and more importantly on a reduced quality of life which is often difficult to measure for many people.

Assessment: slightly adverse

Physical Fitness

3.10.15 With no plan reliance on the motor car will continue to grow, both replacing and making it more difficult to walk and cycle. This is likely to reduce the average amount of exercise taken per day and reduce physical fitness. This is likely to lead to poorer human health with increased cases of obesity and circulatory diseases. The impacts will be longer term and potentially irreversible.

Assessment: moderately adverse

Accidents

3.10.16 With no interventions the number of road accidents could be expected to increase as levels of traffic increase, however improvements to 'in car' safety features may work to reduce the severity of accidents. Overall the impact is likely to be neutral.

Assessment: neutral

Security

3.10.17 Although in a number of areas throughout the County we have seen a reduction in crime, research has shown that there has been an increased in the perceived incidents of crime. Unless we can reverse this trend, again we will see reduced quality of the way people live for certain groups of people such as the elderly who are increasingly, as a result of this perception of crime, feel it difficult to leave their homes especially on dark evenings..

Assessment: moderately adverse

Accessibility

3.10.18 As the economy grows and households in Shropshire become more affluent it is likely that availability of a car will increase - this will mean more people will have good levels of accessibility. However, it is likely that at the same time levels of accessibility for those who still have no access to a car e.g. very old or young will get even poorer. The overall baseline evolution is therefore likely to be neutral

Assessment: neutral

Material Assets

3.10.19 If there were no LTP and therefore no capital maintenance of County roads the quality of the road network asset would deteriorate significantly over time. In the long term it would take more money and more natural resources to replace the highways, so although fewer natural resources would be consumed in the short term in the long term there would be a higher environmental cost.

Assessment: slightly adverse

3.10.20 Table 3.20 provides a summary of the potential evolution of the Environmental Baseline in the absence of a Local Transport Plan.



Table 3.20 Summary of likely evolution of baseline without LTP

SEA Topic	Likely events without a LTP	Likely effects on environmental baseline	Baseline evolution assessment
Local air quality	<ul style="list-style-type: none"> Increased traffic volumes Increasing congestion Cleaner vehicles Reducing background concentrations of NO₂ 	<ul style="list-style-type: none"> Slight reduction in NO₂ levels Un declaring of AQMAs Still some poor air quality hotspots where congestion increases in "canyon" type streets 	Slightly beneficial
Greenhouse gases	<ul style="list-style-type: none"> Increased traffic volumes Increased use of larger & faster vehicles Faster average speeds 	<ul style="list-style-type: none"> Increased carbon dioxide levels 	Moderately adverse
Landscape	<ul style="list-style-type: none"> Increasing traffic levels More indiscriminate parking 	<ul style="list-style-type: none"> Visual intrusion Loss of tranquillity Light pollution Loss of characteristics Shropshire's landscape is recognised for 	Slightly adverse
Townscape and heritage	<ul style="list-style-type: none"> Increasing traffic levels More indiscriminate parking More air pollution, vibration and noise 	<ul style="list-style-type: none"> Visual intrusion (street furniture) Light pollution Damage to historic buildings Negative change in ambience of conservation areas 	Slightly adverse

SEA Topic	Likely events without a LTP	Likely effects on environmental baseline	Baseline evolution assessment
Biodiversity (Flora and Fauna, and soil)	<ul style="list-style-type: none"> Increasing traffic levels and increased use of larger & faster vehicles increasing severance Negative changes to air quality, water quality, noise, vibrations & light emissions 	<ul style="list-style-type: none"> Road mortality Barriers to movement leading to habitat fragmentation Increased health problems and disturbance Reduction in both numbers and in species of wildlife 	Slightly adverse
Water quality	<ul style="list-style-type: none"> Increasing traffic levels and additional pollution in run-off 	<ul style="list-style-type: none"> Reduction in water quality Limited availability Poor quality of water for drinking and bathing, leisure activities and health implications for wildlife Floods (damage and / or loss to persons, wildlife, infrastructure) 	Slightly adverse
Noise	<ul style="list-style-type: none"> Increased traffic volumes Larger & faster vehicles 	<ul style="list-style-type: none"> Loss of tranquillity Poor quality of health Reduced quality of life 	Slightly adverse
Physical fitness	<ul style="list-style-type: none"> Increased car use and reduced walking and cycling 	<ul style="list-style-type: none"> Reduced fitness Poor quality of health Reduced quality of life 	Moderately adverse
Accidents	<ul style="list-style-type: none"> Increasing traffic Better safety features in more modern cars 	<ul style="list-style-type: none"> More slight casualty accidents but fewer serious and fatal accidents <p>Accidents could lead to:</p> <ul style="list-style-type: none"> Loss of life Reduced quality of life 	Neutral



SEA Topic	Likely events without a LTP	Likely effects on environmental baseline	Baseline evolution assessment
Security	<ul style="list-style-type: none"> Fewer people walking and cycling More traffic 	<ul style="list-style-type: none"> Increased fear of crime 	Slightly adverse
Accessibility	<ul style="list-style-type: none"> Increased car ownership Reduced quality of public transport services 	<ul style="list-style-type: none"> More people with access to a car and good accessibility Poorer accessibility for those without a car 	Neutral
Material assets	<ul style="list-style-type: none"> Deteriorating road condition 	<ul style="list-style-type: none"> Increased fuel consumption for vehicles operating on poor quality roads Increased resource consumption in long term to fully replace highways 	Slightly adverse

3.11 Summary of Environmental Problems and Opportunities

3.11.1 In developing the environmental baseline the key environmental problems and opportunities facing Shropshire have been identified. This is important as any likely effects of the LTP on elements of the environment which are already at risk, or are of very high quality will be of great significance.

3.11.2 An assessment of the strengths, weakness, opportunities and threats for the environment in Shropshire, at a strategic level, are identified in Table 3.21

Table 3.21 SWOT analysis of key environmental problems and opportunities

Strengths	Weaknesses
<p>Rich cultural heritage</p> <p>Well preserved and tranquil countryside character</p> <p>General good water quality</p> <p>Generally good air quality</p> <p>Much of Shropshire’s landscape lying within the boundaries of land classified as ‘Area of Outstanding Natural Beauty</p>	<p>4 Air Quality Management Areas declared for NO₂ emissions from transport</p> <p>Relatively high contributions to greenhouse gas emissions from transport sector</p> <p>Some loss of landscape, tranquillity and countryside to development</p> <p>Little exploration of any renewable energy resources in the County</p> <p>41 listed buildings are currently on the ‘at risk’ register</p>
Opportunities	Threats
<ul style="list-style-type: none"> ● Shropshire one of 24 pilot local authorities in the UK involved in CCP sponsored by DEFRA ● Increasing public awareness of climate change issues ● Capability to lead the market in the production of biofuels ● To produce and source food locally to reduce ‘food miles’ 	<ul style="list-style-type: none"> ● Climate change ● Vulnerability to flooding from climate change ● Continued loss of landscape, habitats and biodiversity from development and growth pressures ● Degradation of countryside and rural tranquillity ● Traffic and congestion growth may mitigate benefits of reduced per vehicle emissions