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# Environmental Capacity in Cannock Chase District

## Final Report

Prepared by LUC  
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Planning & EIA  
Design  
Landscape Planning  
Landscape Management  
Ecology  
Mapping & Visualisation

LUC LONDON  
43 Chalton Street  
London NW1 1JD  
T 020 7383 5784  
F 020 7383 4798  
[london@landuse.co.uk](mailto:london@landuse.co.uk)

Offices also in:  
Bristol  
Glasgow  
Edinburgh



FS 566056  
EMS 566057

Land Use Consultants Ltd  
Registered in England  
Registered number: 2549296  
Registered Office:  
43 Chalton Street  
London NW1 1JD

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# 1 Introduction

- 1.1 LUC was commissioned by Cannock Chase District Council in October 2012 to undertake a study to assess the environmental capacity of the District. The overriding aim of the study was to gain an informed and quantified understanding, based on the best available evidence, of the extent to which the environment acts as a constraint to development within the District.

## Aim and objectives

- 1.2 The study sought to address a number of environmental themes agreed with Cannock Chase District Council. These themes were:
1. Carbon emissions.
  2. Air quality.
  3. Water quality.
  4. Water supply.
  5. Flood risk.
  6. Biodiversity.
  7. Landscape.
  8. Open space.
  9. Soils.
  10. Historic environment.
  11. Minerals.
- 1.3 The impacts of climate change were considered as a theme that cuts across all the above themes.
- 1.4 For each environmental theme, the study was required to establish:
- A baseline position – setting out what the current state of that theme is within the District
  - A threshold definition – identifying the tipping point for each theme beyond which development would have an unacceptable impact
- 1.5 The study was then required to test development scenarios to understand if and how they may mean that environmental limits are reached.
- 1.6 Having established the baseline, the thresholds and tested the development scenarios, the following questions were addressed:
1. To what extent is the environment of the District and surrounding area a constraint on development requirements?
  2. At what stage is each environmental aspect likely to suffer as a result of the amount and location of development?
    - a. Would further growth, significantly above the levels provided for in the Draft Local Plan (Part 1), with a specific focus on urban extensions, cause environmental/Green Belt harm? If so, is this harm likely to outweigh the benefits of growth?
    - b. Is it possible to mitigate against the environmental impact of the development?
    - c. Where are the least harmful location(s) for future urban extensions (ignoring administrative boundaries).

3. For each environmental theme, what level and what kind of mitigation is likely to be needed to deal with adverse environmental effects?
4. What cross boundary implications may need addressing?
5. What is the point (or points) at which further development will not be possible without irreversible environmental damage being caused?

## Context and key issues

- 1.7 Cannock Chase District is a relatively compact District of 7,800ha with a significant number of environmental assets, a number of which are of national or international importance, including Cannock Chase AONB (which covers just over 38% of the whole District), Cannock Chase SAC and the Cannock Extension Canal SAC, and three SSSIs.
- 1.8 The District forms an important link (and barrier) between the West Midlands urban area and the wider Staffordshire area beyond. The West Midlands Green Belt was declared in 1955, and around 60% of the District is designated as Green Belt land.
- 1.9 The environmental assets that the District contains can also be considered as constraints to development. At a certain point, the quantum of development is likely to cause significant environmental damage, and it is this point (the threshold or tipping point) that is the key issue to be investigated within this study.
- 1.10 Based on the most recent census, the population of Cannock Chase District was estimated to be 97,500 in 2011. The ONS 2011 population projections (which are trend based projections based on the previous 5 years) project a population of 100,838 in 2021, i.e. an increase of 3,338 people, or 334 people per annum over the 10 year period from 2011 to 2021.
- 1.11 The Southern Staffordshire Districts Housing Needs Study and Strategic Housing Market Assessment (SHMA) Update (2012) identified a minimum requirement within south-east Staffordshire (Tamworth Borough, Lichfield District and Cannock Chase District) of 900 houses per annum from 2006 to 2028 (19,800 houses in total). The report also concludes that Cannock Chase District's housing requirement is within the range of 250 – 280 dwellings per annum, over the plan period (2006-2028) i.e. a total range of 5,500 to 6,160.
- 1.12 The Draft Local Plan (Part 1) for the District proposes a level of provision of 5,300 net additional dwellings throughout the Plan period (2006-2028) with a further 500 in the Local Plan for Lichfield District to help meet the needs of Rugeley. The strategic approach for the District outlined in the Plan is to apportion housing development in proportion to population sizes of the urban areas at the start of the plan period, and to protect Cannock Chase AONB and other green infrastructure.
- 1.13 Following discussions falling under the duty to co-operate Cannock Chase Council recognise that evidence is emerging to indicate that Birmingham will not be able to accommodate the whole of its new housing requirement for 2011-31 within its administrative boundary and that some provision will need to be made in adjoining areas to help meet Birmingham's needs. Cannock Chase Council will work collaboratively with Birmingham and other authorities, including joint commissioning of appropriate evidence to assess the emerging housing shortfall and the scale and distribution of any such requirement. In the event that the additional work identifies Cannock Chase District as a reasonable option for helping to meet the requirement, this will be addressed further as part of Local Plan Part 2.

## Principles of environmental capacity

- 1.14 The environment provides a range of services or benefits to society. These 'ecosystem services' are important for two main reasons:
  - Some are important for sustaining life (e.g. the need for clean air to breathe, water to drink, food to eat, materials for housing, protection from flooding, genetic biodiversity, pollination of plants and crops, etc.).

- Some are important for enriching the quality of life (e.g. sense of place and heritage, tranquillity, attractive landscapes and townscapes).
- 1.15 Without some ecosystem services we could not survive. Without others the quality of our lives would be severely diminished.
- 1.16 There are strong links between ecosystem services, environmental limits and thresholds, and environmental capacity. Common to them all is the important concept of 'acceptability'. It can be argued that the environmental limit of a location to accommodate development is at the point when the loss, damage or erosion to the environment turns from being acceptable to being unacceptable.
- 1.17 Acceptability is determined by society. This can be done in variety of ways:
- (i) At the international and national level, acceptability is often decided by the setting of quantitative targets or standards. For example, targets or standards have been set for carbon emissions in order to prevent climate change, for pollutants to air to ensure human health, for pollutants in water, and for the maintenance of the integrity of Natura 2000 sites to protect ecological diversity and networks.
  - (ii) Some are set down in national policy, most notably through the National Planning Policy Framework (NPPF), and related guidance, such as for flood risk, and for the protection of Sites of Special Scientific Interest (SSSIs), historic assets, designated landscapes, and best and most versatile agricultural land. These comprise a mix of quantitative and qualitative measures that can often involve interpretation and argument.
  - (iii) Some can only realistically be set at the local level, through engagement with Council Members, stakeholders and the general public, to determine what is acceptable or unacceptable to communities. Examples of these may include how much development a local community might be willing to accept on greenfield land to deliver essential housing, economic activity, or community infrastructure. In these instances, there are likely to be widely divergent views depending upon the priorities of the individuals or communities concerned.
- 1.18 The purpose of an environmental capacity study, therefore, is not only to determine the point at which targets, standards and policy intent is likely to be compromised. It is also to provide in an as objective way as possible, a description and evaluation of the effects of further development in order to inform those with an interest and, ultimately, those who have to make decisions.
- 1.19 In order to determine environmental capacity, it is important not just to focus on each environmental theme or topic in isolation. The cumulative impact of development on a range of topics and themes also needs to be taken into account. Thus, a development proposal such as an urban extension may not breach any single identifiable environmental limit, but it may impinge on a range of environmental limits that, together, could be considered to breach the environmental capacity of a location.
- 1.20 Finally, it is possible to mitigate and compensate for the impacts of development in such a way as to ensure that environmental capacity is not breached. For example, investment in the upgrading of a sewage treatment works may allow more development to be accommodated without damaging water quality. The incorporation of water efficient appliances and sustainable drainage systems may allow for more development to be delivered without risk of unacceptable water abstraction or flooding. The use of materials and design in development, so that they strengthen local character and distinctiveness, can help to make new developments more acceptable to local people. The restoration and creation of new habitats (e.g. green infrastructure) can help to compensate for those lost to development.
- 1.21 All of these factors are important in feeding into decisions on the environmental capacity of a location to accept development. Ultimately, it is only by going through such thought processes that policies in Local Plans can be developed, tested, consulted upon, and adopted. The benefit of undertaking an environmental capacity study is that it makes this process explicitly rather than simply implicitly implied.

## Structure of the report

- 1.22 **Section 2** of the report sets out the baseline position for each of the eleven environmental themes. For each theme, the following information is presented:
- **Why is it important?** A description of why the environmental theme is important in the consideration of environmental capacity, such as the services and benefits it provides to society. Reference, where relevant, to national and local policy is provided.
  - **Vulnerability to climate change:** A short description is provided on how climate change may, over time, impact upon the environmental theme concerned.
  - **How can we measure performance?** Standards, targets and indicators, where available, are listed for each theme as a measure of performance.
  - **Data sources:** Available data sources, both national and local, are provided.
  - **Application to the environmental capacity study:** a description is provided on how the above data can be applied to the environmental capacity study.
  - **Assessing environmental capacity:** Using the identified targets, standards, indicators, and data sources, an assessment is made of the baseline position with respect to each environmental theme in Cannock Chase, noting any particular aspects where it could be considered that environmental limits could be at risk of being breached.
- 1.23 **Section 3** goes on to bring the various themes together. It seeks to identify those aspects of the environment that could be considered to be **primary constraints** (i.e. where significant development is likely to be precluded), and those which represent **secondary constraints** (i.e. where significant development may not be precluded, but where there is the risk of negative impacts).
- 1.24 **Section 4** provides an assessment of the environmental capacity of **three potential development locations** in and around Cannock Chase District (west of Cannock; south-east of Cannock; four locations around Rugeley), using **two development scenarios** over and above those already contained in the Draft Local Plan. This section goes on to describe what mitigation measures could be considered to minimise any potential environmental capacity issues that are identified.
- 1.25 **Section 5** sets out the **conclusions and recommendations** arising from the study.

## 2 Themes

### Theme 1: Carbon emissions

#### Why is it important?

2.1 Climate Change is potentially the most serious long-term issue facing the world today. It is a global problem, and one that requires a global solution. Climate change may significantly affect access to fundamental elements such as water and food for people on a worldwide basis.

2.2 As set out in the DECC web site:

*"the earth's surface has warmed by more than 0.75°C since around 1900, with much of this warming occurring in the past 50 years. The 2007 Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) concluded it is very likely (more than 90% probability) that most of the observed global warming since the mid-20<sup>th</sup> century is due to the observed increase in human-caused greenhouse gas (GHG) concentrations".<sup>1</sup>*

2.3 Reducing emissions of CO<sub>2</sub> and other greenhouse gases is imperative (see the targets set out by the Climate Change Act 2008 below), but adapting to climate change is also important, and mitigating for its effects in areas such as flood risk, water availability, and extreme heat events (the impacts of climate change are covered under environmental themes as relevant).

#### National Planning Policy Framework

2.4 One of the 12 core planning principles within the NPPF is that planning should:

*"support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy)"<sup>2</sup>*

2.5 Chapter 10 of the NPPF sets out that *"Local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations."*

2.6 The NPPF states that, to support the move to a low carbon future, local planning authorities should:

- *"Plan for new development in locations and ways which reduce greenhouse gas emissions;*
- *Actively support energy efficiency improvements to existing buildings; and*
- *When setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards."<sup>3</sup>*

#### Local policy

2.7 Climate change adaptation and mitigation measures need to be integral to new developments, as is set out in Policy CP16 of the Draft Local Plan (Part 1) 2012.

#### Sustainability Appraisal / Habitats Regulations Assessment

2.8 Energy is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues are identified within the energy topic:

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<sup>1</sup> <http://www.decc.gov.uk/en/content/cms/tackling/explaining/explaining.aspx>

<sup>2</sup> National Planning Policy Framework, CLG (2012) p5

<sup>3</sup> National Planning Policy Framework, CLG (2012) Chapter 10 p22

- *"Speculation that decentralised energy may help to reduce CO<sub>2</sub> emissions and that the recession may act as a driver for firms to reduce costs by increasing their energy and resource efficiency."*<sup>4</sup>

2.9 Within the Rugeley Town Centre study area, the following issues are identified within the energy topic:

- *"Rugeley Power Station as a source of sulphur dioxide and greenhouse gases.*
- *Rugeley Power Station to potentially convert to the use of biomass fuel."*<sup>5</sup>

2.10 However, pollution modelling suggests that areas at Stile Cop to Slitting Mill and beyond are most likely to experience peak SO<sub>2</sub> concentrations resulting from stack emissions, rather than Rugeley Town Centre itself.

### **How can we measure performance?**

2.11 All sectors of the economy need to contribute to carbon reductions, but there is a particular need for greater energy efficiency within buildings, electrification of heat and transport, and decarbonisation of the power sector (The Carbon Plan, 2011 p23).

2.12 In terms of measuring performance, the most useful indicator is considered to be carbon emissions within the authority.

2.13 DECC provide total CO<sub>2</sub> emission and per capita emissions data by local authority. This data is categorised by source. The data is also available to show only those emissions within the scope of influence of a local authority (emissions which are beyond the influence of local authorities, such as motorways and EU Emission Trading Scheme installations have been removed from the data).

#### *Proposed indicator*

2.14 Per capita CO<sub>2</sub> emissions by local authority.

#### *Justification*

2.15 Using per capita emissions provides a fair and consistent way of comparing emissions between Cannock Chase and other local authorities.

### **Targets / standards**

2.16 The Climate Change Act 2008 sets legally binding reduction targets for greenhouse gas emissions in the UK. The UK is signed up to achieve a reduction of at least 34% by 2020 and at least 80% by 2050, based on 1990 baseline levels.

2.17 The target would be for a trajectory in line with the UK level of reductions, to be assessed on an annual basis. [Note: We have been unable to ascertain 1990 carbon emissions by local authority area].

### **Data sources**

2.18 The following data sources are relevant to this theme.

#### *GIS data*

- Carbon emissions by local authority (DECC spreadsheet).

#### *Documents*

- Local Climate Impacts Profile, Cannock Chase District, (2012)
- West Midlands Regional Climate Change Action Plan (2007)
- Staffordshire County-wide Renewable / Low Carbon Energy Study. Camco (2010)

<sup>4</sup> Sustainability Appraisal and Strategic Environmental Assessment of the Local Plan (Part 1) 2012 p16

<sup>5</sup> Sustainability Appraisal and Strategic Environmental Assessment of the Local Plan (Part 1) 2012 p16

- Climate Change and Renewable Energy Background Paper. Cannock Chase District Council (2011)
- Local area carbon emissions reduction report for Cannock Chase District Council. Energy Saving Trust (2009)

### Application to the Environmental Capacity Study

- 2.19 Additional development over and above that already planned will inevitably increase carbon emissions. Carbon emissions can be mitigated by increased energy efficiency in the construction and operation of development, by the provision of renewable sources of energy, and by minimising increases in the traffic generated by new development.
- 2.20 Given that many of these influences are beyond simply the quantum of development, it is difficult to quantify changes in carbon emissions in this study.

### Assessing Environmental Capacity

- 2.21 Based on 2010 data (published in August 2012), Cannock Chase District's per capita CO<sub>2</sub> emissions compare favourably with neighbouring authorities (5.4 tonnes per capita against a Staffordshire figure of 8.7 tonnes per capita). See **Figure 2.1a**.
- 2.22 The main sources of carbon emissions in Cannock Chase are domestic, followed by industry and commercial, and road transport. Industry and commercial and road transport carbon emissions in Cannock Chase are particularly low compared to national averages.

**Table 2.1: CO<sub>2</sub> emissions 2005-2010 (kt per capita)<sup>6</sup>**

Source	2005			2010		
	Cannock Chase	Staffs	National	Cannock Chase	Staffs	National
Industry and commercial	<b>2.1</b>	3.9	4.1	<b>1.8</b>	3.4	3.3
Domestic	<b>2.5</b>	2.6	2.6	<b>2.4</b>	2.4	2.4
Road transport	<b>1.3</b>	3.2	2.2	<b>1.2</b>	2.9	2.0
<b>Total</b>	<b>6.0</b>	<b>9.6</b>	<b>8.8</b>	<b>5.4</b>	<b>8.7</b>	<b>7.6</b>

- 2.23 Although the 2010 data is positive (and Cannock Chase has the second lowest per capita emission in Staffordshire), it represents a slight increase (of 0.3 tonnes) compared to the 2009 figure for Cannock Chase.
- 2.24 The Local Area Carbon Emissions Reduction Report<sup>7</sup> provides guidance about actions the Council can take to tackle climate change through its role as community leader and provider of local services. Although this report focused primarily on the services that Cannock District Council has direct control over, including its own property and housing stock, it also provided recommendations with respect to planning policy. For example, it recommended the incorporation of energy efficiency standards beyond building regulations standards linked to phased introduction of minimum levels of the Code for Sustainable Homes, investigating the potential for renewable energy in new developments including combined heat and power, and incentivising exemplar/zero energy developments. Similarly, the report provided recommendations on how to encourage residents and businesses to use more sustainable modes of transport.

<sup>6</sup> [http://www.decc.gov.uk/en/content/cms/statistics/climate\\_stats/gg\\_emissions/laco2/laco2.aspx](http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/laco2/laco2.aspx)

<sup>7</sup> Local area carbon emissions reduction report for Cannock Chase District Council, Energy Saving Trust (2009)

- 2.25 In response, Cannock Chase District Council has sought to reflect many of the recommendations in its Draft Local Plan (e.g. Policy CP16 – Climate Change and Sustainable Resource Use), although it does not specify targets for energy efficiency above those required under national policy.
- 2.26 The Staffordshire County-wide Renewable /Low Carbon Energy Study<sup>8</sup> found that Cannock Chase can generate over 12% of its energy demand from renewable sources by 2026/26 under the elevated scenario (which assumes a more rapid achievement of zero carbon and renewable energy take-up than a base case scenario). It notes that the majority of renewable energy generation could be through retrofit to existing buildings, although the role of new buildings is more prominent than for other authorities in Staffordshire due to the relatively significant scales of development that is expected. The study also notes that Cannock Chase has a collection of sites which are technically viable to support multiple wind turbines. An energy opportunity map is provided that shows the area that has potential for wind turbines (located between Cannock and Norton Canes), as well as Lower Super Output Areas (LSOAs) with district heating potential (which are primarily in Cannock and Rugeley), and hydropower opportunities (which are within Cannock).

### Key issues for Carbon Emissions

- Cannock Chase District performs well compared to neighbouring authorities and national trends with respect to per capita carbon emissions.
- The Draft Local Plan includes a clear steer that it expects new development to have significantly improved energy efficiency and incorporate renewable energy where possible.
- Carbon emissions will arise wherever development takes place, either directly (e.g. through use of heat and power) or indirectly (e.g. through the generation of traffic), and therefore in this respect it is not a constraining factor on the amount of development that the District can accommodate.
- In terms of location, carbon emissions from new development are most likely to be minimised where alternative modes of transport other than the car are attractive to use, and where there are opportunities to incorporate renewable energy sources, such as district heating.
- Development in certain parts of the District may reduce opportunities for developing renewable energy schemes, such as wind turbines.

## Theme 2: Air Quality

### Why is it important?

- 2.27 Air pollution (or poor air quality) has an impact upon the health of the population, and upon the natural environment. Poor air quality can have a long term impact on health, causing premature mortality due to effects on the heart and lungs. Short term impacts include increased admissions to hospital and premature death to those people who are more vulnerable to daily changes in the levels of air pollutants<sup>9</sup>. Estimates indicate that air pollution reduces life expectancy in the UK by an average of six months<sup>10</sup>. The estimated annual economic cost of this impact is between £9 and £19 billion. Poor air quality is generally associated with poorer areas in England, which are often urban areas close to busy roads<sup>11</sup>.
- 2.28 Impacts on the natural environment include decreasing level of biodiversity, an impact on sensitive environments, and a reduction in agricultural crop yields<sup>12</sup>.

### *National Planning Policy Framework*

- 2.29 Section 11 of the NPPF (Conserving and enhancing the natural environment) states that:

<sup>8</sup> Staffordshire County-wide Renewable/Low Carbon Energy Study. Camco (2010)

<sup>9</sup> DEFRA (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland p13

<sup>10</sup> <http://www.defra.gov.uk/environment/quality/air/air-quality/impacts/>

<sup>11</sup> <http://www.defra.gov.uk/environment/quality/air/air-quality/impacts/>

<sup>12</sup> <http://www.defra.gov.uk/environment/quality/air/air-quality/eu/>

*"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 Area 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."*<sup>13</sup>

#### *Local policy*

- 2.30 Policy CP10 - Sustainable Transport of the Draft Local Plan (Part 1), sets out that: *"Development proposals will need to take into account traffic generation and any implications for the Bridgtown Air Quality Management Area (AQMA) and for the Churchbridge junction, including appropriate mitigation."*<sup>14</sup>
- 2.31 Policy CP13 - Cannock Chase Special Area of Conservation (SAC) of the Draft Local Plan (Part 1), sets out that all development within the zone of influence of the Cannock Chase SAC *"that leads to a net increase in dwellings should mitigate for effects on the SAC, in line with the ongoing work to outline the pressures caused by recreation, visitors and air quality impacts"*.<sup>15</sup>
- 2.32 Policy CP16 – Climate Change and Sustainable Resource use states that: *"The Council, working with partners, will tackle climate change and ensure sustainable resource use via the promotion and positive consideration of initiatives and development proposals that (...) d. reduce or mitigate all forms of pollution, having regard to strategic local issues including air quality (Policies CP10 and CP13)..."*<sup>16</sup>

#### *Sustainability Appraisal / Habitats Regulations Assessment*

- 2.33 Air is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues were identified within the air topic:
- Increased traffic and housing / employment development in the district will likely increase emissions of oxides of nitrogen and sulphur, as well as carbon monoxide, carbon dioxide and ozone.
- 2.34 Within the Rugeley Town Centre study area, the following issues were identified within the air topic:
- Air quality at roadsides is poor.
  - Further investment will also reduce NOx and dust emissions from Rugeley Power Station.
- 2.35 The Habitats Regulations Assessment recommended the following in relation to the Draft Local Plan:
- *"Air quality modelling required for new housing developments where housing will add to the traffic use on roads within 200m of the [Cannock Chase] SAC. Alternative development locations may be needed;*
  - *"Recommend Code for Sustainable Homes Level 6 standards for large housing developments to reduce air pollution from housing, in accordance with Natural England recommendations;*
  - *"Update the 2009 Air Quality Updating and Screening Assessment to produce an Air Quality Strategy for the district. The Strategy should cover potential impacts on biodiversity (including impacts on European Sites) in addition to impacts on human health."*<sup>17</sup>

#### **Vulnerability to climate change**

- 2.36 There is a strong link between climate change and air pollution – they share common sources.<sup>18</sup>
- "Changes in the climate will impact on air quality; increases in temperature may affect the formation of ozone, increasing the frequency and severity of summer smogs. During the UK heat-*

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<sup>13</sup> National Planning Policy Framework, CLG (2012) p29

<sup>14</sup> Cannock Chase Draft Local Plan (Part 1) 2012, p120

<sup>15</sup> Cannock Chase Draft Local Plan (Part 1) 2012, p126

<sup>16</sup> Cannock Chase Draft Local Plan (Part 1) 2012, p131

<sup>17</sup> Habitats Regulations Assessment of the Draft Local Plan (Part 1) 2012 pp23-24

<sup>18</sup> Air Pollution : Action in a Changing Climate, DEFRA, (2010) p10

wave of August 2003, between 420 and 770 (...) deaths brought forward were attributable to air pollution in a 15 day period<sup>19</sup>.

### How can we measure performance?

- 2.37 The 2008 ambient air quality directive (2008/50/EC) set legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and nitrogen dioxide (NO<sub>2</sub>).
- 2.38 The EU Directive was made law in England through the Air Quality Standards Regulations 2010, which also incorporates the 4<sup>th</sup> air quality daughter directive (2004/107/EC) that sets targets for levels in outdoor air of certain toxic heavy metals and polycyclic aromatic hydrocarbons<sup>4</sup>.
- 2.39 Schedule 2 of the Air Quality Regulations (2010) England sets out limits for seven aerial pollutants. These are presented in **Table 2.2**, below.

**Table 2.2: Air Pollutant Limits**

Pollutant	Averaging period	Limit Value
Sulphur dioxide	One hour	350 µg/m <sup>3</sup> not to be exceeded more than 24 times a calendar year
	One day	125 µg/m <sup>3</sup> not to be exceeded more than 3 times a calendar year
Nitrogen dioxide	One hour	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a calendar year
	Calendar year	40 µg/m <sup>3</sup>
Benzene	Calendar year	5 µg/m <sup>3</sup>
Lead	Calendar year	0.5 µg/m <sup>3</sup>
PM <sub>10</sub>	One day	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a calendar year
	Calendar year	40 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Calendar year	25 µg/m <sup>3</sup>
Carbon monoxide	Maximum eight hour daily mean <sup>(1)</sup>	10 mg/m <sup>3</sup>

Source: <http://www.legislation.gov.uk/ukxi/2010/1001/schedule/2/made>

- 2.40 Additionally, there are target values for six other pollutants, as set out in **Table 2.3**.

**Table 2.3: Pollutant targets**

Pollutant	Objective	Averaging period	Target Value
Ozone	Protection of human health	Maximum daily eight hour mean <sup>(1)</sup>	120 µg/m <sup>3</sup> not to be exceeded on more than 25 days calendar year averaged over three years <sup>(2)</sup>
	Protection of vegetation	May to July	AOT 40 (calculated from 1 h values) 18,000 µg/m <sup>3</sup> ·h averaged over five years <sup>(2)</sup>
PM <sub>2.5</sub>		Calendar year	25 µg/m <sup>3</sup>

<sup>19</sup> Air Pollution : Action in a Changing Climate, DEFRA, (2010) p10

Pollutant	Objective	Averaging period	Target Value
Arsenic		Calendar year	6 ng/m <sup>3</sup>
Cadmium		Calendar year	5 ng/m <sup>3</sup>
Nickel		Calendar year	20 ng/m <sup>3</sup>
Benzo(a)pyrene		Calendar year	1 ng/m <sup>3</sup>

Source: <http://www.legislation.gov.uk/ukxi/2010/1001/schedule/3/made>

2.41 Cannock Chase District Council produces an air quality report each year. On a three yearly cycle an Air Quality Review and Assessment is carried out (which involves producing an Updating and Screening Assessment) and in the intervening two years an Air Quality Progress Report is produced. The Updating and Screening Assessment covers:

- New monitoring data.
- New objectives.
- New sources or significant changes to existing sources, either locally or in neighbouring authorities.
- Other local changes that might affect air quality.

2.42 If there is a risk that these changes may be significant, then a simple screening assessment should be carried out.

2.43 Both the Progress Reports and the Updating and Screening Assessments provide details of the air quality monitoring data for the previous year.

2.44 Currently, Cannock Chase District Council does not have a local air quality strategy.

#### *Proposed indicator*

2.45 Performance can be measured in two ways:

- Through an assessment of the number of AQMAs designated
- Through the annual Air Quality Progress Reports produced by the District Council.

#### *Justification*

2.46 These Air Quality Progress Reports set out monitoring results for each pollutant, and also identify new local developments that could potentially affect air quality.

2.47 Any further AQMA designations would be an indication that the national air quality objectives are not being met.

#### **Targets / standards**

2.48 See **Table 2.2** and **Table 2.3** above.

#### **Data sources**

2.49 The following data sources have been identified.

##### *GIS data*

- Air Quality Management Areas.

##### *Documents*

#### **National**

- Air Quality Standards Regulations (2010) England  
[<http://www.legislation.gov.uk/ukxi/2010/1001/contents/made>]
- DEFRA (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.

## Local

- Cannock Chase Council (2012) Cannock Chase Council Air Quality Action Plan (A5 Watling Street between Churchbridge and Longford and A4601 Wolverhampton Road, Churchbridge).
- Cannock Chase Council (2011) 2011 Air Quality Progress Report for Cannock Chase Council.
- Draft Detailed Air Quality Assessment. Cannock Chase District Council (2012).

## Application to the Environmental Capacity Study

- 2.50 Additional development over and above that already planned is likely to increase air pollution. Air pollution can be mitigated by increased energy efficiency in the construction and operation of development, and by minimising increases in the traffic generated by new development. Cleaner fuels and engines will also have an influence.
- 2.51 Given that many of these influences are beyond simply the quantum of development, it will be difficult to quantify changes in air quality in this study. However, trends and the designation of a AQMA will help to enable qualitative commentary on where air quality issues could be exacerbated by additional development.

## Assessing the Environmental Capacity

- 2.52 The main sources of air pollution in the district are the main arterial roads (as shown in **Figure 2.2a**). There are also a number of industrial / commercial potential sources of pollution, the most notable of which is the coal fired power station at Rugeley<sup>20</sup>.
- 2.53 The key findings from the 2011 Air Quality Progress Report for Cannock Chase are that the national standards are met throughout most of the District, including the area around Rugeley Power Station.
- 2.54 However, there is one Air Quality Management Area, around the A5 Watling Street near Bridgtown, shown in **Figure 2.2b**. The Nitrogen Dioxide Annual Mean Objective continues to be exceeded in this area (with an annual mean of over 40 µg/m<sup>3</sup>).
- 2.55 The Air Quality Progress Report also identifies a number of new or proposed developments which have been identified as having the potential to influence air quality. These are:
- Development of:
    - Pye Green Distributer Road.
    - Anaerobic digestion facility, Poplars Landfill Sites, Lichfield Road, Cannock.
    - Residential redevelopment of existing properties at Ann Crescent, Elizabeth Road, Philip Grove, Cannock (there should be minor beneficial impact from this re-development due to increased efficiency of the new housing stock).
  - Planning Permission for:
    - Mixed use development off Norton Hall and Butts Lane, Norton Canes.
    - Residential development of land off Walsall Rd., Churchbridge, which is within South Staffordshire District Council's area.
    - Residential development, Rumer Hill Industrial Estate, Walsall Road, Cannock.
    - Residential development of land south of Red Lion Lane, Norton Canes.
    - Residential development of land north east of Wolseley Road, between junction of Bower Lane and Brindley Bank Pumping Station, Rugeley.
  - Infrastructure improvements at Norton Aluminium Ltd., Norton Green Lane, Norton Canes.
- 2.56 There are also a number of known developments which could now be added to this list, including:
- Land to the West of Pye Green Road.

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<sup>20</sup> 2011 Air Quality Progress Report for Cannock Chase Council (2011)

- Pye Green Valley.
- Moss Road.

2.57 Any development that may pose significant changes to air quality will undergo a screening assessment.

2.58 Based on the 2011 Air Quality Progress Report for Cannock Chase District Council, **Table 2.4** sets out a summary of pollutants assessed against the agreed limits.

**Table 2.4: Air pollution monitoring results**

Pollutant	Monitored?	Results
Sulphur dioxide	Yes – automatic monitoring at 2 sites (one within the AQMA and one at Stile Cop, operated by Rugeley Power Station)	No breaching of limits found.
Nitrogen dioxide	Yes – automatic monitoring at 3 sites and diffusion tube monitoring at numerous locations throughout the district.	The annual mean limit of 40µg/m <sup>3</sup> continues to be exceeded at roadside locations at Bridgtown (within the AQMA). The limit is also breached beyond the AQMA on the A5 at 268 Watling Street. This area has already been subject to a Detailed Air Quality Assessment report, and the 2011 Progress Report sets out that a further Detailed Assessment is needed here.  Some hourly breaches of 200µg/m <sup>3</sup> occur, but not more than the 18 times per calendar year permitted.
Benzene	No (no sources likely to cause breaching of limits within the District)	n/a
Lead	No (no sources likely to cause breaching of limits within the District)	n/a
PM <sub>10</sub>	Yes – automatic monitoring at two sites	No breaching of limits found.
PM <sub>2.5</sub>	No (target to be achieved by 2020 – not currently monitored)	n/a
Carbon monoxide	No (no sources likely to cause breaching of limits within the District)	n/a

2.59 As shown in the table above, the one pollutant that exceeds the limit is NO<sub>2</sub>. This is exceeded within the AQMA and potentially also in an area further east on the A5. The main source of the

NO<sub>2</sub> pollution is heavy goods traffic on the A5 trunk road<sup>21</sup>. In September 2012 the District Council produced a draft action plan to address air quality within the AQMA. Ten actions are identified within the action plan, which aim to reduce emissions along this section of the A5.

- 2.60 Cannock Chase DC have recently completed a draft Air Quality Updating and Screening Assessment which will be submitted to DEFRA prior to general consultation. This document reviews all of the developments listed above which have now been completed. No problems were identified other than the potential for road traffic pollution associated with the Hednesford Town Centre Redevelopment at Rugeley Road. Ongoing monitoring will measure any changes in NO<sub>2</sub>. The Draft Detailed Air Quality Assessment recently completed identifies an exceedence of the NO<sub>2</sub> objective to the west of Turf Island.

### Key issues for Air Quality

- NO<sub>2</sub> levels exceed the limits set out in the Air Quality Regulations (2002), and the Air Quality Regulations (2010) at specific locations around the A5 (both within the Air Quality Management Area, and potentially beyond).
- New developments have the potential to influence air quality, and need to be assessed for traffic implications.
- Where new developments may increase traffic on roads within 200m of Cannock Chase SAC, air quality modelling will be required.
- Baseline monitoring of air quality would be beneficial.

## Theme 3: Water Quality

### Why is it important?

- 2.61 Water is fundamental to life. As set out in the Water for Life DEFRA White Paper:

*"Clean, thriving water bodies are an integral part of the natural environment, giving life to plants, animals and people alike. Water is also integral to the economy. We need it to grow food, for industrial processes and for energy production"*<sup>22</sup>

#### National Planning Policy Framework

- 2.62 Section 11 of the NPPF (Conserving and enhancing the natural environment) states that:

*"The Planning system should contribute to and enhance the natural and local environment by: [...] preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of [...] water [...] pollution."*<sup>23</sup>

#### Local policy

- 2.63 Policy CP16 – Climate Change and Sustainable Resource use states that:

*"The Council, working with partners, will tackle climate change and ensure sustainable resource use via the promotion and positive consideration of initiatives and development proposals that (...) d. reduce or mitigate all forms of pollution, having regard to strategic local issues including (...) water quality, particularly along the Burntwood Brook, Saredon Brook and River Trent to meet Water Framework Directive targets. The Humber River Basin Management Plan (as the local delivery tool for achieving Water Framework Directive targets) will be supported via the permitting of developments that will not pose an obstacle to meeting WFD objectives and do not have a negative impact on water quality, either directly through pollution of surface or ground water or indirectly through overloading of Wastewater Treatment Works."*<sup>24</sup>

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<sup>21</sup> 2011 Air Quality Progress Report for Cannock Chase Council (2011)

<sup>22</sup> Water for Life, DEFRA (2011) p4

<sup>23</sup> National Planning Policy Framework, CLG (2012) p26

<sup>24</sup> Cannock Chase Draft Local Plan (Part 1) 2012, p131

### *Sustainability Appraisal / Habitats Regulations Assessment*

- 2.64 Water quality and supply is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues were identified within this topic:
- The River Trent has been identified as having 'poor' ecological status in the River Basin Management Plan (RBMP) and the Burntwood Brook and Saredon Brook as having 'moderate' ecological status.
- 2.65 Within the Rugeley Town Centre study area, the following issues were identified within the water topic:
- Risk of pollution to major aquifer underlying Rugeley town
- 2.66 Within the pre-screening stage of the Habitats Regulations Assessment, one of the site characteristics / vulnerabilities of the Cannock Extension Canal SAC is water quality. It is noted that "surface water run-off from roads causes some reduction in water quality"<sup>25</sup>. However, water quality was then scoped out following consultation with Natural England, and no likely significant effects were predicted for water quality impacts. At the monitoring stage of the HRA the need is identified for "continued monitoring of water quality within the SAC and hydrologically connected areas"<sup>26</sup>.

### **Vulnerability to climate change**

- 2.67 Climate change may lead to deterioration in water quality<sup>27</sup>. For example, decreased river flows could lead to decreases in the dilution effect of water, and there is the potential for increased algal blooms.

### **How can we measure performance?**

- 2.68 The European Water Framework Directive (2000) became part of UK law in 2003, through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The Environment Agency is the lead body on the Water Framework Directive but all organisations are expected to help deliver it.
- 2.69 For 20 years prior to 2007, the Environment Agency used a general quality assessment (GQA) scheme to assess river water quality in terms of chemistry, biology and nutrients. From 2007 onwards, a more comprehensive way of assessing the whole water environment was introduced.
- 2.70 These more comprehensive measurements are described in the Humber River Basin Management Plan as follows:
- "For surface waters there are two separate classifications for water bodies, ecological and chemical. For a water body to be in overall 'good' status both ecological and chemical status must be at least 'good'.*
- "For groundwater there are two separate classifications for groundwater bodies: chemical status and quantitative status. Each must be reported in addition to the overall groundwater body status. For a groundwater body to be at good status overall both chemical status and quantitative status must be good. In addition to assessing status, there is also a requirement to identify and report where the quality of groundwater is deteriorating as a result of pollution and which may lead to a future deterioration in status"<sup>28</sup>*
- 2.71 Cannock Chase falls within the Severn Trent Catchment Area which is within the Humber River Basin District.

### *Proposed indicator*

- 2.72 Surface water and groundwater overall status.

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<sup>25</sup> Habitats Regulations Assessment of the Cannock Chase District Draft Local Plan (Part 1) 2012 p13

<sup>26</sup> Habitats Regulations Assessment of the Cannock Chase District Draft Local Plan (Part 1) 2012 p29

<sup>27</sup> <http://www.environment-agency.gov.uk/research/planning/116822.aspx>

<sup>28</sup> Humber River Basin Management Plan, (2009) Annex A, p2

### Justification

- 2.73 The condition statements are a nationally accepted performance measurement, which is frequently monitored.

### Targets / standards

- 2.74 As set out in the Southern Staffordshire Outline Water Cycle Study (2010), "*no decrease in (water) quality is considered acceptable, as stated within the objectives of the Water Framework Directive (WFD)*".<sup>29</sup>
- 2.75 Status objectives for water bodies are set out in the River Basin Management Plan (RBMP). The targets / standards for water bodies within Cannock Chase District would be taken directly from this document.

### Data sources

- 2.76 The following data sources have been identified relating to Water Quality.

#### GIS data

- Surface and ground water bodies (Environment Agency)
- Groundwater protection maps (Environment Agency)

#### Documents

##### National

- Natural Environment White Paper (2011).
- Water for Life (2011) DEFRA [<http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf>]
- Environment Agency guidance on Groundwater source protection zones.

##### Regional

River Basin Management Plan: Humber River Basin District, Environment Agency (2009).

##### Local

- Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010).

### Application to the Environmental Capacity Study

- 2.77 It is difficult to quantify changes in water quality as a direct result of an increase in the quantum of development. Groundwater source protection zones may preclude development (or require conditions to allow development to go ahead) in certain locations. The Environment Agency states that "*there are various causes for water bodies failing under the Water Framework Directive. Built development plays a large part alongside agriculture. Each failure needs to be taken on a case by case basis.*"<sup>30</sup>

### Assessing the Environmental Capacity

- 2.78 Cannock Chase District is situated within the Humber River Basin District. The District is covered by two Catchment Abstraction Management Strategy (CAMS) areas:
- Staffordshire Trent Valley.
  - The Tame, Anker and Mease.
- 2.79 Within the Southern Staffordshire Water Cycle Study (2010), the theme of Water Quality has been assessed with regard to potential development within the District. The study used the draft West Midlands Regional Spatial Strategy (WMRSS) housing targets for each District, which was 5,800 residential dwellings for Cannock Chase District, and 84ha of employment land. The study

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<sup>29</sup> Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010) p33

<sup>30</sup> Direct communication from Environment Agency, 29/11/2012 (Laura Perry, Planning Liaison Team Leader)

also tested two further scenarios of high development, with a 10% and a 30% increase on the draft WMRSS figures. This is slightly higher than the 5,300 proposed level of provision within the Cannock Chase District Draft Local Plan (2012) (which has a further 500 dwellings in Lichfield District contributing to the needs of Rugeley).

2.80 Within the Water Cycle Study, key potential residential and employment sites were considered for Cannock Chase, together with the main settlements. The study identified the waste-water treatment works (WwTWs) within the district that are affected by the proposed development, the watercourses into which they discharge, and the distance to the nearest environmentally designated sites:

*"For the WwTWs located on watercourses with poor or moderate ecological status or where a protected designation has been specified, the Environment Agency will place tighter discharge quality consents on the watercourses and, as a result, may not increase the discharge consents as requested by STWL without additional processing of the effluent or, in the worse cases, not at all."*<sup>31</sup>

2.81 The Water Cycle Study also identified that:

*"There are a large number of environmentally significant sites located within and around Cannock Chase District and all, in some form, are at risk of degradation due to development. It is therefore important that the Council undertakes the appropriate environmental surveys, such as Appropriate Assessments and Sustainability Appraisals before they decide on the final sites they wish to bring forward for development."*<sup>32</sup>

2.82 A traffic light system was used within the Water Cycle Study to assess the impact of development upon water quality:

- Green: Development not predicted to impact water quality and/or environment sites.
- Amber: Some predicted impact to impact water quality and/or environment sites from development. Mitigation may be required.
- Red: Significant predicted impact to impact water quality and/or environment sites from development. Mitigation will be required.

2.83 Of the nine residential potential development sites examined in the study, one is assessed as 'Red', four are assessed as 'Amber' and the remaining four assessed as 'Green'.

2.84 Of the 20 potential employment sites examined, seven are assessed as 'Red', eleven as 'Amber' and two as 'Green'.

2.85 Finally, for development around the existing settlements, development in and around Rugeley is assessed as 'Red', in and around Cannock and Prospect Village and Cannock Wood are assessed as 'Amber' and Norton Canes assessed as 'Green'.

2.86 **Table 2.5** sets out the rivers and their catchments within the study area, their current overall status and their overall status objective.

**Table 2.5: River condition and status objectives**

Catchment	River ID	River Name	Current Overall Status	Status Objective (Overall)
Staffordshire Trent Valley	R18 (GB104028046720)	Penkridge (South West) catchment (trib of Penk)	Poor	Good by 2027
Staffordshire Trent Valley	R19 (GB104028046740)	Saredon Brook from Source to River Penk	Moderate	Good by 2027

<sup>31</sup> Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010) p229

<sup>32</sup> Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010) p231

Catchment	River ID	River Name	Current Overall Status	Status Objective (Overall)
Staffordshire Trent Valley	R23 (GB104028047120)	River Penk from Saredon Brook to River Sow	Moderate	Good by 2027
Staffordshire Trent Valley	R27 (GB104028047190)	River Sow from R Penk to R Trent	Moderate	Good by 2027
Staffordshire Trent Valley	R30 (GB104028047260)	Longdon/Armitage Catchment (trib of Trent)	Moderate	Good by 2027
Staffordshire Trent Valley	R31 (GB104028047270)	Bourne-Bilson Brook Catchment (trib of Trent)	Good	Good by 2015
Staffordshire Trent Valley	R32 (GB104028047290)	River Trent from Moreton Brook to River Tame	Poor	Good by 2027
Staffordshire Trent Valley	R33 (GB104028047300)	River Trent from River Sow to Moreton Brook	Poor	Good by 2027
Staffordshire Trent Valley	R34 (GB104028047380)	Moreton Brook from Source to River Trent	Moderate	Good by 2027
Staffordshire Trent Valley	R46 (GB104028047280)	Rising Brook	Moderate	Good by 2027
Tame, Anker and Mease	R22 (GB104028046480)	Crane-Burntwood Brook from Source to Fotherley Bk	Moderate	Good by 2027
Tame, Anker and Mease	R42 (GB104028046990)	Ford Brook from Source to River Tame	Moderate	Good by 2027

- 2.87 As shown in the table, within the study area, there are three rivers in poor condition (the Penkridge, and the River Trent from River Sow to Moreton Brook and from Moreton Brook to River Tame; eight rivers in moderate condition, and just one river (Bourne-Bilson Brook Catchment) in good condition.
- 2.88 **Figure 2.3a** shows the geographic distribution of the river catchments set out in the table above. It is clear from this map that the vast majority of the study area contains river catchments of moderate condition. The two river Trent catchments in the north of the study area are in poor condition, and this has the potential to affect any development in and around the Rugeley area.
- 2.89 **Table 2.6** sets out the groundwater bodies in the study area, their current overall status and their status objectives.

**Table 2.6: Groundwater bodies and status objectives**

Groundwater ID	Groundwater body name	Current Overall Status	Status Objective (Overall)
G7 (GB40402G300300)	Staffordshire Trent Valley - Mercia Mudstone East & Coal Measures	Good	Good by 2015
G8 (GB40401G301000)	Tame Anker Mease - PT Sandstone Birmingham Lichfield	Poor	Good by 2027
G34 (GB40402G990800)	Tame Anker Mease - Secondary Combined	Poor	Good by 2027
G37 (GB40401G300500)	Staffordshire Trent Valley - PT Sandstone Staffordshire	Poor	Good by 2027

- 2.90 As shown in the table, three of the groundwater bodies are currently assessed as having 'poor' overall condition, and one is currently assessed as 'good'. G8 (Tame Anker Mease – PT Sandstone Birmingham Lichfield) covers the majority of the District, as shown in **Figure 2.3b**, and is categorised as 'poor'.
- 2.91 The Groundwater Source Protection Zones are also shown on **Figure 2.3b**. There are three main areas within the District that contain Source Protection Zones 1 or 2 (the inner and outer protection zones, respectively):
- Where the A460 intersects the Marquis's Drive at Cannock Chase Country Park.
  - At Slitting Mill, Rugeley.
  - At the very northern end of Rugeley between the A460 and the A51.
- 2.92 These are zones within which there is a particular risk of contamination to groundwater supplies from any activities which may cause pollution. There is also a Source Protection Zone 3 (the source catchment protection zone) which covers a significant part of the District, stretching from Rugeley to Hednesford. This is the "area around an abstraction source within which all groundwater recharge is presumed to be discharged at the abstraction source"<sup>33</sup>. As such any development in this zone may be subject to constraints made by the Environment Agency.
- 2.93 The Environment Agency was consulted as part of this study, and has stated: "We are not able to advise on the threshold of additional housing that could be accommodated before water quality issues cause a problem, as stated previously, Severn Trent Water would be in a better position to advise on this."

### Key issues for water quality

- Burntwood WWtW, which discharges into Burntwood Brook, may be unable to receive additional flow due to biological and chemical quality issues in Burntwood Brook.
- The Water Cycle Study recommends that before progressing with development within the Burntwood, Rugeley (Penkridge Bank) or Cannock WwTW catchments, that discussions with the Environment Agency and STWL take place, due to potential restrictions resulting from water quality in Burntwood Brook, the River Trent and Saredon Brook. Mitigation or infrastructure upgrades are likely to be needed, and resulting delay to development expected.
- There are a number of environmentally significant sites in the District that could be impacted upon by development
- A significant area of the District is covered by Groundwater Source Protection Zones (1 to 3).

<sup>33</sup> Groundwater Protection: Principles and Practice, Environment Agency (November 2012)

## Theme 4: Water Supply

### Why is it important

2.94 Water is a fundamental natural resource, and the need for clean water to drink is an essential human need. In addition to this most basic of needs, water is required for agriculture, for power generation and to supply industries and homes.

2.95 The Environment Agency states:

*"Water is something that most of us in England and Wales take for granted. In fact, it is a precious resource that faces increasingly severe demands and conflicting pressures."*<sup>34</sup>

#### *National Planning Policy Framework*

2.96 Chapter 10 of the NPPF sets out that:

*"Local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations."*<sup>35</sup>

2.97 The NPPF also sets out that:

*"Local planning authorities should work with other authorities and providers to assess the quality and capacity of infrastructure for (...) water supply (...) and its ability to meet forecast demands"*.<sup>36</sup>

#### *Local policy*

2.98 Policy CP16 – Climate Change and Sustainable Resource use states that:

*"All new residential developments should achieve water efficiency standards equivalent to Code for Sustainable Homes Level 3/4 as a minimum and should have regard to wider sustainability standards of the Code (using Level 3 as a good practice benchmark)." <sup>37</sup>*

#### *Sustainability Appraisal / Habitats Regulations Assessment*

2.99 Water quality and supply is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues were identified within this topic:

- Improvements to water infrastructure required if water supply and sewerage capacity are to meet forecast growth.

2.100 Within the Rugeley Town Centre study area, the following issues were identified within the water topic:

- Reduction in water table/over abstraction.

2.101 Within the Habitats Regulations Assessment of the Draft Local Plan, Severn Trent Water's Review of Consents Stage 4 regarding abstraction licences at Milford and Bednall was identified as having a likely significant effect on Cannock Chase SAC. However, water abstraction was then screened out of the HRA, as *"although water abstraction could potentially lead to a significant effect on the qualifying interest features of Cannock Chase SAC, the issue relates to the uncertainty around the Milford and Shugborough boreholes, which are in Stafford Borough. The report concludes that only housing growth in Stafford Borough could cause potential negative impacts on the SAC."*<sup>38</sup>

### Vulnerability to climate change

2.102 The supply of water is extremely vulnerable to climate change. As set out in the Sustainability Appraisal of the Local Plan, *"temperature in the region is expected to continue to increase and*

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<sup>34</sup> Environment Agency (2009) Water for People and the Environment, p3

<sup>35</sup> National Planning Policy Framework, CLG (2012) Chapter 10 p22

<sup>36</sup> National Planning Policy Framework, CLG (2012) p40

<sup>37</sup> Cannock Chase Draft Local Plan (Part 1) 2012, p132

<sup>38</sup> Habitats Regulations Assessment of the Cannock Chase District Draft Local Plan (Part 1) 2012 p19

rainfall will fall in summer and increase in winter<sup>39</sup>. This changing pattern may lead to both droughts and floods.

### How can we measure performance?

2.103 There are two main sources from which we can measure performance in terms of water supply. These are:

- The Environment Agency, within the Catchment Abstraction Management Plans.
- The Water Supply Companies, within their Water Resources Plans.

2.104 The Catchment Abstraction Management Plans (CAMS) set out the indicative water resource availability status.

2.105 There are two Water Companies who manage the water supply in the study area, these are: South Staffordshire Water (SSW), and Severn Trent Water (STW). Cannock Chase District is covered by SSW, but there is a small area to the north of the District, included in our study area, that falls within STW's area. Each company produces a Water Resources Plan to assess future water resources within the region.

#### Proposed indicator

2.106 Based on discussions with the Environment Agency and the Water Resource Companies, the proposed indicator is the assessment of water availability within the Water Resources Plans of the Water Supply Companies.

#### Justification

2.107 The Water Resource Plans are used by the water companies for water resource planning, and are based upon housing figures within the existing local plans.

### Targets / standards

2.108 The demand and supply forecasts used by the Water Companies are complex, and it is not possible within the constraints of this study to re-model the forecasts with different data to assess potential availability of water under different scenarios. Moreover, water efficiency measures in existing and new developments will have significant impact upon water availability.

2.109 An appropriate standard/target could be set in discussion with the Environment Agency and relevant water companies, linked to the availability of 'sustainable' sources of water supply.

### Data sources

2.110 The following data sources have been identified relating to Water Supply.

#### GIS data

- Staffordshire Trent Valley CAMS area (EA).
- Tame, Anker and Mease CAMS area (EA).
- CAMS Groundwater Units / Management Units (EA).

#### Documents

##### National

- Water Resources Strategy for England and Wales (Water for People and the Environment, Environment Agency (2009).

##### Regional

- The Staffordshire Trent Valley Catchment Abstraction Management Strategy, Environment Agency (2007).
- The Tame, Anker and Mease Catchment Abstraction Management Strategy, Environment Agency (2008).

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<sup>39</sup> Sustainability Appraisal and Strategic Environmental Assessment of the Local Plan (Part 1) 2012, Halcrow (2012) p16

- 
- South Staffordshire Water Final Water Resources Plan (2009).

**Local**

- Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010).

**Application to the Environmental Capacity Study**

2.111 By reference to the documents referred to above, and in dialogue with the Environment Agency and water companies, it may be possible to come to an indicative view on the extent to which water resources are likely to be a constraining factor with respect to the delivery of additional development in Cannock Chase. In terms of quantification, this could be dependent upon a number of factors with respect to how development is delivered, such as source zones and use of water efficiency measures, and which water resource management unit is relevant.

**Assessing the Environmental Capacity**

2.112 As shown in **Figure 2.4a** (*figure pending, awaiting data*), there are two CAMS areas that cover the study area: Staffordshire Trent Valley, which covers the majority of the District, and the Tame, Anker and Mease. Within these CAMS, the study area is covered by four Water Resource Management Units (WRMUs). Within Staffordshire Trent Valley, these are:

- The Sow and Penk (WRMU 3)
- Lower Trent and Swarbourn (WRMU 2)

2.113 And within the Tame, Anker and Mease CAM, they are:

- Bourne / Black Brook (WRMU 3)
- Rivers Tame, Cole, Anker and Trent (WRMU 1)

2.114 The current resource availability status of the relevant four WRMUs are set out below:

**Table 2.7: Water resource availability within Staffordshire Trent Valley CAMS area**

WRMU Name	Associated Main River	Individual WRMU status	Integrated WRMU status	Target status in 2010	Target status in 2016
WRMU3 (Sow and Penk)	River Sow, River Penk	No water available	No water available	No water available	No water available
WRMU2 (Lower Trent and Swarbourn)	River Trent, River Swarbourn	No water available	No water available	No water available	No water available

Source: Staffordshire Trent Valley CAMS

**Table 2.8: Water resource availability within Tame, Anker and Mease CAMS area**

WRMU Name	Associated Main River	Individual WRMU status	Integrated WRMU status	Target status in 2013	Target status in 2019
WRMU3 (Bourne / Black Brook)	Bourne / Black Brook (including the Shenstone and Lickfield groundwater units)	Over abstracted	Over abstracted	Over abstracted	Over licenced
WRMU1 (Tame, Anker Cole and Trent)	Rivers Tame, Anker, Cole, Rea, Bourne and the River Trent from the Tame to the Dove (and the Birmingham, Sutton, Nuneaton, Coleorton and Warton groundwater units)	Water available	Water available	Water available	No water available

Source: Tame, Anker and Mease CAMS, and direct communication from the Environment Agency

2.115 The status descriptions are :

- **Water available:** Water is likely to be available at all flows including low flows. Restrictions may apply.
- **No water available:** No water is available for further licensing at low flows. Water may be available at higher flows with appropriate restrictions.
- **Over licenced:** Current licenced abstraction is such that no water is available at low flows. If existing licences were used to their full allocation they would cause unacceptable environmental damage at low flows. Water may be available at high flows, with appropriate restrictions.
- **Over abstracted:** Existing abstraction is causing unacceptable damage to the environment at low flows. Water may still be available at high flows, with appropriate restrictions.

2.116 However, the Environment Agency's abstraction policies are unlikely to impact on residential development and more likely to impact upon smaller commercial developments or agriculture if they require extraction from the watercourse<sup>40</sup>. Therefore the assessments of the Water Supply Companies are likely to provide the most useful indicator of the availability of water supply to meet future development scenarios.

2.117 As identified above, there are two Water Companies who manage the water supply in the study area, these are: South Staffordshire Water (SSW), and Severn Trent Water (STW). This report refers to the Final Water Resources Plans for the two Water Companies, but it should be noted that the Water Companies are due to publish new draft plans next March, which may change the situation.

<sup>40</sup> Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010) p218

- 2.118 Within the Environment Agency's national work to identify areas of water stress, the water supply zones for both of these companies are shown as areas of 'moderate' water stress. These areas will require enhanced levels of water efficiency activity to preserve supplies. The SSW area is classified as a 'Single Resource Zone' meaning that the whole of the area is at equal risk of water shortage issues. In consultation for this report, SSW stated that:
- "the company's network system can transport water across the network but this is short term resilience and effective network management is based on localised river abstraction and boreholes and treatment. The main issue for local development is its impact on the local network."*<sup>41</sup>
- 2.119 The Final Water Resources Plan for SSW (2009) uses the Phase 2 revision of the West Midlands RSS figures upon which to base the future household projections to be included in the Plan. Although not adopted, these figures are still relevant for Cannock Chase District. These projections are incorporated into their baseline demand forecast. Based on the baseline demand forecast and supply forecast SSW state that they have sufficient resources to meet dry year annual average demand and critical period peak week demand throughout the plan period (2010 to 2035). Therefore SSW does not predict a need for major resource development or demand management measures over the plan period.
- 2.120 The Final Water Resources Plan for Severn Trent Water (2010) also uses the Phase 2 revision of the West Midlands RSS figures upon which to base the future household projections to be included in the Plan. As with SSW, although the Phase 2 revision of the WMRSS was not adopted, these figures are still relevant for Cannock Chase District. The STW FWRMP also uses a lower figure than the RSS projection for the period up to 2014/15 to account for the economic recession, followed by a return to the levels cited in the RSS to 2035. Based on the estimates contained in the Plan, STW predict that they will need additional water resources and treatment capacity in the longer term.
- 2.121 Given the considerable size of the Severn Trent Water area, it is important to review the actual Water Resource Zones covering the study area for this project. The area that falls within the study area is currently Water Resource Zone 2: Staffordshire and East Shropshire. According to the WRMP, the strategy for the Staffs and East Shropshire zone maintains a headroom surplus of around 20Mi/d throughout the planning period. The strategy for this zone is based on reducing demand through encouraging more water efficiency, and reducing leakage. (p162). It should be noted that STW have recently reviewed and revised their Water Resource Zones, and the area within the study area for this project will shortly become the Stafford WRZ. This will be incorporated into the 2015 WRMP.
- 2.122 The Southern Staffordshire Outline Water Cycle Study (2010) assesses water availability in the context of three growth scenarios, based upon the Draft West Midlands Regional Spatial Strategy baseline (the Draft West Midlands Regional Spatial Strategy Phase 2 Revision is now withdrawn, but the evidence base behind it remains until superseded). For Cannock Chase, these growth scenarios are:

**Table 2.9: Growth scenarios within the Water Cycle Study**

	Residential (dwellings)	Employment (ha)
Scenario 1 (RSS)	5,800	84
Scenario 2 (+10% Phase 2)	6,380	92.4
Scenario 3 (+30%)	7,540	109.2

- 2.123 The baseline scenario (scenario 1) is essentially what has been incorporated in the Draft Local Plan for Cannock, albeit with 500 dwellings of the 5,800 to be allocated in Lichfield District, contributing to meeting the needs of Rugeley.
- 2.124 Based on the FWRMP for SSW, the water cycle study states that there is enough water available to meet the level of development proposed in Scenario 1. *"However, this is reliant upon the*

<sup>41</sup> Direct communication from South Staffs Water (Steve Colella, 10/12/2012)

*implementation of metering, leakage and water efficiency measures and the Code for Sustainable Homes.”<sup>42</sup>. It also identifies that “there is insufficient resource within the supply area to meet the higher scenarios of development, especially Scenario 3.”<sup>43</sup>*

- 2.125 Further consultation with SSW for this study, provided the following information: SSW is currently working on its 2014 Water Resources Management Plan, a draft plan is to be submitted to Defra in March 2013. All current plans for SSW are therefore work in progress. They are not currently planning for any development over and above that which is forecast within the Council’s Annual Monitoring Report. At this time, SSW does not expect to have a ‘supply demand’ deficit across the whole of the supply area. However, depending on where developments take place some network enhancements may be needed. Network modelling would be needed to clarify exactly what enhancements would be needed for individual developments, and therefore detailed consultation would be needed with SSW prior to any additional development.<sup>44</sup>
- 2.126 Where water supply is a critical issue, SSW would seek to implement the Code for sustainable Homes level 3 for any new developments (120 litres/head/day).<sup>45</sup>
- 2.127 A traffic light system is used within the Water Cycle Study to assess the impact of development upon water supply. This is:
- Green: Little or no infrastructure upgrade required.
  - Amber: Minor infrastructure upgrade required.
  - Red: Major infrastructure upgrade required.
- 2.128 Of the nine residential potential development sites examined in the study, six are assessed as ‘Amber’ and the remaining three are assessed as ‘Green’ (although one of these requires further hydraulic analysis by STW).
- 2.129 In responding to questions for this study, the Environment Agency states:
- “water supply networks are large and water can be moved considerable distances so a local source is unlikely to supply a local area. In other words it may not be sources in Cannock that supplies that council’s area; the water could be piped in from elsewhere so a lack of water in Cannock does not automatically translate as a lack of water available for public water supplies.”<sup>46</sup>*
- 2.130 As stated, STW supply a small part of the study area for this study, they have stated that their strategy is to meet development needs, as long as they are consulted on any development as soon as possible.

### **Key issues for Water Supply**

- There is enough water available to meet the baseline scenario of development, as set out in the Draft Local Plan (2012). However, this is reliant upon the implementation of metering, leakage and water efficiency measures and the Code for Sustainable Homes.
- Meeting the baseline scenario of development may require some investment for minor infrastructure improvements, discussion will be needed with SSW ahead of development taking place.
- There is insufficient water resource within the supply area to meet higher scenarios of development (assessed as 6,380 dwellings and 7,540 dwellings)
- For the parts of the study area supplied by STW, the water company’s strategy to meet current levels of development is reliant upon leakage reduction and increased water efficiency measures. More detailed assessment would be needed for higher levels of development.

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<sup>42</sup> Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010) p217

<sup>43</sup> Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010) p217

<sup>44</sup> Direct communication from South Staffs Water (Steve Colella, 10/12/2012)

<sup>45</sup> Direct communication from South Staffs Water (Steve Colella, 10/12/2012)

<sup>46</sup> Direct communication from Environment Agency, 29/11/2012 (Laura Perry, Planning Liaison Team Leader)

## Theme 5: Flood Risk

### Why is it important?

- 2.131 As our climate changes, the risk of flooding in England is increasing. Floods can cause damage to property, injury and loss of life. They can also cause significant damage to infrastructure, affecting drinking water, power supplies and transport.

#### *National Planning Policy Framework*

- 2.132 One of the 12 core planning principles within the NPPF is that planning should:

*"Support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy)"<sup>47</sup>*

- 2.133 Chapter 10 of the NPPF sets out that:

*"Local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations."<sup>48</sup>*

- 2.134 Within the same chapter it states:

*"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere."<sup>49</sup>*

#### *Local Policy*

- 2.135 Policy CP16 – Climate Change and Sustainable Resource use states that:

*"The Council, working with partners, will tackle climate change and ensure sustainable resource use via the promotion and positive consideration of initiatives and development proposals that:(...) g. appropriately account for both current and future potential levels of flood risk. Via the strategic approach (Policy CP1) developments are guided away from areas of flood risk. However where there are no alternative options available, and development is required within the highest risk zone 3b, flood risk shall be managed through upstream alleviation in order to bring development in line with national planning policy. Land for key infrastructure requirements, namely for the formal flood alleviation scheme for the Rising Brook at Rugeley, will be safeguarded via the strategic approach. The need for alleviation of surface water flood risk in the higher risk areas of Rugeley and Cannock is also identified and will be promoted via partnership working with the Lead Local Flood Authority."<sup>50</sup>*

- 2.136 Within the same policy, the Plan states that:

*"All residential and non-residential development proposals should contribute to tackling climate change and promoting sustainable resource use by: (...) c. Avoiding incompatible developments in high risk flood areas as per the Strategic Flood Risk Assessment, unless the wider sustainability benefits outweigh the risk, such as the re-use of previously development land. Surface water run-off rates should be limited to the Greenfield equivalent in areas upstream of flood risk problem areas wherever possible, such as the Rising Brook in Rugeley and Ridings/Saredon Brook in Cannock."<sup>51</sup>*

#### *Sustainability Appraisal / Habitats Regulations Assessment*

- 2.137 Flood risk is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues were identified within this topic:

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<sup>47</sup> National Planning Policy Framework, CLG (2012) p5

<sup>48</sup> National Planning Policy Framework, CLG (2012) Chapter 10 p22

<sup>49</sup> National Planning Policy Framework, CLG (2012) Chapter 10 p23

<sup>50</sup> Cannock Chase Draft Local Plan (Part 1) 2012, p131

<sup>51</sup> Cannock Chase Draft Local Plan (Part 1) 2012, p133

- Surface Water Management Plan for southern Staffordshire also gave various recommendations to the council and developers about how to alleviate flood risk and where to locate development. It also identified that there are 2,218 properties at risk from future surface water flooding.

2.138 Within the Rugeley Town Centre study area, the following issues are identified within the flood risk topic:

- Several potential development sites are within Flood Zones. Site specific recommendations for Rugeley included in Strategic Flood Risk Assessment Report.
- Flooding of properties increasing (as district).

2.139 The Habitats Regulations Assessment of the Draft Local Plan, refers to the potential role of the District's canals in assisting flood risk management. The HRA states that:

*"Any such measures in relation to the Cannock Chase SAC would need to be discussed with Natural England in terms of potential effects on water quality in the SAC."*<sup>52</sup>

### **Vulnerability to climate change**

2.140 As set out in the Sustainability Appraisal of the Local Plan, *"temperature in the region is expected to continue to increase and rainfall will fall in summer and increase in winter"*<sup>53</sup>. This changing pattern may lead to both droughts and floods. However, the River Trent Catchment Flood Management Plan (2010) states that for the West Staffordshire Sub Area, of which Cannock Chase is part, *"Flood risk is not expected to increase considerably in the future as a result of climate change and urban growth"*<sup>54</sup>.

### **How can we measure performance?**

2.141 Flood risk can be measured by the number of properties at risk of flooding.

#### *Proposed indicator*

2.142 Number of properties at risk of flooding (located within Flood Zone 2 and Flood Zone 3).

#### *Justification*

2.143 This indicator measures performance against NPPF policy.

2.144 Outcome 8.31 of the Draft Local Plan (Part 1) 2012 includes: *"Number of planning applications granted contrary to Environment Agency advice on grounds of flood risk and pollution hazards minimised"*<sup>55</sup>.

### **Targets / standards**

2.145 There is no statutory or national target for flood risk. However, a suitable target might be 'a reduction in the number of properties located within Flood Zone 2 and Flood Zone 3'.

### **Data sources**

2.146 The following data sources have been identified relating to Flood Risk.

#### *GIS data*

- Flood Zones 2 and 3 (EA).

#### *Documents*

#### **National**

- Flooding in England: A National Assessment of Flood Risk, Environment Agency (2009).

#### **Regional**

<sup>52</sup> Habitats Regulations Assessment of the Cannock Chase District Draft Local Plan (Part 1) 2012 p28

<sup>53</sup> Sustainability Appraisal and Strategic Environmental Assessment of the Local Plan (Part 1) 2012, Halcrow (2012) p16

<sup>54</sup> River Trent Catchment Flood Management Plan Summary Report, Environment Agency (2010) p24

<sup>55</sup> Cannock Chase District Draft Local Plan (Part 1) 2012, p142

- River Trent Catchment Flood Management Plan, Environment Agency.

### Local

- Cannock Chase District Council Strategic Flood Risk Assessment for Local Development Framework, Halcrow (2008).
- Southern Staffordshire Surface Water Management Plan, Royal Haskoning (2010).
- Southern Staffordshire Surface Water Management Plan Phase 2 - Cannock Town, Royal Haskoning (2011).
- Rugeley Town Centre Area Action Plan Strategic Flood Risk Assessment Level 2, Halcrow Group Ltd (January 2009).

### Application to the Environmental Capacity Study

2.147 The application of flood risk zones is relatively straightforward in terms of a mapping exercise. There may be a need to consider flood defences and management to refine flood risk considerations, and other mitigation such as sustainable drainage systems.

### Assessing the Environmental Capacity

2.148 The flood risk zones in the study area are shown in **Figure 2.5a**. The main zones identified are:

- The River Trent along the northern boundary of the District, through the town of Rugeley.
- Rising Brook, from Cannock Chase Country Park to the Trent in Rugeley.
- Ridings Brook, through Cannock and Hednesford.
- Saredon Brook and Wash Brook along the southern boundary of the District.

2.149 The flood zones shown on the map are:

- Flood Zone 2: Medium probability of flooding (1% - 0.1% probability of river flooding in any year).
- Zone 3a: High probability (>1% probability of river flooding in any year).
- Zone 3b: Functional floodplain (>5% probability of river flooding in any year, or where flood water flows or is stored).

2.150 The remaining area is classed as Zone 1, where there is a less than 0.1% chance of river flooding in any year.

2.151 As set out in the Southern Staffordshire Water Cycle Study (2010), there are a number of issues relating to flood risk and new development<sup>56</sup>:

- Direct flood risk to the new development.
- Increased flood risk to other areas as a result of an increase in surface water runoff rate.
- Increase in flood risk from development in the floodplain.

2.152 Cannock Chase District Council has completed a Level 1 Strategic Flood Risk Assessment (SFRA) for the District, and an additional Level 2 SFRA for Rugeley town. There is also a Surface Water Management Plan (SWMP) for Southern Staffordshire, completed in 2010. Staffordshire County Council is the Lead Local Flood Authority for the area, and completed a Preliminary Flood Risk Assessment (PFRA) in March 2011.

2.153 Following this PFRA, and the release of the National Flood Map for Surface Water, and a number of Settlement Specific Phase 2 SWMPs, an addendum to the South Staffordshire Water Cycle Study was issued in April 2011, to update the Flood Risk sections of the WCS.

2.154 As identified in the WCS addendum, significant parts of Cannock Chase District have suffered from a number of recent historical flood events, including July 1999, November 2000 and June/July 2007, resulting in flooding of both Cannock and Rugeley. The WCS states that:

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<sup>56</sup> Southern Staffordshire Outline Water Cycle Study, Royal Haskoning (2010) p50

*"Since these events Cannock has been protected by a Flood Alleviation Scheme (FAS), protecting a number of properties against the 1 in 100 year event (1% chance of occurring). Although offering some protection this FAS still results in a residual flood risk to the area. Although not reflected in the SFRA Flood Zones and therefore within this WCS, the risk of the breaching or overtopping of defences should be reviewed when considering any development close to these watercourses."*<sup>57</sup>

- 2.155 The SWMP for Southern Staffordshire (2010) compares areas of surface water flood risk with properties from the NPD (National Property Dataset). Nearly 2,500 properties in Cannock and over 2,200 properties in Rugeley are located within the Environment Agency's "Less" flood extent. This flood zone is based on a surface water flood map of the UK, which does not take into account underground sewerage or drainage systems, small over ground drainage systems or buildings. This is therefore a broad scale model which does have deficiencies, but using the lesser flood extent from this model does provide a worst case estimate of the properties at risk.
- 2.156 The SWMP indicates that Cannock, Rugeley and Norton Canes have all been identified as being at a high risk of surface water flooding in the future. In the RFRA, Cannock Chase District has been classified as having a Medium probability of fluvial flood risk, and a High consequence of fluvial flooding. It is also identified as having a Medium probability of residual flooding from overtopping/breaching of flood defences, with a High predicted consequence.<sup>58</sup>
- 2.157 The Phase 2 SWMP for Cannock town (2011) determines *"overall the current risk (accounting for probability and consequence) from surface water flooding within Cannock town is relatively low, especially for the high probability (more frequent) flood events. (...) However the mapping indicates that certain parts of the town have a higher risk of surface water flooding and, if flow routes become blocked or new development increases the runoff velocities or volume, the water depths may increase dramatically"*<sup>59</sup>. The report also shows that despite the overall relatively low risk status of the area, there are a number of 'high hazard' spots distributed around Cannock.
- 2.158 The WCS Addendum has used a traffic light approach to assess potential development sites with regard to flood risk. All nine of the potential residential development sites, are classified as 'Amber'. Of the 20 potential employment sites, seven are classified as 'Red', eleven as 'Amber' and the remaining two as 'Green'. For development in and around the existing urban areas, both Cannock and Rugeley are classified as 'Red', and Norton Canes and Prospect Village and Cannock Wood as 'Amber'.
- 2.159 Level 2 SFRA for the Rising Brook in Rugeley concluded that the Brook suffers from a lack of culvert capacity during storm events.<sup>60</sup>

*"As such it is vital that all developments within the town incorporate suitable SUDS techniques to ensure no additional surface water enters the Brook and, where possible, the surface runoff is actually decreased to reduce the problem."*<sup>61</sup>

- 2.160 The Level 2 SFRA also recommended that an open land site on the Risings Brook, downstream of the A460 (West of the Western Springs Road), be investigated with regard to creating a formal floodplain storage area. Policy RTC 11 (Flood alleviation measures) of the Rugeley Town Centre Area Action Plan sets out the implementation of this recommendation. This policy states that:

*"to reduce existing flood risk affecting the town centre, a formal flood alleviation scheme will need to be constructed within the open land west of Western Springs Road, A460 (formerly A51). As a minimum, the scheme shall hold back functional flood plain flows and ensure that all site allocations, currently in flood zone 3B within the AAP are outside the functional flood plain, and will enable vehicular access. This scheme will be delivered in partnership through financial contributions from the Environment Agency and appropriate town centre developers and shall be undertaken to the satisfaction of the Environment Agency. Implementation of the scheme will be required prior to regeneration of the Rugeley Market Hall/Bus Station site (Policy RTC6) and also*

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<sup>57</sup> Southern Staffordshire Outline Water Cycle Study Addendum, Royal Haskoning (2011) p41

<sup>58</sup> Southern Staffordshire Outline Water Cycle Study Addendum, Royal Haskoning (2011) p42

<sup>59</sup> Southern Staffordshire Surface Water Management Plan Phase 2 – Cannock Town (2011) p21

<sup>60</sup> Southern Staffordshire Outline Water Cycle Study Addendum, Royal Haskoning (2011) p41

<sup>61</sup> Southern Staffordshire Outline Water Cycle Study Addendum, Royal Haskoning (2011) p41

*the Market Street Garages Site (Policy RTC5) unless flood risk assessment indicates otherwise in accordance with policy RTC5."*

- 2.161 The River Trent Catchment Flood Management Plan states that following recent flood defence works at Cannock, flood risk is significantly reduced, with current overall flood risk being classed as low (with 110 properties in the sub area at risk during a 1% flood event). However, a number of environmental sites are liable to be affected by flooding, including the Cannock Extension Canal SAC.<sup>62</sup>

### Key issues for Flood Risk

- The sewer network in the District is operating under pressure, meaning that infrastructure development is needed to avoid increasing the probability of flood risk.
- Cannock, Rugeley and Norton Canes have all been identified as being at a high risk of surface water flooding in the future.
- All new developments in Rugeley need to incorporate SUDS techniques to ensure that no additional water enters the Rising Brook, which suffers from a lack of culvert capacity during storm events.
- A large proportion of the proposed development sites within the Draft Local Plan (2012) may already be susceptible to flood risk issues. Development over and above this level would need to undergo flood risk assessment.
- Flood resilience of new properties is extremely important, as are measures to reduce placing additional strain on resources, such as implementation of SUDS techniques.
- Any development near to the flood alleviation scheme at Rugeley "*which included an encroachment of buildings or land raising within Flood Zone 3 would require floodplain compensation to be undertaken in order to ensure that the development does not reduce floodplain storage and increase flood risk elsewhere by displacing flood water outside of the natural floodplain*"<sup>63</sup>.
- Any development around Cannock which increases surface water run-off volume or velocity could have a significant impact on the level of flood risk for the wider area.

## Theme 6: Biodiversity

### Why is it important?

- 2.162 Biodiversity has intrinsic importance and at a global scale, its preservation is also vital to the continued functioning of complex ecosystem interactions which underpin the habitability of the planet and provide a host of services to humans. Examples of these 'ecosystem services' include provision of food, fuel and fibre; purification of air and water; provision of a 'bank' of genetic resources which are a key input to new crop varieties and medicines; maintenance of soil fertility through nutrient cycling and decomposition of wastes<sup>64</sup>. Biodiversity also has an important role to play as an indicator of the health of the sub-region's natural environment since thriving biodiversity provides evidence that other environmental factors (e.g. water resources, water quality, air quality, soil fertility etc.) are in good condition.

### *National Planning Policy Framework*

- 2.163 Section 11 of the NPPF states that:

*"The planning system should contribute to and enhance the natural and local environment by: (...) minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including*

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<sup>62</sup> River Trent Catchment Flood Management Plan Summary Report, Environment Agency (2010) p24

<sup>63</sup> Letter from Environment Agency to Cannock Chase District Council, 18/09/2012

<sup>64</sup> Secretariat of the Convention on Biological Diversity (2000) Sustaining life on Earth: How the Convention on Biological Diversity promotes nature and human well-being.

*by establishing coherent ecological networks that are more resilient to current and future pressures.*<sup>65</sup>

2.164 The same section of the NPPF also states that local planning authorities should set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure.<sup>66</sup>

*"To minimise impacts on biodiversity and geodiversity, planning policies should:*

- Plan for biodiversity at a landscape-scale across local authority boundaries;*
- Identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;*
- Promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan;*<sup>67</sup>

2.165 The NPPF also sets out six principles by which local planning authorities should aim to conserve and enhance biodiversity when determining planning applications, including:

- "if significant harm resulting from a development cannot be avoided (...) then planning permission should be refused;*
- Proposed development on land within or outside of a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted (...)*
- Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats (...)*<sup>68</sup>

#### *Local Policy*

2.166 Policy CP12 – Biodiversity and Geodiversity states that the District's biodiversity and geodiversity assets will be protected, conserved and enhanced via:

*"The safeguarding from damaging development of ecological and geological sites, priority habitats and species and areas of importance for enhancing biodiversity, including appropriate buffer zones, according to their international, national and local status. Development will not be permitted where significant harm from development cannot be avoided, adequately mitigated or compensated for;*

*Support for the protection, conservation and enhancement of existing green infrastructure to facilitate robust wildlife habitats and corridors at a local and regional scale;*

*Supporting and promoting initiatives for the restoration and creation of priority habitats and recovery of priority species and the provision of new spaces and networks to extend existing green infrastructure*

*Supporting development proposals that assist the delivery of national, regional and local Biodiversity and Geodiversity Action Plan (LBAP/GAP) targets by the appropriate protection, incorporation and management of natural features and priority species"*

*It also states that:*

*"Planning permission will be refused for developments resulting in the loss of or adverse effects upon a locally designated site, ancient woodland, veteran trees or priority biodiversity habitat unless the need for, and the wider sustainability benefits of, the proposal clearly outweigh its adverse impacts."*<sup>69</sup>

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<sup>65</sup> National Planning Policy Framework, CLG (2012) pp25-26

<sup>66</sup> National Planning Policy Framework, CLG (2012) p26

<sup>67</sup> National Planning Policy Framework, CLG (2012) p27

<sup>68</sup> National Planning Policy Framework, CLG (2012) pp27-28

<sup>69</sup> Cannock Chase District Draft Local Plan (Part 1) 2012, p124

- 2.167 Policy CP13 – Cannock Chase Special Area of Conservation (SAC) states that development will not be permitted where it would be likely to lead directly or indirectly to an adverse effect upon the European Site network and the effects cannot be mitigated (...) the issues raised in any relevant Habitat Regulations Assessments should be taken into account by developers.

*"In order to retain the integrity of the Cannock Chase Special Area of Conservation (SAC) all development within its zone of influence (as identified by the evidence base and subject to further refinement) that leads to a net increase in dwellings should mitigate for effects on the SAC"*<sup>70</sup>

#### *Sustainability Appraisal / Habitats Regulations Assessment*

- 2.168 Biodiversity is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues were identified within this topic:

*"Various development pressures are affecting the European designated sites and these have been recognised in Appropriate Assessments. Primary threats to Cannock Chase SAC and Cannock Extension Canal are increased recreation and recreation/ pollution respectively"*<sup>71</sup>

- 2.169 The Habitats Regulations Assessment concluded that the Local Plan may result in impacts on both the Cannock Chase SAC and Cannock Extension Canal SAC<sup>72</sup>. Potential impacts on the Cannock Chase SAC were associated with increased air pollution (as described above), and also as a result of an increased local population and resultant recreation pressure on the SAC. It was concluded that an updated evidence base was required to determine the extent of these effects, including the requirement for a visitor survey to inform the development of planning documents, and the provision of Supplementary Accessible Natural Greenspace (SANG).
- 2.170 In terms of the Cannock Extension Canal SAC, it was concluded that potential projects such as the restoration of the Hatherton Branch Canal and the potential role of the canal network in addressing flood risk will require further investigation in to potential impacts on the SAC. This may include further discussion with Natural England, the Environment Agency and other infrastructure providers, and further assessment as proposals/projects are progressed.

#### **Vulnerability to climate change**

- 2.171 The Biodiversity 2020 strategy states that:

*"To date, climate change has had a relatively small impact on the UK's biodiversity and ecosystems, though it has, for example, affected species ranges, populations sizes, timing of biological events such as flowering, and increased sea levels. (...) However, we do know that in the longer term, over a fifth (22%) of priority habitats are at high risk of direct impacts. (...) We do know that managing our biodiversity is important to both 'mitigation' (addressing the causes of climate change by removing greenhouse gases from the atmosphere) and 'adaptation' (helping to reduce the impacts of climate change). All of this poses a challenge to the way we try to conserve biodiversity"*<sup>73</sup>

#### **How can we measure performance?**

- 2.172 There is a hierarchy of protection for sites containing nature conservation value. This ranges from non-statutory locally designated protection (Sites of Biological Importance) through to statutory local and national designations (Local Nature Reserves, National Nature Reserves and Sites of Special Scientific Interest (SSSIs)) to international designations (Special Areas of Conservation, Special Protection Areas and Ramsar sites).
- 2.173 In addition to these designated sites, the Natural Environment and Rural Communities (NERC) Act 2006, required the publication of a list of habitats and species which are of principal importance for the conservation of biodiversity in England. This list (the UK Biodiversity Action Plan or UK BAP list) identifies 1,150 species and 65 habitats which are a conservation priority in England.

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<sup>70</sup> Cannock Chase District Draft Local Plan (Part 1) 2012, p126

<sup>71</sup> Sustainability Appraisal of the Draft Local Plan, Halcrow Group Ltd (2012) p17

<sup>72</sup> Habitats Regulations Assessment of the Cannock Chase District Draft Local Plan (Part 1) 2012 p30-31

<sup>73</sup> Biodiversity 2020: A strategy for England's wildlife and ecosystem services, DEFRA (2011) p16

- 2.174 At a local level, the Staffordshire Biodiversity Action Plan (SBAP) has recently been updated, and rather than containing individual habitat action plans, the SBAP now contains 14 "Ecosystem Action Plans" (EAPs) and one Rivers Action Plan. This approach *"aims to prioritise conservation management at a landscape level and contribute to local, regional and national conservation targets. Each EAP may contain a number of Priority Habitats."*
- 2.175 Cannock Chase undertook a Biodiversity Study in 2008, which included an extended Phase 1 habitat survey. This survey provided a benchmark against which future surveys can be compared to identify changes in area and quality of habitats over time.
- 2.176 Performance could be measured by looking at the condition of designated sites, the extent of Priority Habitats, and the degree to which the EAPs are being achieved (which looks at condition and extent of priority habitats) dependent on data availability.
- 2.177 It is not possible to use species information to measure performance. Sufficiently robust baseline information regarding species populations within the District is unlikely to be available which would otherwise allow accurate monitoring. Although biological record centres do collate species records, these often reflect ad hoc survey/reporting effort, rather than actual species distributions as would be obtained through robust and repeatable surveys. Similarly, the presence of invasive species and spread of these could in theory provide a useful measure of success or otherwise towards biodiversity objectives but the existing baseline regarding distribution is not sufficiently robust to allow monitoring (nor are the resources likely to be available to allow this).

#### *Proposed indicator(s)*

- 2.178 Condition of SACs within study area.
- 2.179 Condition of SSSIs within study area.
- 2.180 Extent of priority habitat within study area.

#### *Justification*

- 2.181 The condition and integrity of SACs provides a clear link to whether the Habitats Directive is being met.
- 2.182 The condition statements for the SSSIs are a common standard that can be used to assess national targets (Biodiversity 2020 Outcome 1A).
- 2.183 The extent of priority habitat can be clearly linked to national strategy (Biodiversity 2020 Outcome 1B).

#### **Targets / standards**

- 2.184 The following targets have been set for biodiversity:
- Maintenance of the integrity of internationally designated habitats.
  - By 2020, 50% of SSSIs (nationally) should be in favourable condition, and 95% of SSSIs should be in favourable or recovering condition.
  - No net loss of priority habitats.
  - Achievement of BAP targets.

#### **Data sources**

- 2.185 The following data sources are relevant to Biodiversity.

#### *GIS data*

- Sites of Biological Importance.
- Local Nature Reserves.
- National Nature Reserves.
- SSSI Unit Areas.
- SACs.

- SPAs.
- Ramsar sites.
- UK Biodiversity Action Plan (UK BAP) Priority Habitats.
- Staffordshire BAP EAPs.

### Documents

#### National

- Biodiversity 2020: A strategy for England's wildlife and ecosystem services, DEFRA (2011).

#### Regional

- Enhancing Biodiversity across the West Midlands, West Midlands Biodiversity Partnership / Natural England (2008).
- Staffordshire Biodiversity Action Plan, Staffordshire Biodiversity Partnership (2001 - under review).

#### Local

- Cannock Chase Council, Extended Phase 1 Biodiversity Study, Penny Anderson Associates Ltd (2008).
- Cannock Chase Draft Local Plan (Part 1) 2012 Habitats Regulations Assessment Report, Halcrow (2012).
- Evidence Base Relating to Cannock Chase SAC and the Appropriate Assessment of Local Authority Core Strategies, Footprint Ecology (2010).
- Cannock Chase Visitor Impacts Mitigation Report, Footprint Ecology (2012)<sup>74</sup> (note that this was been informed by other, detailed reports including the above report, an investigation of recreational pressure 2012<sup>75</sup> and updated visitor survey 2012<sup>76</sup>, also all undertaken by Footprint Ecology).
- Cannock Extension Canal Appropriate Assessment Baseline Report,(White Young Green (2007) produced for CCC and the Black Country Authorities.

### Application to the Environmental Capacity Study

2.186 It is relatively straightforward to map designated sites as a constraint to development. Beyond this, various assumptions need to be made to provide qualitative commentary on the potential impacts of additional development on ecological networks, habitat fragmentation, etc., with specific reference to priority habitats and species.

### Assessing the Environmental Capacity

2.187 As shown in **Figure 2.6a**, Cannock Chase District has two SACs.

- The **Cannock Chase SAC** is designated on the basis of the annex 1 Habitats it supports: European Dry Heaths and Northern Atlantic wet heaths with *Erica tetralix*. Conservation Objectives for this SAC are to maintain these designated features in favourable condition.
- The **Cannock Extension Canal SAC** is designated for the population of the Annex II species Floating water-plantain *Luronium natans* which it supports. Conservation Objectives for this SAC are to maintain this designated feature in favourable condition.

2.188 Favourable condition is generally assessed as, subject to natural change, the ability to maintain or restore:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species.

<sup>74</sup> Cannock Chase Visitor Impacts Mitigation Report 2012 (Footprint Ecology)

<sup>75</sup> Impacts of Recreation to Cannock Chase SAC 2012 (Footprint Ecology)

<sup>76</sup> Cannock Chase AONB Visitor Survey 2012 (Footprint Ecology)

- The structure and function (including typical species) of qualifying natural habitats and habitats of qualifying species.
- The supporting processes on which qualifying natural habitats and habitats of qualifying species rely.
- The populations of qualifying species.
- The distribution of qualifying species within the site.

2.189 The District also supports three SSSIs:

- **Chasewater and The Southern Staffordshire Coalfield Heaths SSSI** - heath, fen and oligotrophic (nutrient-poor) standing open water habitats, and supports populations of two nationally scarce vascular plant species (floating water-plantain and round-leaved wintergreen *Pyrola rotundifolia*).
- **Cannock Chase SSSI** – largely designated for the heathland and woodland habitats, and associated species, comprising the most ecologically valuable parts of the former Royal Chase, one of a nationally important series of relict ancient Forest/Chase landscapes in the Midlands.
- **Cannock Extension Canal SSSI** - high water quality supporting a highly diverse aquatic flora including nationally scarce and notable species.

2.190 A further three SSSIs are located within 2.5km of the District:

- **Gentleshaw Common SSSI** – heathland habitats.
- **Clayhanger SSSI** – wetland habitats.
- **Jockey Fields SSSI** – wet grassland, fen and swamp.

2.191 The District also includes approximately 30 local SBIs and 2 LNRs (1 additional pending)<sup>77</sup>.

2.192 The Phase 1 Habitat Survey report completed by Penny Anderson Associates (2009) maps and provides a baseline for percentage cover of habitats within the District. In terms of UK BAP Priority Habitat, Natural England data identifies the following as being present within the District (Figure 2.6b):

**Table 2.10 Area of UK BAP Priority Habitat (Source: Natural England GIS Data)**

BAP Priority Habitat	Area (Ha)	% cover of Study Area
Undetermined Grassland	167.00	0.81
Reedbeds	48.35	0.23
Lowland Meadows	39.33	0.19
Lowland Heathland	1,630.72	7.91
Lowland Dry Acid	94.54	0.46
Fens	32.68	0.16
Deciduous Woodland	984.80	4.78
Coastal and Floodplain	82.40	0.40
<b>Total Area of BAP Habitat</b>	<b>3,079.82</b>	
<b>Total Area of Study Area (CCDC + 2.5km buffer zone)</b>	<b>20,616.29</b>	

<sup>77</sup> Cannock Chase District Draft Local Plan (Part 1) 2012, p25

2.193 The Staffordshire BAP includes three Ecosystem Action Plans which overlap with the District (Figure 2.6b):

**Table 2.11: Ecosystem Action Plans within the District**

Ecosystem Action Plan	Priority Habitat	EAP Aims for Priority Habitat
Cannock Chase Heaths	Comprising the AONB, lowland heath habitats are the priority habitat for nature conservation	<p>Maintain the extent and condition of existing 'favourable' habitat and improve the condition of sites deemed as 'unfavourable'</p> <p>Increase the extent of lowland heathland - create patches over 30 ha where possible to promote sustainability</p>
Central Farmland EAP	<p>Farmlands of mixed arable and pastoral farming with varied intensity of management.</p> <p>Priority Habitats include:</p> <ul style="list-style-type: none"> <li>- Hedgerows</li> <li>- Arable field Margins</li> <li>- Rivers</li> </ul>	<p><i>Hedgerows:</i></p> <p>Maintain the net extent of hedgerows, the number of individual, isolated hedgerow trees and the number of isolated veteran trees by 2015. Achieve favourable condition of 50% of hedgerows by 2015 and ensure they remain, on average, at least as rich in native woody species and herbaceous hedgerow flora</p> <p>Restoration of hedgerows – this includes increasing numbers of young trees (1-4 years) and increasing the diversity of the herbaceous hedgerow flora</p> <p>Achieve a net increase in the length of hedgerows</p> <p><i>Arable field Margins:</i></p> <p>Expand the area of arable field margins to include cultivated low-input field margins, wild bird seed, flower-rich field margins and permanent grass margins</p> <p><i>Rivers:</i></p> <p>The Water Framework Directive (WFD) commits EU member states to achieve good ecological status for watercourses and water bodies.</p>
Urban	<p>These EAPs are focused around the settlements of Cannock, Rugeley and Burntwood.</p> <p>Priority Habitats include:</p> <ul style="list-style-type: none"> <li>- Lowland meadows</li> <li>- Native woodland</li> </ul>	<p><i>Lowland meadows:</i></p> <p>Maintain the extent and condition of existing habitat</p> <p>Restoration of lowland meadows from semi-improved or neglected grassland</p> <p>Creation of lowland meadows from arable or improved grassland</p>

Ecosystem Action Plan	Priority Habitat	EAP Aims for Priority Habitat
	<ul style="list-style-type: none"> <li>- Open mosaic on previously developed land</li> </ul>	<p><i>Native woodland:</i></p> <p>Maintain the extent and condition of ancient and non-ancient woodland (native woodland)</p> <p>Initiate the restoration of coniferous or mixed PAWS</p> <p>Creation of broadleaved woodland</p> <p><i>Open mosaic on previously developed land:</i></p> <p>Restoration of habitat by arresting succession of scrub and woodland</p>

- 2.194 The Conservation of Habitats and Species Regulations 2010 provide legal protection to SACs and SPAs (UK planning policy also applies this to Ramsar sites) that aims to maintain the integrity of internationally designated sites and an ecologically coherent network of habitats. Assessing the condition of the SACs within the District in terms of meeting their Conservation Objectives is achieved through analysis of the component SSSI Condition Assessments, and other data sources relating to the features which determine favourable nature conservation status, such as hydrology, air quality or recreation. This level of analysis has been undertaken as part of a number of HRAs and related studies as identified above.
- 2.195 Outcome 1A of the Biodiversity 2020 agreement states that, by 2020, 50% of SSSIs should be in 'favourable' condition, with at least 95% in 'favourable' or 'recovering' condition. The condition of SSSIs is regularly assessed by Natural England.<sup>78</sup> As shown in **Figure 2.6a**, Of the 66 SSSI Site Unit Conditions within the study area (2.5km from Cannock Chase District Boundary):
- 12 are classed as in favourable condition (107.38ha).
  - 47 as unfavourable recovering (1,706.35ha).
  - 3 as unfavourable no change (27.64ha).
  - 4 are in unfavourable declining condition (4.32ha).
- 2.196 In terms of percentage of the total area of the SSSIs within the Study Area (1,845.69ha), this comprised:
- Favourable condition – 5.81%.
  - Unfavourable recovering – 92.45%.
  - Unfavourable no change – 1.50%.
  - Unfavourable declining – 0.23%.
- 2.197 Therefore the target for 2020 is not currently being met with less than 50% of the area of SSSIs within the Study Area in favourable condition, although over 95% are in favourable or recovering condition. However, given the high percentage which are recovering, it would seem possible that should the recovery continue, areas will be upgraded to the favourable category which may enable the 2020 target to be met.
- 2.198 Common themes identified during the HRA and related studies, and within the SSSI condition assessments as causes for unfavourable condition include the following:
- **Recreation Pressure and Urban Effects:** This was identified as a potential impact for both SACs and their component SSSIs, as well as potentially for SSSIs adjacent to the District such as the Gentleshaw Common SSSI. For example, within the Cannock Chase AA evidence base it is concluded that "*development in the respective core strategies will result in an increase of*

<sup>78</sup> Biodiversity 2020: A strategy for England's wildlife and ecosystem services, DEFRA (2011) p12

approximately 9% in visits to the SAC. Recreational access and associated visitor pressure is associated with various impacts that include trampling, increased fire risk, erosion, spread of disease and nutrient enrichment. It will not be possible to avoid these effects if development is within 400m of the SAC or for where large single developments occur within easy travel distance or travel time from the SAC. Otherwise mitigation measures should be successful in avoiding adverse effects arising from recreational pressure. Mitigation measures will be complex, difficult to implement and require a separate strategy, followed by a more detailed implementation plan; however precedents do exist in other areas, such as Dorset and the Thames Basin Heaths<sup>79</sup>. More recent studies undertaken in 2012<sup>80</sup> have similarly identified that "the SAC is already suffering significant damage from existing visiting levels and that additional visiting from new developments will add to this. Such additional visiting is likely to increase levels of damage without mitigation. The main problems are fragmentation of habitat from a multiplicity of paths and tracks, track and path widening with erosion, trampling and compaction and horse riders and cyclists going off the bridleways, eutrophication from dog mess and disturbance from people and dogs." Extensive mitigation measures which would be required to address impacts of future development are identified.

- **Air Pollution:** Identified as a particular issue relating to the Cannock Chase SAC and heathland habitats due to their sensitivity to NOx deposition in particular. The Cannock Chase evidence base identifies road traffic as a particular issue, with roads passing through the heathlands heavily used. This study states "the general level of nitrogen deposition at Cannock Chase already exceeds the maximum critical load for dry heath and the minimum, critical load for wet heath. Any further increase in nitrogen deposition is therefore going to further contribute to an adverse effect upon the integrity of the interest features."
- **Hydrology and Water Pollution:** particular issue for wetland habitats given the reliance of designated interest features, for example the nationally important plant populations within the Cannock Extension Canal SAC, to water and sediment levels, and water quality. Control of water levels are also of important for other designated wetland habitats, such as wet grassland and fens, as well as heathland habitats with abstraction identified as a potential issue by HRAs.
- **Inappropriate management:** for example, overgrazing has been identified as the key reason of failing condition of the Clayhanger Lane SSSI.
- **Invasive species:** This issue is of particular concern for wetland habitats, with for example the condition of both the Cannock Extension Canal SAC and Clayhanger SSSI being affected by invasive species, including species such as *Crassula helmsii*, *Lemna minor* and *Azolla filiculoides*<sup>81</sup>.

- 2.199 Outcome 1B of the Biodiversity 2020 agreement states that there should be no net loss of priority habitats, with an increase in the overall extent whilst creating bigger and less fragmented areas for wildlife. The data sources are not currently available to accurately assess whether this target has been met. This could be achieved through updating the PAA study to assess habitat cover in the future. Difficulties using NE data relate to the accuracy of the BAP Habitat datasets, and likely varied method and dates of data acquisition which would hinder comparability.
- 2.200 The SBAP EAPs include similar aims regarding increasing the area or length of priority habitats, as well as to enhance condition and undertake restoration, for example (Table 2.8). The Biodiversity Action Reporting System (<http://ukbars.defra.gov.uk/archive/default.asp>) was reviewed to try and determine progress towards targets. Unfortunately this appeared to use different targets to those detailed within the SBAP EAPs and so direct comparison was not possible.
- 2.201 Specifically relating to the River Priority Habitat, it was possible to investigate progress towards meeting WFD aims. As detailed under Theme 3, within the study area, there are three rivers in poor condition (the Penkrudge, and the River Trent from from River Sow to Moreton Brook and

<sup>79</sup> Evidence Base Relating to Cannock Chase SAC and the Appropriate Assessment of Local Authority Core Strategies 2010 (Footprint Ecology)

<sup>80</sup> Cannock Chase Visitor Impacts Mitigation Report 2012 (Footprint Ecology)

<sup>81</sup> Cannock Extension Canal Appropriate Assessment Baseline Report (White Young Green, 2007); Clayhanger SSSI condition assessment, November 2012

<http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?report=sdrt13&category=S&reference=1003040>

from Moreton Brook to River Tame; seven rivers in moderate condition, and just one river (Bourne-Bilson Brook Catchment) in good condition. It appears that further work is therefore required for compliance with the WFD. The main reasons cited for surface waters not achieving good ecological status or potential within the wider River Humber Catchment included<sup>82</sup>:

- Point source pollution from water industry (sewage works and storm discharge).
- Point source pollution from non-water industry.
- Diffuse pollution from agricultural land.
- Diffuse pollution from urban run-off.
- Physical modifications due to urbanisation, flood protection, water storage / supply and land drainage.
- Physical modification creating barriers to fish migration.

### **Key issues for Biodiversity**

- 2.202 The above analysis, including review of existing HRAs, indicates that the District's biodiversity resource is currently adversely affected as a result of impacts associated with development and urbanisation. There is evidence that further development may result in additional pressure on the biodiversity resource including internationally designated SACs. Key potential impacts are:
- Increased recreational pressure and urban effects (such as trampling, predation by pets, arson, litter, eutrophication associated with pet fouling).
  - Air pollution, particularly associated with NOx deposition.
  - Water pollution including as a result of sewage treatment, industrial inputs, urban runoff and agricultural runoff.
  - Water levels and impacts associated with abstraction (likely to be addressed through EA licencing).
- 2.203 Other sensitivities such as inappropriate management or introduction of invasive species may be exacerbated as a result of increased urbanisation (for example, resulting in increased conflicts between recreation and grazing management, or increased risk of introduction of invasive species).
- 2.204 Specifically relating to SSSIs, the 2020 condition target<sup>83</sup> could be threatened if increased pressures prevented the continued recovery of areas currently classified as in 'unfavourable recovering' condition (currently 92.45% of the SSSIs in the Study Area) to such an extent that they could be upgraded to favourable condition (currently 5.81%).

## **Theme 7: Landscape**

### **Why is it important?**

- 2.205 Landscape, whether it be rugged coastline, peri urban green space or an urban park, is the setting for every aspect of our lives. It serves a variety of cultural functions, and provides not just aesthetic pleasure but also contributes to sense of place and tranquillity. An appreciation of how today's landscape was formed can also inform an understanding of its management over time and contribute to future land use planning. Understanding of landscape character and sense of place is also important to providing a sense of identity and community.
- 2.206 Landscape is also vitally important as it provides us with a wide variety of goods and services/benefits. It is therefore an essential cornerstone of quality of life for people and communities, and of sustainable development which fits within environmental limits – an ultimately finite resource which needs careful management if it is to retain its ability to provide

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<sup>82</sup> River Basin Management Plan Humber River Basin District, EA (2009) pg 17

<sup>83</sup> For at least 50% of SSSIs to be in 'favourable' condition, and at least 95% in 'favourable' or 'recovering' condition by 2020.

the fullest range of services, whether provisioning (food/fuel), cultural/social, environmental or economic.

#### *National Planning Policy Framework*

2.207 Section 11 of the NPPF states that:

*"The planning system should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes(...)"<sup>84</sup>*

2.208 It also states that:

*"Great weight should be given to conserving landscape and scenic beauty in (...) Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty"<sup>85</sup>*

2.209 The NPPF states that assessments of landscape sensitivity should be prepared for areas where there are major expansion options.<sup>86</sup> It states at para 113 that local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or **landscape areas** will be judged.

2.210 With respect to Green Belts, paragraph 80 of the NPPF lists the five purposes of Green Belts as follows:

- To check the unrestricted sprawl of large built up areas.
- To prevent neighbouring towns merging into one another.
- To assist in safeguarding the countryside from encroachment.
- To preserve the setting and special character of historic towns.
- To assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

2.211 The NPPF states that local planning authorities should plan for beneficial use of Green Belt land, whether to facilitate access (and therefore enjoyment of the landscape) or to retain and enhance landscape, visual amenity and biodiversity. The presumption in the NPPF is one against development in the Green Belt, unless there are situations/land uses which have an over-riding need for a Green Belt location (paragraph 89-90 of the NPPF).

#### *Local policy*

2.212 Policy CP1 – Strategy states that:

*"In Cannock Chase District the focus of investment and regeneration will be in existing settlements whilst conserving and enhancing the landscape of the AONB, Hednesford Hills, Green Belt and the green infrastructure of the District."<sup>87</sup>*

2.213 Specifically in relation to the Green Belt, it states that:

*"The extent of the urban areas will be constrained by the Green Belt Boundary as defined on the Proposals Map. Development proposals at locations within the Green Belt will be assessed against the NPPF and Policy CP14".*

2.214 Policy CP14 – Landscape Character and Cannock Chase Area of Outstanding Natural Beauty (AONB) sets out that:

*"The District's landscape character will be protected, conserved and enhanced via:*

- *The consideration of landscape character in all development proposals in order to protect and conserve locally distinctive qualities, rural openness and sense of place and maximise opportunities for restoring, strengthening and enhancing distinctive landscape features (...)*
- *Supporting development proposals within the AONB that are compatible with its management objectives, as set out in the AONB Management Plan (...) Development of adjacent land*

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<sup>84</sup> National Planning Policy Framework, CLG (2012) p25

<sup>85</sup> National Planning Policy Framework, CLG (2012) p26

<sup>86</sup> National Planning Policy Framework, CLG (2012) p41

<sup>87</sup> Cannock Chase District Draft Local Plan (Part 1) 2012. p105

*forming the setting of the AONB will be expected to avoid an adverse impact on the landscape and scenic beauty of the area;*

- *Supporting development proposals across the rest of the District that help to facilitate the AONB Management Plan objectives, particularly the need to protect and enhance green infrastructure (...) ensure that tranquil areas retain this quality and ensuring mitigation of potential increased recreational pressures (...)*<sup>88</sup>

2.215 Policy CP15 – Historic Environment sets out that:

*"The District's Historic Environment will be protected and enhanced via:*

- *The safeguarding of all historic sites, buildings, archaeological remains and their historic landscape and townscape (...)*
- *Supporting and promoting development proposals that are sensitive to and inspired by their context and add value to the existing historic environment, landscape and townscape character (...)*<sup>89</sup>

#### *Sustainability Appraisal / Habitats Regulations Assessment*

2.216 Landscape is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues are identified within the landscape topic:

- Deterioration of historic landscape from:
  - Continued deterioration of field pattern due to lack of hedgerow maintenance.
  - Increasing recreational impacts.
  - Increasing light pollution would serve to erode overall landscape quality if not mitigated by district-wide policies.

2.217 For the Rugeley Town Centre study area, the following issues are identified within the landscape topic:

- High levels of light pollution.
- Protection of character and unique qualities of the Cannock Chase AONB.

2.218 Within the Issues and Options Assessment, the issues arising under the Cultural Heritage and Landscape topic are:

- Development pressure on greenfield land may have visual impacts and affect local landscape character and distinctiveness.
- New road infrastructure provision to serve Pye Green and Heath Hayes could have visual impacts and affect local landscape character and distinctiveness.

#### **Vulnerability to climate change**

2.219 The impacts of climate change upon the UK's landscape are likely to be significant. In their position statement on landscape architecture and the challenge of climate change, the Landscape Institute list the following potential impacts:

- *"Intensification of the urban heat island effect as a result of higher temperatures, particularly in summer, leading to risks to human health in the built environment.*
- *Water shortages as a result of reduced rainfall and increased evapotranspiration, affecting the vitality and productivity of vegetation.*
- *Flooding, particularly in our built environments and floodplains, as a result of increased rainfall intensity and increasingly frequent storm events.*
- *Rising sea levels leading to significant landscape impacts in coastal areas, including displacement of communities, social infrastructure, biodiversity and alterations to landform configurations.*

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<sup>88</sup> Cannock Chase District Draft Local Plan (Part 1) 2012. p127

<sup>89</sup> Cannock Chase District Draft Local Plan (Part 1) 2012, p129

- *Changes in biodiversity as a consequence of new climatic conditions, particularly temperature and humidity levels. As some species increase in number and range whilst others decline, food provision, the spread of diseases and our enjoyment of a healthy and aesthetically pleasing environment all stand to be affected.*
- *Decreasing air quality as a result of higher temperatures and possible increases in ultraviolet radiation, which could have consequences for human health and comfort.*
- *The character of our landscapes, as a changing climate impacts upon environmental, cultural, social and economic factors which shape this character.* <sup>90</sup>

### How can we measure performance?

2.220 The European Landscape Convention (ELC) came into force in the UK in 2007. The definition of landscape within the Convention encompasses:

*"The whole territory of states including all urban and peri-urban landscapes, towns, villages and rural areas, the coast and inland areas. It applies to ordinary or even degraded landscape as well as those areas that are outstanding or protected"*<sup>91</sup>

*"Success will be measured by demonstrating that all England's diverse landscapes are valued and well looked after, providing a sense of place and identity relevant to people's lives, and that their complex ecosystems function well."*<sup>92</sup>

2.221 In 2010, the Methodological Review to the Character and Quality of England's Landscapes (CQuEL) project, identified the need to develop and monitor landscape quality objectives to implement the European Landscape Convention (ELC).<sup>93</sup>

2.222 Many sensitive or uncommon landscapes are protected through statutory designation such as National Parks or Areas of Outstanding Natural Beauty (AONBs). However, as identified in the ELC, the quality of the undesignated landscape can be considered just as important in terms of measuring performance for the theme.

2.223 The Landscape Character Assessment (LCA) of Cannock Chase District (2009) was carried out to understand condition and strategic sensitivities of the district's landscape. The study defined condition as:

*"How far removed that landscape is from an 'optimal' state, where all the key characteristics are present and functioning. Condition, therefore, has a functional as well as a visual dimension. The latter reflects the degree to which the existing landscape pattern appears visually fragmented, due to the loss of existing features, or the imposition of new features which appear 'out of place'. The functional dimension embraces a range of issues related to the ecological health of the countryside and the extent to which present day land use respects the inherent ecological/cultural character of the land."* (Landscape Character Assessment of Cannock Chase, 2009, P5)<sup>94</sup>.

2.224 Research shows that one aspect of the rural landscape particularly valued by the public is tranquillity.<sup>95,96</sup> The Campaign for the Protection of Rural England (CPRE) has published Intrusion Maps which show the areas of countryside which are close enough to towns and cities and major infrastructure such as roads, airports and power stations to be significantly disturbed by visual and noise pollution.<sup>97</sup> A time series of such maps provides one indication of the cumulative impacts of development on landscape. Whilst providing a useful indication of long term trends, the definition of intrusion is rather simplistic, being based wholly on proximity to particular forms of development. Tranquillity Mapping is also available from CPRE to provide a more sophisticated

<sup>90</sup> Landscape architecture and the challenge of climate change: Landscape Institute Position Statement, The Landscape Institute (2008) p2

<sup>91</sup> European Landscape Convention – A Framework for Implementation, Natural England (2007) p1

<sup>92</sup> European Landscape Convention – A Framework for Implementation, Natural England (2007) p2

<sup>93</sup> Preparing a detailed project plan for CQuEL. Work package 1: Methodological Review Produced by LUC, Fabis consulting and Countryside for Natural England and DEFRA (2010) p4

<sup>94</sup> Landscape Character Assessment of Cannock Chase District (2009) Cannock Chase Council

<sup>95</sup> 'Landscapes in Britain', MORI; survey conducted 15-20 January 2004 on quota sample of 2031 adults [SSE/18/a Appendix 5].

<sup>96</sup> YouGov poll for CPRE, 27-29 September 2006.

<sup>97</sup> CPRE (2007) Intrusion: England's fragmented countryside <http://www.cpre.org.uk/campaigns/planning/intrusion>

snapshot of the current situation.<sup>98</sup> This mapping began with a national survey to understand what factors add (e.g. seeing a natural landscape; hearing birdsong) and detract (e.g. constant traffic noise; crowds of other people) from the public perception of tranquillity, which then informed the multiple GIS datasets to be combined to spatially illustrate a continuum of scores from most to least tranquil.

- 2.225 Another factor suggested for inclusion in this study is noise. Although noise is not an environmental capacity issue per se, the impacts of road, rail and air traffic noise, together with noise from industry can have adverse effects on people’s health and quality of life. The CPRE Tranquillity Maps referred to in the previous paragraph have been built up from 44 factors, 17 of which relate to noise related contributors to or detractors from tranquillity (the other 27 relate to visual factors). The noise related factors are set out below, together with their percentage weighting within the Tranquillity Map model.

**Table 2.12: Noise impacts on tranquillity**

Positive impacts upon tranquillity		Negative impacts upon tranquillity	
Factor	Percentage weighting	Factor	Percentage weighting
Birdsong	4.9	Constant noise from cars, lorries and/or motorbikes	10.96
Peace and quiet	3.35	Lots of people	3.29
Natural sounds	2.62	Low flying aircraft	2.78
Wildlife	2.26	Non-natural sounds	1.32
Running water	2.23	Occasional noise from cars, lorries and/or motorbikes	0.54
No human sounds	1.35	Military training (not aircraft)	0.40
Lapping water	1.35	Trains and Railways	0.30
The sea	1.04	High altitude aircraft	0.14
Silence	0.58		

- 2.226 Increased development would have an impact on tranquillity (and on the noise component of tranquillity). In particular there may be increased noise from road traffic (a heavily weighted factor within the tranquillity map) and recreational impacts in the quieter areas, such as parts of Cannock Chase AONB.

*Proposed indicators*

- 2.227 The Landscape Character Types defined within the Cannock Chase LCA could be evaluated with sensitivity judgements to assess the effect that specific residential development scenarios (of various scales/configurations/density models) could have upon them. Further work would be needed to achieve this. This would need to add more detail/analysis to the strategic/inherent sensitivity analysis in the existing LCA, as key characteristics would need to be interpreted to understand how they are sensitive to specific types of or quanta of development (landscape attributes are sensitive in different ways and to differing levels to specific types of change).

<sup>98</sup> <http://www.cpre.org.uk/campaigns/landscape/tranquillity>

- 2.228 Another indicator could be the area of land classified as 'developed' using the CPRE Intrusion maps of the 1960s, 1990s and 2007.
- 2.229 Other data which could be used to understand aspects of landscape condition and quality are data in relation to uptake of positive land management grants such as environmental stewardship (agri-environment schemes), specifically Higher Level Stewardship or HLS.

#### *Justification*

- 2.230 The landscape sensitivity judgements applied to Landscape Character Types would encompass the holistic approach to landscape set out within the ELC, e.g. that they could be used to develop a high level strategy to guide and manage change in the landscape (as per the key objectives of ELC complaint LQOs – protect, manage, plan).
- 2.231 The CPRE Intrusion maps provide an opportunity to assess the changing impact of developments within Cannock Chase over a 50 year period.
- 2.232 Information on uptake of HLS and implementation of HLS agreements/improvement plans (capital works) can provide an indicator of positive landscape change/condition, albeit often at a relatively 'micro' or site specific/site cluster scale.

#### **Targets / standards**

- 2.233 There are no statutory targets or standards for landscape.
- 2.234 A possible target could be for all development to be sited in landscape character types of appropriate sensitivity level (according to the scale of development).
- 2.235 A secondary potential target would be to ensure that there is no loss in the number of Landscape Description Units (LDUs) which have a 'Good' overall condition. This target would be dependent on a follow up Landscape Character Assessment being done in the future, ideally with measurable landscape strategies or guidelines e.g. in the form of landscape quality objectives. The target could also aim to improve the condition of those LDUs with a 'Poor' or 'Moderate' overall condition.

#### **Data sources**

- 2.236 Data sources identified for Landscape were:

#### *GIS data*

- Landscape Character Types & Land Description Units
- CPRE Tranquillity Dataset.
- CPRE Intrusion Dataset.
- Natural England HLS agreement data

#### *Documents*

- Landscape Character Assessment of Cannock Chase District, Cannock Chase Council (2009).
- Cannock Chase AONB Management Plan 2009-14 (2009)
- Cannock Chase AONB Peace and Tranquillity Report (2010).
- State of the AONB Report (2010).
- Historic Environment Character Assessment (2009).
- Historic Farmsteads Survey.
- Review of Green Belt Boundaries in Cannock Chase District (2010).

#### **Application to the Environmental Capacity Study**

- 2.237 It is relatively straightforward to map designated sites as a constraint to development. Beyond this, various assumptions may need to be made to provide qualitative commentary on the potential impacts of additional development on landscape character with reference to the documentation referred to above.

- 2.238 Cannock Chase AONB Management Plan 2009-14 (2009) contains useful baseline in the form of landscape character areas which are described in detail in terms of characteristics and the special qualities of the AONB. The reporting could be used to interpret characteristics of the landscape which would be sensitive to residential development and to generate a landscape sensitivity analysis to understand areas/landscape features most vulnerable to development, similar to that described for the district LCA described above, albeit for the AONB only. This assessment could also be used to understand effect on special qualities using a similar approach and thereby effects of growth scenarios on the integrity of the landscape designation.
- 2.239 The Cannock Chase AONB Peace and Tranquillity Report (2010) relates only to perception of tranquillity and does not contain enough specific information to inform analysis of the landscape as an indicator. However if the mapping within the report was overlaid on the LCTs, it could provide useful additional baseline information on perceptual aspects of landscape character to inform landscape sensitivity analysis.
- 2.240 The State of the AONB Report (2010) identifies a number of indicators which could also be applied to areas outside the AONB to understand landscape condition to input to analysis of landscape sensitivity. For example designated assets (such as SSSI or ancient woodland) in favourable condition, which could be mapped in GIS to generate statistical analyses for the LCTs. This could usefully be overlaid with other information such as take up of land management schemes such as Higher Level Stewardship to provide an indication as to landscape quality/to help inform understanding of landscape sensitivity to growth scenarios.
- 2.241 The Historic Environment Character Assessment (2009) identifies sensitivity to different scales of development, in relation to the defined historic landscape character types. This is essentially very fine grain information although could be aggregated and overlaid on LCTs/growth scenarios for analysis, where applicable.
- 2.242 The Landscape Character Assessment of Cannock Chase District (2009) would need further interpretation to apply sensitivity judgements to assess the impact of further housing development. The LDUs are supported by insufficiently detailed descriptive information/metadata to be used in such an analysis.

### Assessing the Environmental Capacity

- 2.243 There is one national landscape designation (Cannock Chase Area of Outstanding Natural Beauty) that poses a constraint to development in the District. The AONB covers 38% of the area of the whole District, as shown in **Figure 2.7a**.
- 2.244 The landscape outside of the principal urban areas and transport corridors covers a rich and diverse mosaic of landscape types, features and habitats, including heathlands and area of afforestation/plantations on the site of the medieval hunting forests and deer parks of Cannock Chase (examples of which include Beaudesert Old Park), plus small sections of river valleys such as the Sow and Trent. A large part of the district's landscape is recognised for its scenic quality through national landscape designation – the Cannock Chase AONB, which is also valued for the opportunities afforded for informal recreation – the Cannock Chase Country Park at Brindley Valley, plus areas of Forestry Commission Open Access Land. The AONB Management Plan<sup>99</sup> identifies a number of special qualities underpinning the designation, many of which relate to underlying landscape character and the perception of this. These include sense of tranquillity and remoteness, large tracts of open heathland with sweeping views, the contrasting character and colour/texture created by juxtaposition of different landscape elements, undulating landforms dissected by small wooded streams, and winding lanes with high hedgebanks.
- 2.245 Other, non-designated landscapes in the district are also of value and interest not least for recreation and ecology, and as part of the setting they provide to the main towns. These landscapes also include a rich post-industrial legacy of colliery restoration, reclamation of spoil sites and restoration of former coalfields and attendant 20<sup>th</sup> century creation of new landscapes (e.g. areas such as around Newlands, Cannock).

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<sup>99</sup> Natural England/Cannock Chase AONB Partnership, Cannock Chase Area of Outstanding Natural Beauty Management Plan 2009-2014

- 2.246 This variety of landscape features is recognised in the district's Landscape Character Assessment<sup>100</sup>, which identifies a number of landscape character types (LCTs) outside of the main urban areas, and which are shown on **Figure 2.7b**.
- 2.247 A key part of the function of the landscape of the district is to provide settlement setting and a sense of separation between the settlements of Cannock, Heath Hayes, Norton Canes and Rugeley. This is recognised in Green Belt designation which washes over the landscape outside the defined settlement boundaries. The Green Belt is shown on **Figure 2.7c**.
- 2.248 The Landscape Character Assessment of Cannock Chase District (2009) identifies six Landscape Character Types (LCTs):
- Sandstone Hills and Heaths
  - Wooded Estatelands.
  - Settled Farmlands.
  - Coalfield Farmlands.
  - Planned Coalfield Farmlands.
  - River Meadowlands.
- 2.249 Each of these landscape types is composed of smaller Landscape Description Units (LDUs), which are defined based on analysis of physical, cultural and land use influences.
- 2.250 The LDUs are examined using three indicators of sensitivity (Ecological, Cultural and Visual) and for each of these indicators the LDU is given a condition, ranging from 'Weak' to 'Strong', as well as an overall condition ranging from good to poor, based on understanding of issues such as functional integrity and intactness of the landscape<sup>101</sup>. It should be noted that the sensitivity is inherent or strategic sensitivity rather than sensitivity to housing development per se – the analysis is based upon the assumption that a landscape with a clearly defined and strongly unified character will be more sensitive to change by virtue of the fact that such landscapes are less able to accommodate 'alien' features that do not conform to the existing pattern.
- 2.251 The Draft Local Plan (Part 1) 2012 states that:
- "The central landscape areas of the District are in fairly good and strong condition overall and are of high sensitivity to change; those in the weakest and poorest condition are primarily at southern and eastern parts (around Norton Canes), mainly due to the extent of change in this area although some parts are still sensitive to further change."*<sup>102</sup>
- 2.252 The CPRE Intrusion maps are essentially a set of supporting datasets which can be used to provide information on aspects of perceptual landscape character/landscape experience, to help inform sensitivity analysis. The maps show areas of land likely to be affected by noise or visual intrusion from a number of sources, including:
- Roads.
  - Railways.
  - Airports.
  - Built-up areas.
  - Areas of mineral extraction.
  - Electrical installations (Power stations, sub stations, and overhead power lines).
  - Wind power developments.
- 2.253 As shown in **Figure 2.7d** Cannock Chase District saw an increase in 'disturbed area' (i.e. areas affected by noise and visual disturbance from the above sources) of 25% between the early 1960s and the early 1990s, and a further 5% between the early 1990s and 2007.

<sup>100</sup> Ashmead Price and Warnock, S, 2009 Landscape Character Assessment of Cannock District

<sup>101</sup> Landscape Character Assessment of Cannock Chase District (2009) Cannock Chase Council

<sup>102</sup> Draft Local Plan (Part 1) 2012, p25

- 2.254 In 2007 almost 96% of the land area within Cannock Chase was classified as 'disturbed' (compared to 86% for the study area excluding Cannock Chase District, and 49% for the West Midlands as a whole). This is obviously a very high proportion of the land within the District. Only a small area in the north-west of the District remained classified as 'undisturbed' in 2007, this area being firmly within the AONB.
- 2.255 This does not provide an indication of landscape capacity (a number of Metropolitan Districts or Unitary Authorities had a classification of 100% 'disturbed' in 2007 based on the intrusion maps, including Birmingham District, the City of Stoke on Trent, Wolverhampton District, and Coventry, Dudley, Sandwell and Walsall Districts within the West Midlands). However, it does indicate that an area is likely to be significantly disturbed by noise or visual disturbance, even within protected landscapes, such as an AONB.

**Table 2.13: Area of 'disturbed' land calculated from CPRE Intrusion Maps**

Area	Total Area (km <sup>2</sup> )	Early 1960s		Early 1990s		2007		% change 1960s – 1990s	% change 1990s – 2007
		Disturbed area (km <sup>2</sup> )	% of total	Disturbed area (km <sup>2</sup> )	% of total	Disturbed area (km <sup>2</sup> )	% of total		
Cannock Chase District	78.88	57.71	73.16	72.40	91.78	75.72	95.99	25.45%	4.59%
Study area outside the District	129.28	92.86	71.83	114.03	88.20	111.77	86.46	22.80%	-1.98%
West Midlands	13,004	3,650.4	28.07	5,579	42.90	6,397	49.19	52.83%	14.66%

- 2.256 **Figure 2.7e** shows the CPRE Tranquillity Map for the West Midlands. It is evident from this map that the southern part of Cannock Chase District is less tranquil, and the northern part of the district, around the AONB more tranquil.
- 2.257 In order to gain a fuller picture of potential environmental capacity/thresholds in landscape terms, more detailed analysis would be required of the landscape sensitivity of LCTs to specific types/scales of residential development.
- 2.258 However, other indications as to landscape quality and intactness (and therefore potentially elements of landscape sensitivity) can be drawn from data on landscape condition of landscape description units (LDUs). This is set out below and also considers condition of LDUs which fall partly within the eastern fringe of the Cannock Chase AONB, to draw out some of the issues in relation to condition of the protected landscape.
- 2.259 Account has also been taken of data on land management initiatives such as agri- environment schemes (land in Higher Level Stewardship schemes where capital landscape works can contribute to landscape enhancement). Due to limited uptake of the scheme, this analysis has been undertaken only at the growth scenario level rather than for LCTs and LDUs.
- 2.260 Uptake of Forestry Commission English Woodland Grant Schemes (EWGS) was also considered for its potential to provide an indication of positive landscape change and therefore aspects of condition/quality. However the EWGS cover a wide range of grants – woodland planning and assessment, creation, restoration, improvement for example. The data available from the Forestry Commission for the EWGS does not differentiate between different types of grant, and therefore it is not possible to identify the extent to which landscape is changing through capital works grants as opposed to those only for feasibility (planning/assessment grants). Therefore, this data has not been used.

2.261 Key findings from the GIS analysis of LDU condition data areas are presented in **Table 2.14**.

**Table 2.14: Analysis of LDU condition**<sup>103</sup>

Condition	% coverage as 'Good'	% coverage as 'Moderate'	% coverage as 'Poor'
By District	37.83%	49.28%	12.89%
In Cannock Chase AONB	43.86%	25.00%	33.00%

- 2.262 Of the LDUs falling within the AONB's fringe, the majority to the southern and western edges of Rugeley, is in good condition and therefore likely to be sensitive in terms of intactness and landscape qualities. However a significant portion (33%) is in poor condition, mostly associated with specific urban fringe sites south of Rugeley (Slitting Mill, near the railway line). Areas in poor condition also include the workings north of Brereton Hayes Wood, south east of Rugeley.
- 2.263 The Review of Green Belt Boundaries in Cannock Chase District (May 2010) proposes 6 locations totalling 79.5 ha which could be removed from the Green Belt, potentially facilitating development in these locations. The Review suggested the use of Landscape Character Assessment to provide a framework for qualitative judgement relating to the impact of development upon the landscape.

#### Key issues for Landscape

- In 2007, almost 96% of the land area within Cannock Chase was classified as 'disturbed' representing a very high proportion of the land within the District. Only a small area in the north-west of the District remained classified as 'undisturbed' in 2007, this area being firmly within the AONB.
- Only 38% of the Landscape Description Units covering the District have been categorised as being in 'good' condition.
- The Green Belt Review identifies a number of areas where development could potentially be accommodated subject to provision of enhanced landscape frameworks.
- Both the AONB Management Plan and the district Landscape Character Assessment contain useful information on attributes of landscape character which could be interpreted to understand landscape sensitivity to defined development scales and thresholds. However, this would be subject to further, more detailed analysis.

## Theme 8: Open Space

### Why is it important?

2.264 In The Value of Public Space, CABE Space define public space as:

*"A vital part of everyday urban life: the streets we pass through on the way to school or work, the places where children play, or where we encounter nature and wildlife; the local parks in which we enjoy sports, walk the dog and sit at lunchtime' or simply somewhere quiet to get away for a moment from the bustle of a busy daily life. In other words, public space is our open-air living room, our outdoor leisure centre."*<sup>104</sup>

<sup>103</sup> NB. Not all of the LDUs have been assigned a condition rating within the LCA. It appears that some have been excluded within the AONB or in proximity to certain urban areas. Therefore only those which have a condition value assigned, have been included within these analyses, to present an accurate picture.

<sup>104</sup> The Value of Public Space: How high quality parks and public spaces create economic, social and environmental value CABE Space (2004)

2.265 The CABE Space document sets out the value of public space in terms of economic benefits, impact on physical and mental health, benefits for children and young people, reducing crime and fear of crime.

2.266 Although PPG17 is no longer extant, the PPG17 Open Spaces Assessment conducted by Cannock Chase District Council in 2009 is still relevant. The Assessment summarises open space as follows:

*"Open Spaces form an integral part of the District's natural and recreational assets. The often multi-functional character of open spaces means that they can help to achieve a number of local aspirations such as improved standards of health, improved habitats for local wildlife, responding to the potential impacts of climate change as well as supporting economic regeneration. A high quality environment with well managed open spaces supports an overall higher quality of life and experience for the District's residents and its visitors. The provision of good quality parks and open spaces is essential to most of the District Council's agenda including crime reduction and healthy living opportunities."*<sup>105</sup>

#### *National Planning Policy Framework*

2.267 Section 8 of the NPPF states that:

*"Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to health and well-being of communities. Planning policies should be based on robust and up-to-date assessments of the needs for open space, sports and recreation facilities and opportunities for new provision. (...)*

*"Existing open space, sports and recreational buildings and land, including playing fields, should not be built on unless:*

- *An assessment has been undertaken which has clearly shown the open space, buildings or land to be surplus to requirements; or*
- *The loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or*
- *The development is for alternative sports and recreational provision, the needs for which clearly outweigh the loss"*<sup>106</sup>

2.268 Section 9 of the NPPF (Protecting Green Belt land) states that:

*"The Government attaches great importance to Green Belts. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. (...)*

*"inappropriate development is, by definition, harmful to the Green Belt and should not be approved except in very special circumstances"*<sup>107</sup>

#### *Local Policy*

2.269 Policy CP1 – Strategy states that:

*"In Cannock Chase District the focus of investment and regeneration will be in existing settlements whilst conserving and enhancing the landscape of the AONB, Hednesford Hills, Green Belt and the green infrastructure of the District."*<sup>108</sup>

2.270 Policy CP3 – Chase Shaping – Design, states that:

*"Opportunities for the enhancement of town and local centres and other public open space will be maximised (...)"*<sup>109</sup>

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<sup>105</sup> PPG17 Open Spaces Assessment, Cannock Chase Council (2009) p4

<sup>106</sup> National Planning Policy Framework, CLG (2012) p18

<sup>107</sup> National Planning Policy Framework, CLG (2012) p20

<sup>108</sup> Cannock Chase District Draft Local Plan (Part 1) 2012. p105

<sup>109</sup> Cannock Chase District Local Plan (Part 1) 2012 p107

2.271 Policy CP5 – Social Inclusion and Healthy Living classifies Parks, open spaces, play areas and allotments as key elements of infrastructure supporting social inclusion and healthy living for sustainable communities:

*"There will be a presumption against the loss of existing green space network sites, sport, recreation and community buildings..."<sup>110</sup>*

2.272 Policy CP14 – Landscape Character and Cannock Chase Area of Outstanding Natural Beauty (AONB) states that:

*"The District's landscape character will be protected, conserved and enhance via (...):*

- *Supporting development proposals across the rest of the District that help to facilitate the AONB Management Plan objectives, proposals to enhance access to high quality open spaces, create missing links and connections to existing rights of way networks and 'quiet lanes' will be encouraged".<sup>111</sup>*

*Sustainability Appraisal / Habitats Regulations Assessment*

2.273 Open Space is not one of the baseline topics with the Sustainability Appraisal. However, SA Objective number 3 is:

*"To meet the needs of the population through the protection, enhancement and creation of open spaces for leisure and recreation"<sup>112</sup>*

2.274 The Habitats Regulations Assessment recommends the following in relation to the Local Plan:

*"With reference to the example of the Land to the West of Pye Green Road development, all major developments should similarly aim to provide as many on-site facilities as possible, in order to reduce the need to travel. These should include [...] public open space".<sup>113</sup>*

2.275 The HRA also sets out that following the findings of the Cannock Chase Visitor Impact Mitigation Strategy, suitable alternative natural green space (SANGs) should be implemented to mitigate for any additional dwellings in the area, to alleviate pressure on the SAC:

*"the area required for such alternative site provision would be in the order of 16ha per 1000 new population within 12km of the SAC, with all of the CCDC area within 12km of the SAC included."<sup>114</sup>*

2.276 Based on this calculation, the quantity of SANGs was calculated to mitigate the potential impacts of the volume of housing within the Draft Local Plan 2012, as set out in Table 2.15.

**Table 2.15: SANG Provision (from HRA)**

Housing allocation	Approximate population increase (assuming average occupancy rate of 2.36)	SANG provision
Cannock/Hednesford/Heath Hayes – 1550	3,658	58.53 ha

<sup>110</sup> Cannock Chase District Local Plan (Part 1) 2012 p110

<sup>111</sup> Cannock Chase District Local Plan (Part 1) 2012 p127

<sup>112</sup> Sustainability Appraisal Report for Cannock Chase District Council, Halcrow Group Ltd (2012), p27

<sup>113</sup> Draft Local Plan (Part 1) 2012 Habitats Regulations Assessment Report p24

<sup>114</sup> Draft Local Plan (Part 1) 2012 Habitats Regulations Assessment Report p25

Housing allocation	Approximate population increase (assuming average occupancy rate of 2.36)	SANG provision
Rugeley/ Brereton – 680	1,605	25.68 ha
Norton Canes – 120	284	4.54 ha
Cannock/Hednesford/Heath Hayes – 750 (strategic site)	1,770	28.32 ha
Norton Canes - 670 (urban extensions)	1,582	25.31 ha
<b>TOTAL</b>	<b>8,899</b>	<b>142.38 ha</b>

2.277 As this report was being completed, the final HRA report was published (on 07/01/2012). This final report sets out targets under Objective 7 of the Local Plan including addressing deficiencies in the provision of green space and assisting in the delivery of an additional 4 SANGS of between 30-35ha each to provide additional, alternative recreation space within 15km of the SAC.

#### Vulnerability to climate change

2.278 Open space has relatively little vulnerability to climate change; although the nature of the space itself has potential to change, its function as part of the open space network can remain. Open space can however provide important mechanisms for climate change adaptation, such as providing flood storage, or for mitigation through carbon sequestration for example.

#### How can we measure performance?

2.279 The PPG17 Open Spaces Assessment sets out nine open space typologies with recommended standards across three categories; 'Quantity', 'Quality and Value' and 'Accessibility'.

**Table 2.16: Provision and accessibility standards**

PPG17 Typology	Quantity	Quality and Value	Accessibility
<b>Parks and Gardens</b>	Maintain current level of provision of 0.43ha per 1,000 population as a minimum	Maintain 'good' quality and 'high' value as a minimum, with aspiration for all parks to be 'very good'.	Improve provision in relation to recommended distance of 740metres (to a 'good' quality park)
<b>Semi Natural Sites</b>	Maintain current level of provision of 6.2ha per 1,000 population as a minimum but look to improve accessibility by increases in quantity	Maintain 'good' quality and 'medium' value as a minimum, with aspiration for all semi-natural sites to be 'very good'.	Improve provision in relation to recommended distance of 480metres (to a 'good' quality site).

PPG17 Typology	Quantity	Quality and Value	Accessibility
<b>Green Corridors</b>	No recommended standard	Maintain 'good' quality and 'medium' value as a minimum, with aspiration for all green corridors to be 'very good'.	As a guide, improve provision in relation to recommended distance of 480 metres (to a 'good' quality site).
<b>Provision for Young People</b>	Achieve standard of 0.045ha per 1,000 population	Maintain 'good' quality and 'medium' value as minimum, with aspiration for all play areas to be 'very good'.	Improve provision in relation to recommended distance of 370 metres (to a 'good' quality LAP/LEAP site) and 740 metres (to a 'good' quality NEAP/MUGA)
<b>Amenity Green Space</b>	As a guide, maintain current levels of provision at 0.68ha per 1,000 population of housing amenity space as a minimum and recognise importance of sites with more visual value	Maintain 'good' quality and recreation value as minimum, with aspiration for all amenity areas to be 'very good'.	Improve provision in relation to recommended distance of 370metres (to a 'good' quality housing amenity space that is of recreational value- as a guide 0.2ha).
<b>Allotments</b>	Increase quantity in line with District requirements (to be informed by demand statistics). As a guide, a target of 0.065ha per 1,000 population of allotment space should be achieved	Maintain 'good' quality and 'high' value as minimum, with aspiration for all allotments to be 'very good'.	Improve provision in relation to recommended distance of 2 miles
<b>Outdoor Sports Grounds</b>	To be addressed via Playing Pitch and Indoor Facilities Assessment	To be addressed via Playing Pitch and Indoor Facilities Assessment	To be addressed via Playing Pitch and Indoor Facilities Assessment
<b>Church/Cemetery</b>	Increase quantity in line with District requirements for burial spaces (approx 8ha)	Maintain 'very good' standard and 'high' value as a minimum.	No recommended standard for distance/travel times
<b>Civic Space</b>	No recommended standard	Maintain 'very good' standard and 'high' value as a minimum.	No recommended standard for distance/travel times

Source: (PPG17 Open Spaces Assessment (2009) P1)

2.280 The number of parks with Green Flag status can be used as an indicator of an open spaces value. The Green Flag Award is given based on eight criteria; 'a welcoming place', 'healthy', 'safe and secure', 'clean and well maintained', 'sustainability', 'conservation and heritage', 'community involvement', 'marketing' and 'management'.<sup>115</sup>

*Proposed indicators*

2.281 The proposed indicators are the quantity, quality and value, and accessibility metrics for each type of open space set out in the typology.

*Justification*

2.282 The PPG17 Assessment provides clear justification for the standards.

**Targets / standards**

2.283 The targets and standards for the open space network have already been identified within the PPG17 Assessment. Deficiencies in a number of these standards have been identified in this work, and any housing development will need to ensure that it contributes to meeting the standards identified above.

**Data sources**

2.284 The following data sources for Open Space were identified.

*GIS data*

- Open Space (with typology).

*Documents*

- PPG17 Open Spaces Assessment, Cannock Chase Council (2009).

**Application to the Environmental Capacity Study**

2.285 The open space network provides a useful reference point for determining potential constraints to development. Green Belt will act as a policy constraint. Both can be mapped.

**Assessing the Environmental Capacity**

2.286 In assessing the baseline, we have focused on the quantity and accessibility of the sites across the District. Although quality is also of paramount importance, and over-use of sites can degrade their quality, the quality of sites can usually be addressed through design and maintenance of spaces, whereas quantity and accessibility have a more direct relationship with the quantum of development.

2.287 The open spaces within the District are shown in **Figure 2.8a**, and summarised in **Table 2.17**. Based on the data in the table, there are approximately 758ha of accessible open space across the District (this excludes provision in the allotments, outdoor sports grounds, church/cemeteries and civic spaces types, as these have very specific functions). In addition to this open space, there is approximately 2,615.47ha of Green Belt land within the District, outside of the open space network.

**Table 2.17: Current provision of open space**

Type	Number	Quantity (ha)
Parks and Gardens	13 parks and 1 community garden	40.5ha (approximately 0.43ha per 1000 people)
Semi-natural sites	Approximately 86 sites (72 of which have unrestricted access)	662ha (585ha of which have unrestricted access within)

<sup>115</sup> <http://greenflag.keepbritaintidy.org/about-us/about-green-flag-award/eligibility/>

Type	Number	Quantity (ha)
	and are within recommended travelling distances)	recommended travelling distances) Approx 6.2ha per 1,000 people within recommended travelling distances
Green Corridors	60 sites	65.2ha
Provision for young people	41 sites	3.6ha (0.038 per 1,000 people)
Amenity Green Space	272 'housing and other amenity space' sites	64.2ha (0.68ha per 1,000 people)
Allotments	9 sites	5.35ha (0.057ha per 1,000 people or 0.78 allotment plots per 1,000 people)
Outdoor Sports Grounds	unknown	Unknown
Church/Cemetery	15 sites	24ha
Civic Space	3 spaces	1.9ha

2.288 **Table 2.18** summarises the provision with reference to the quantity and accessibility standards. As shown in the table, current quantity provision meets the standards for three types of space (parks and gardens, semi-natural sites and amenity green space) and does not meet the standard for three types of space (provision for young people, allotments and churchyards/cemeteries). The remaining three types of space (green corridors, outdoor sports grounds, civic space) do not have quantity standards set.

2.289 Where accessibility standards have been set, key deficiencies have been identified for every type of space.

**Table 2.18: Quantity and accessibility standards against current provision**

Type	Quantity Standard	Accessibility standard	Provision with reference to quantity and accessibility standards
Parks and Gardens	0.43ha per 1,000 people	740 metres (to a 'good' quality park)	Quantity: Current provision meets quantity standard, but provision will need to increase in line with population in order to maintain standard.  Accessibility: Key deficiencies in the north-west of Rugeley, north and south Cannock and northern parts of Norton Canes.
Semi-natural sites	6.2ha per 1,000 people	480 metres (to a 'good' quality site).	Quantity: Current provision meets standard, but opportunities should be sought to address areas of deficiency, and to reduce recreational pressure on the strategic AONB sites where possible, through increasing quantity.  Accessibility: The majority of the district has some access to a site, however when the

Type	Quantity Standard	Accessibility standard	Provision with reference to quantity and accessibility standards
			Natural England ANGST standards are applied there are key deficiencies in the whole of Rugeley/Brereton, south Cannock and south-west parts of Norton Canes.
Green Corridors	No recommended standard	480 metres (to a 'good' quality site).	Quantity: n/a Accessibility: Some deficiencies in the Cannock urban area.
Provision for young people	0.045ha per 1,000 people	370 metres (to a 'good' quality LAP/LEAP site) and 740 metres (to a 'good' quality NEAP/MUGA)	Quantity: Current provision does not meet standard. Accessibility: Key deficiencies in Cannock West, north Heath Hayes/Hawks Green and Brereton and Ravenhill.
Amenity Green Space	0.68ha per 1,000 people	370 metres (to a 'good' quality housing amenity space that is of recreational value-as a guide 0.2ha).	Quantity: Current provision meets standard, but provision will need to increase in line with population in order to maintain standard. Accessibility: Key deficiencies in Cannock North, Heath Hayes, northern Rugeley and eastern Norton Canes (however, majority of the District's population is catered for when sites below 0.2ha are taken into account).
Allotments	To be informed by demand statistics). As a guide, a target of 0.065ha per 1,000 people	2 miles	Quantity: Current provision does not meet standard. Estimates suggest that a further 127 plots could be provided for. Accessibility: virtually the entire District is within the 2 mile standard, but there is an uneven distribution and issues with number of plots available at the sites.
Outdoor Sports Grounds	To be addressed via Playing Pitch and Indoor Facilities Assessment	To be addressed via Playing Pitch and Indoor Facilities Assessment	Unknown.
Church/Cemetery	Increase quantity in line with District requirements for burial spaces (approx 8ha)	No recommended standard for distance/travel times	Quantity: There is a shortage of burial space within the District, and provision needs to increase. There is the potential for a development of around 8ha in the south of the District to cater for approximately 150 burials per annum (enabling long-term provision for up to 85 years). Accessibility: n/a
Civic	No recommended	No recommended standard for	Quantity: n/a

Type	Quantity Standard	Accessibility standard	Provision with reference to quantity and accessibility standards
Space	ed standard	distance/travel times	Accessibility: n/a

2.290 The key findings of the PPG17 Assessment are that:

*"The majority of all settlement areas are within recommended travelling time/distance of at least one form of open space provision. (...) However, there are key deficiencies in relation to specific open spaces in each of the settlements, and importantly some of these key deficiencies occur in areas of multiple social and economic deprivations e.g. Cannock North and South. The quality of spaces is fairly comparable across the District although there are some geographical disparities"*

2.291 There are a number of recommendations within the report including the following:

*"Future investment should be targeted at those typologies with current greatest deficiencies in certain areas and with the highest level of recreational value i.e. parks, semi-natural spaces, play areas and allotments. (...) given the historical development and make-up of the District there are physical constraints which result in limited opportunities for new (particularly larger) sites. Therefore the emphasis should also be on enhancing overall quality (...)."*

*"Given the deficiencies in quantities, the provision of new sites should be identified in the LDF to prevent sites being built on and existing sites should be protected.(...) Opportunities arising from new developments and the redevelopment of existing built areas (typically large scale) should seek to address deficiencies, particularly by considering how the reconfiguration of existing spaces on site could contribute."<sup>116</sup>*

### Key Issues for Open Space

- Quantity standards are currently being met for parks and gardens, semi-natural sites and amenity green space, but provision will need to increase in line with population for all of these types for standards to be maintained.
- Quantity standards are currently not being met for provision for young people, allotments and churchyards/cemeteries, provision needs to increase.
- Accessibility standards are not being met for all types of space, although some types can substitute for others, meaning that most places are within accessible distances of at least one form of open space.
- Existing open space sites of all types should be protected.
- These are limited opportunities for the provision of new (particularly larger) sites.
- As set out in the Biodiversity theme, there is a need for suitable alternative natural green space sites to be provided to mitigate for recreational pressure on Cannock Chase SAC.

## Theme 9: Soils

### Why is it important?

2.292 Soil is an invaluable and non-renewable natural resource. The socio-economic and environmental contribution made by soil is often overlooked but it provides a range of vital ecosystem services including food, timber, wildlife habitats, clean water, run-off and flood management, nutrient cycling, and carbon storage. As set out in the Soil Strategy for England, *"soil is one of the building blocks of life."*<sup>117</sup>

### National Planning Policy Framework

2.293 Section 11 of the NPPF states that:

<sup>116</sup> PPG17 Open Spaces Assessment, CCDC (2009)

<sup>117</sup> Safeguarding our soils: A strategy for England, DEFRA (2009)

"The planning system should contribute to and enhance the natural and local environment by: (...) protecting and enhancing (...) soils; preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil (...) pollution or land instability".<sup>118</sup>

2.294 The NPPF also states that:

"Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality".<sup>119</sup>

#### *Local Policy*

2.295 Soil is not explicitly referred to in the Draft Local Plan (Part 1) 2012. Policy C16 of the 1997 Local Plan (Protection of Best Agricultural Land) has not been saved.

#### *Sustainability Appraisal / Habitats Regulations Assessment*

2.296 The Sustainability Appraisal noted that there is a lack of detailed data on soils and contaminated land. With respect to impacts from development arising from policies in the Draft Local Plan, the Sustainability Appraisal noted there is considerable uncertainty but highlighted the potential for water pollution arising from the development of soils with a high leaching potential.

2.297 The Habitats Regulations Assessment noted the potential for impacts on internationally designated sites from soil compaction and soil erosion caused by trampling by walkers, cyclists and horse riders, and eutrophication (i.e. enrichment of soils) caused by water pollution and dog excrement.

#### **Vulnerability to climate change**

2.298 The Soil Strategy for England states that:

"Climate change has the potential to increase erosion rates through hotter, drier conditions that make soils more susceptible to wind erosion, coupled with intense rainfall incidents that can wash soil away."<sup>120</sup>

2.299 Although not a vulnerability, soil has a vital role to play in carbon sequestration, mitigating the effects of climate change.

#### **How can we measure performance?**

2.300 One of the key functions of soil is its ability to support food and other forms of agricultural production. The agricultural quality of soil is measured through the Agricultural Land Classification, and graded from 1 (high quality) to 5 (low quality). All soils within the 1-3a grades are defined as 'Best and Most Versatile Land'<sup>121</sup>. Best and most versatile agricultural land is that which is most flexible, productive and efficient in response to inputs and can best deliver future crops for food and non-food uses, such as biomass, fibres and pharmaceuticals. The Agricultural Land Classification gives a useful indication of the overall soil quality of the District. However, ALC Surveys are not carried out regularly, and so may not provide the best measure of performance on an on-going basis.

2.301 Soil quality can be significantly degraded by poor agricultural practices, leading to soil erosion and runoff. Environmental Stewardship (ES) is an agri-environment scheme that provides funding to farmers and other land managers in England to deliver effective environmental management on the land. We can measure the area of land within the district under both Entry Level and Higher Level Stewardship. The soil quality of agricultural land covered by ES schemes should be safeguarded to a greater extent than land not covered by such schemes.

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<sup>118</sup> National Planning Policy Framework, CLG (2012) pp25-26

<sup>119</sup> National Planning Policy Framework, CLG (2012) p26

<sup>120</sup> Safeguarding our soils: A strategy for England, DEFRA (2009) p2

<sup>121</sup> See PPS 7 or Defra's *Agricultural Land Classification Explanatory note* (<http://www.defra.gov.uk/rds/publications/technical/alc.pdf>).

2.302 With respect to contaminated land, there are two routes currently available for local authorities to oversee the investigation of soil quality and instigating any necessary remediation of contaminated land:

- The planning process.
- Part IIa of the Environmental Protection Act 1990.

2.303 By combining statistics from both regimes it should be feasible to monitor the number of potentially contaminated sites that are investigated and remediated. This would require a robust means of tracking all planning applications requiring site investigations.

*Proposed indicators*

2.304 Extent of best and most versatile land.

2.305 The number and area of contaminated land sites / investigations.

*Justification*

2.306 The NPPF makes it clear that higher quality agricultural land should be safeguarded if possible.

2.307 Contaminated land provides a potential obstacle to development; conversely, the remediation of contaminated land to bring it back into productive use (e.g. for development) represents an opportunity.

**Targets / standards**

2.308 No loss of ALC Grades 1, 2 and 3a (Best and most versatile land).

**Data sources**

2.309 The following data sources were identified for Soils.

*GIS data*

- Agricultural Land Classification.
- Area of land within Environmental Stewardship Schemes.

*Documents*

- Safeguarding our Soils: A Strategy for England, DEFRA (2009).
- Cannock Chase District Contaminated Land Reports (various).

**Application to the Environmental Capacity Study**

2.310 The agricultural land classification suggests that there is no Grade 1 or Grade 2 agricultural land in the District. However, there is a significant proportion of land that is Grade 3, some of which may have the potential to be Grade 3a (i.e. best and most versatile). This is registered as a potential constraint.

2.311 The loss of undeveloped land and soils to additional development can also be calculated, using assumptions on density of development.

2.312 Potential contaminated land sites are quite localised and within existing urban areas. They are unlikely to have a significant effect on the environmental capacity of the District to accommodate additional development.

**What is the baseline position?**

2.313 The Sustainability Appraisal, drawing on information from the Soilscape (England) classifications, sets out the soil types found in Cannock Chase (see **Table 2.19**).

**Table 2.19: Soilscape (England) classifications within Cannock Chase District**

Location	Soil characteristics
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Location	Soil characteristics
Narrow parcel of land along railway rom edge of Cannock Chase AONB into Rugeley; Cannock Chase AONB uplands	Freely draining slightly acidic loamy soils. Neutral and acid pastures and deciduous woodlands; acid communities such as bracken, and gorse in the uplands. This soil is characterised by low fertility.
North of Cannock Chase AONB in proximity to Rugeley	Slightly acidic loamy and clayey soils with impeded drainage. Wide range of pasture and generally broadleaved and mixed woodland types are associated with this moderate to high fertility soil.
Cannock Chase AONB uplands	Freely draining slightly acid sandy soils. Acid dry pastures, acid deciduous and coniferous woodland characterised by low fertility.
Cannock Chase AONB upland area	Freely draining very acid sandy and loamy soils. Underlying sandstone provides freely draining soils which are characterised by low natural fertility. Characteristic semi-natural habitat is mostly dry heath communities with mixed and coniferous woodland.
East, and South East of Cannock Town	Slowly permeable seasonally wet slightly acidic but base rich loamy and clayey soils. The loamy and clayey soils form a relatively impermeable layer, providing impeded drainage which gives a moderate fertility. The characteristic semi-natural habitat is lowland and seasonably wet pasture and woodland.
Area around previous quarry and opencast mining operations.	Restored soils mostly from quarry and opencast spoil. These variable but low to moderate fertility soils include specialist communities tolerant of prevailing conditions. The characteristic semi-natural habitat for this Soilscape type is grassland, arable and woodland.

2.314 The area of each agricultural land classification in hectares within Cannock Chase District is set out in **Table 2.20** and **Figure 2.9a**.

**Table 2.20: Agricultural Land Classification Grades within District**

Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Non-Agricultural	Urban
0.00	0.00	1541.05	1227.55	0.00	3108.38	2011.46

2.315 On the periphery of the AONB agriculture is the principal land use<sup>122</sup>, and there is also agriculture within the rural area south of the M6 Toll.

2.316 The Sustainability Appraisal of the Draft Local Plan 2012 states that:

<sup>122</sup> State of the AONB Report

"Since the 1800s as much as 95% of Staffordshire heath land has been permanently lost due to intensive farming and the development of the poor nutrient quality soil. Further development on agricultural land and Green Belt could further threaten heathland soil without Core Strategy planning. Policies to protect AONB, the Green Belt, landscape and biodiversity should help to protect soil resources, as should sound flood management planning". (SA Appendix C p48-49).

- 2.317 With respect to contaminated land, the Sustainability Appraisal states that this is principally associated with past and present landfill, mining and heavy industrial sites, and that the Council is currently implementing its Contaminated Land Strategy to identify potentially contaminated sites but no sites have been added to the contaminated land register. Coal and iron were extensively extracted from quarries and open cast mines during the 19<sup>th</sup> and 20<sup>th</sup> centuries but today no mining activities exist. The processes associated with coal mining of minerals could provide a source of contamination. There are three landfill sites located within the District Council boundary.
- 2.318 The Cannock Chase District Council's website lists 12 Contaminated Land Reports. These represent initial investigations to determine whether a site should be included on the contaminated land register. The sites are as follows:

**Table 2.21: Cannock Chase District Contaminated Land Reports**

Site	Settlement	Size
Greenheath Road	Hednesford	1 hectare
Hednesford Road (Woodfield)	Norton Canes	0.7 hectares
North of Rawnsley	Hednesford	1.6 hectares
Land off Blake Close and Burgoyne Street	Chadsmoor	1.3 hectares
Land between View Street and Foster Avenue	Hednesford	1.1 hectares
Armitage Road	Rugeley	2 sites totalling 0.56 hectares
Blake Close	Chadsmoor	1.3 hectares
Stagborough Way	Hednesford	18 hectares
Land between Walsall Road and Brownhills Road	Norton Canes	1.5 hectares
Oxford Road	Rumer Hill	2.24 hectares
Land near Fiveways Island	Heath Hayes	1.5 hectares
Land off Hunter Road	Cannock	3 hectares

- 2.319 With the exception of the Stagborough Way site, most other locations are not significant in size with respect to the delivery of significant amounts of development. All are within or close to existing built-up areas.

#### **Key issues for Soils**

- Although a significant proportion of Cannock Chase District is undeveloped, there is very little in the way of best and most versatile agricultural land that could act as a constraint on development. However there are areas of Grade 3 agricultural land that could have the potential to be classified as best and most versatile agricultural land.

- There are no contaminated sites listed on the contaminated land register. However, there are a number of sites under investigation, and there is the potential for more linked to former mining activity and landfill.

## Theme 10: Historic Environment

### Why is it important?

- 2.320 Heritage features, buildings and archaeology, field patterns and land uses combine to create the historic environment. The historic environment shapes an area's character and identity, providing links with our heritage and past generations. The historic environment and the heritage features it contains are finite resources which enhance quality of life and provide communities with a sense of place which can be shared through education and enjoyed in recreation<sup>123</sup>. The historic environment is not limited to built features and archaeological remains, but also includes historic land uses, such as coppiced woodland or grazing marsh which may have existed in a similar form for many centuries.

#### *National Planning Policy Framework*

- 2.321 Section 12 of the NPPF (Conserving and enhancing the historic environment) states that:

*"Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance."*<sup>124</sup>

#### *Local Policy*

- 2.322 Policy CP3 – Chase Shaping – Design sets out that one of the key requirements of high quality design to be addressed in development proposals is to:

*"Conserve and enhance the local historic environment including reuse of buildings and sympathetic repair, using the historic environment as a stimulus to high quality design and enhancing local character and distinctiveness"*

- 2.323 Policy CP15 – Historic Environment states that:

*"The District's Historic Environment will be protected and enhanced via:*

- *The safeguarding of all historic sites, buildings, archaeological remains and their historic landscape and townscape settings according to their national or local status from developments harmful to their significance in order to sustain character, local distinctiveness and sense of place."*<sup>125</sup>

#### *Sustainability Appraisal / Habitats Regulations Assessment*

- 2.324 Cultural heritage is one of the baseline topics of the Sustainability Appraisal. District-wide, the following key sustainability issues are identified within the cultural heritage topic:

- 2 out of 8 Conservation Areas at Risk
- Vulnerability of non-designated sites due to lack of protection

- 2.325 For the Rugeley Town Centre study area, the following issues are identified within the cultural heritage topic:

- Rugeley Town Centre Conservation Area "at risk" as a result of deterioration of building fabric and public realm areas

- 2.326 In the Screening Assessment of the Core Strategy within the Habitats Regulations Assessment, part of Policy CP15 – Historic Environment is assessed as follows:

<sup>123</sup> National Planning Policy Framework (2012)

<sup>124</sup> National Planning Policy Framework, CLG (2012) p30

<sup>125</sup> Cannock Chase District Draft Local Plan (Part 1) 2012 p129

*"... A further conservation area will be considered for the Cannock Extension Canal, having regard to its wider setting and the potential for enhancements".*

2.327 Within the HRA, only positive effects of this part of the policy are identified, referring to protection and enhancement of the Cannock Extension Canal SAC environs.

### **Vulnerability to climate change**

2.328 English Heritage identify a list of potential direct impacts of climate change upon the historic environment as (those most relevant to the study listed only):

- *"rising sea levels and a possible increase in storminess that endangers historic landscapes, structures, buildings and archaeology in the coastal zone*
- *Increased extremes of wetting and drying that heighten the risk of ground subsidence and accelerated decay of stonework thus pose a threat to many historic buildings*
- *More frequent intense rainfall that causes increased erosion of archaeological sites and damaging flooding in historic settlements, the latter making historic buildings difficult to insure*
- *Changes in hydrology that put buried archaeological remains, including well-preserved wetland archaeology, at risk*
- *Possible increases in the frequency or geographical range of extreme weather that could pose an increased risk of damage to some historic landscapes and buildings*

2.329 English Heritage also identify a list of potential impacts from adaptive responses;

- *New flood defences, particularly in historic towns, can cause major archaeological damage along historic waterfronts and may impair the character of historic quaysides and waterside buildings and gardens.*
- *The design integrity of some historic buildings and landscapes could be damaged by the need to provide new and more effective rainwater disposal or storage systems or flood protection features.*

2.330 Finally English Heritage identify the impact policies to mitigate future climate change may have:

- *The construction of new renewable energy infrastructure, including hydro-electric and tidal plants and onshore and offshore wind farms, may have direct impacts on archaeological remains.*
- *Wind farms need to be carefully sited to avoid compromising significant landscapes, or the visual setting of important sites or buildings where the integrity of that setting is an important part of their significance.*
- *Some types of micro-generation equipment, such as mini wind turbines, or micro combined heat and power plants, are unlikely to present problems if sensitively located on historic buildings; others may be more visually intrusive and difficult to accommodate. Consideration should be given to minimising physical impacts on the historic fabric of buildings and ensuring reversibility wherever practicable.*
- *Poorly designed or inappropriate energy-saving measures could seriously detract from the historic character and fabric of buildings and landscapes, whereas well-designed measures can make considerable savings with little or no damage. Proposals to replace historic buildings with new stock that is ostensibly more energy-efficient could result in serious losses of historic character and diversity.*<sup>126</sup>

### **How can we measure performance?**

2.331 The quality of the historic environment can be measured through identifying the number of heritage features on English Heritage's 'Heritage at Risk Register', and by assessment of the extent to which a given area's historic landscape character is intact. The Heritage at Risk register records vulnerability of certain designated assets (such as Grade I and II\* Listed Buildings,

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<sup>126</sup> Climate Change and the Historic Environment, English Heritage (2008)

Scheduled Monuments, and Conservation Areas). It is recognised that the majority of the District's Listed Buildings are Grade II, and therefore not currently assessed for the Heritage at Risk register. It is noted that this performance measure also does not take into account the undesignated heritage assets, and the inclusion of a local list would be helpful.

#### *Proposed indicators*

2.332 Heritage assets on the 'Heritage at Risk' register.

#### *Justification*

2.333 The 'Heritage at Risk' register is a regularly updated and nationally recognised register of vulnerable heritage assets.

#### **Targets / standards**

2.334 The NPPF identifies that heritage assets are an irreplaceable resource and sets out four considerations local authorities should take into account when planning development:

- The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation.
- The wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring.
- The desirability of new development making a positive contribution to local character and distinctiveness.
- Opportunities to draw on the contribution made by the historic environment to the character of a place.

2.335 The NPPF states that:

*"As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II\* listed buildings, grade I and II\* registered parks and gardens, and World Heritage Sites, should be wholly exceptional."* (NPPF, 2012, p31).

2.336 As such the standards should be:

- 1 No loss of designated heritage assets.
- 2 No degradation of designated assets so that they need to be added to the 'at risk' register.

2.337 The target should be to improve the two Conservation Areas currently at risk to enable their removal from the 'at risk' register.

#### **Data sources**

2.338 The following data sources identified for the Historic environment.

#### *GIS data*

- Listed Buildings.
- Registered Parks and Gardens.
- Scheduled Monuments.
- Conservation Areas.
- World Heritage Sites (none within study area).
- Heritage at Risk.

#### *Documents*

##### **National**

- National Heritage Protection Plan, English Heritage (2011 – 2015).

## Regional

- Staffordshire Historic Environment Record (<http://www.staffordshire.gov.uk/environment/eLand/planners-developers/HistoricEnvironment/HistoricEnvironmentRecord.aspx>)
- West Midlands Historic Farmsteads Study (2010)

## Local

- Local List for building conservation (see [http://www.cannockchasedc.gov.uk/info/200074/planning/1091/building\\_conservation/6](http://www.cannockchasedc.gov.uk/info/200074/planning/1091/building_conservation/6))
- Historic Environment Character Assessment (2009).
- Cannock Extensive Urban Survey (2009).
- Rugeley Extensive Urban Survey (2010).
- Historic Farmsteads Survey (2010).
- Conservation Area Appraisals documents (2005 – 2012)
- Conservation Area Management Plans (2010 – 2012)

## Applications of the Environmental Capacity Study

- 2.339 Designated historic assets can readily be mapped. Some will act as true constraints to development (e.g. a registered park or garden is unlikely to be developed). Others may act as either constraints or opportunities (e.g. bringing back into appropriate use a derelict listed building would be positive). The issue of setting of historic assets may also be important.
- 2.340 By their very nature, 'unknown' or 'unrecorded' historic assets could be omitted as a constraint through lack of knowledge. Undesignated historic landscapes may require an element of qualitative commentary based on documents referred to above.

## Assessing the Environmental Capacity

*"England's historic buildings, sites and landscapes are of fundamental importance to telling our national story; to establishing community identities and to creating a sense of place. By encouraging tourism, creating jobs and providing the places where most of us live and work, our heritage is also an important contributor to growth and prosperity within the UK. But much of this heritage is at risk of damage or destruction: sometimes sudden and catastrophic, more often gradual and incremental – threatening the distinctiveness, character and appeal of the places we care about. Damage can be caused by natural erosion, climate change, crime or poorly thought-through development. Decline often starts with neglect, abandonment or the loss of the skills needed for vital advice, maintenance and repair."<sup>127</sup>*

- 2.341 In terms of statutory designated historic assets, there are 71 Listed Buildings, five Scheduled Monuments and eight Conservation areas within the District.
- 2.342 **Figure 2.10a** shows these statutory designated historic assets. As shown on the map, six of the eight Conservation Areas are within Rugeley and the remaining two are within Cannock and Bridgtown. Two of the Conservation Areas within Rugeley are currently on the Heritage at Risk register. Both of these (Rugeley Town Centre and Talbot Street/Lichfield Street) are noted to be in deteriorating condition on the Heritage at Risk 2012 Register.
- 2.343 The Conservation Area Appraisals and Management Plans are used to indicate whether areas are 'at risk' and therefore can be useful for appraising quality / trends over time. They may also contain policy requirements for developers that will be applied by the District Council, for example, the requirement for a developer to appoint an archaeologist to carry out a 'watching brief' where appropriate. This type of requirement may slow down any development within Conservation Areas.

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<sup>127</sup> <http://www.english-heritage.org.uk/professional/protection/national-heritage-protection-plan/all-about-NHPP/>

- 2.344 There are five scheduled monuments within the District. Two of these are within Cannock town (Conduit Head in High Street and Churchyard Cross at St. Luke's Churchyard), two around Cannock Wood (Castle Ring, which is a multivallate hillfort and medieval hunting lodge, and a moated site and bloomery in Courtbanks Covert) and one near Cannock Chase Country Park (a WWI trench system instruction model). Within the study area, there is also one further scheduled monument within Stafford District, near Bishton Hall.
- 2.345 The 71 listed buildings are predominantly located around Cannock, Hednesford and Rugeley. Seven of these are Grade II\*, and the remaining 64 are Grade II. Grade II listed buildings are nationally important and of special interest, and Grade II\* are particularly important buildings of more than special interest. Grade II\* buildings are currently included on the Heritage at Risk register, but Grade II buildings are not. None of the Grade II\* buildings within the District are on the 'at risk' register.
- 2.346 In terms of non-designated assets, the Staffordshire Historic Environment Record (HER) returns 630 records for Cannock Chase District. **Figure 2.10b** shows the Historic Environment Record data within the study area. As is evident from the map, there is a significant number of Historic Environment Records within the study area, many of which reflect the District's mining past, or landscape parks.
- 2.347 With the currently non-designated assets in mind, the Council is considering the potential to prepare a 'Local List' of buildings and structures which are of local importance in terms of their architecture or history:
- "This proposal has arisen from a desire to recognise buildings and structures valued for their contribution to the local scene or for their local historical associations but which do not merit statutory listing where the emphasis is on national importance. Buildings on the Local List would not be subject to the same controls as those on the statutory list, however their special architectural or historic character would be taken into account in considering any planning applications that could affect them or their surroundings, with a presumption against their demolition."<sup>128</sup>*
- 2.348 Cannock Chase District's historic landscape was characterised by Staffordshire County Council in 2009, in the Historic Environment Character Assessment of Cannock Chase District<sup>129</sup>. This report sets out the historic environment within two project areas, on the outskirts of Cannock and Rugeley. The towns of Cannock and Rugeley were themselves excluded from this assessment, as they were subsequently covered under the Extensive Urban Survey (EUS)<sup>130</sup>. These reports give a detailed overview of the heritage assets and historic character of Cannock. Within the Character Assessments, Historic Environment Character Zones were defined. These HECZs were then assessed against seven themes (survival, potential, documentation, diversity, group association, amenity and sensitivity to change, specifically to housing expansion and infrastructure).
- 2.349 **Figure 2.10c** shows the Cannock and Rugeley Historic Environment Character Zones (HECZs), denoted by their overall score across all of these seven themes. A high overall score would suggest that very significant historic environment mitigation would be needed to accommodate development, although even character zones with low scores may require such mitigation for particular historic environment assets. Within the Cannock project area there are 8 HECZs with a Low overall score, and within the Rugeley project area there are a further two. In terms of the historic environment capacity, it is possible that these areas contain the most potential for further development, but further work would be needed to assess the quantum of development that the areas may be able to accommodate.
- 2.350 As mentioned above the towns of Cannock and Rugeley have both undergone an Extensive Urban Survey. The main aim of these documents is to "*understand the development and current historic character of the medieval towns*<sup>131</sup>". The Historic Urban Character Areas (HUCAs) identified within this work, could be assessed further to identify the scale of housing development that it may be

<sup>128</sup> [http://www.cannockchasedc.gov.uk/info/200074/planning/1091/building\\_conservation/6](http://www.cannockchasedc.gov.uk/info/200074/planning/1091/building_conservation/6)

<sup>129</sup> Historic Environment Character Assessment of Cannock Chase District, Staffordshire County Council (2009)

<sup>130</sup> Extensive Urban Survey for Cannock (SCC, Draft Dec 2009) and Extensive Urban Survey for Rugeley (SCC, Draft Feb 2010)

<sup>131</sup> Staffordshire Extensive Urban Survey: Rugeley Historic Character Assessment (2010)

possible to accommodate within them, but in themselves the reports do not provide guidance for environmental capacity.

2.351 The West Midlands Farmsteads and Landscape Project:

*"was conducted by English Heritage in collaboration with regional development agency Advantage West Midlands and local county and metropolitan authorities to help national and local decision-makers evaluate what future uses for farm buildings should be, to understand how they contribute to local character and to identify the most significant and vulnerable cases"*<sup>132</sup>.

2.352 Annex 2 of the Staffordshire County Summary Report sets out the following two notes for Cannock Chase District:

- *"Low survival of historic farmsteads, 32.8% retaining some of their working buildings as well as the house.*
- *Too few historic farmsteads to make meaningful generalisations about their social and economic role".*<sup>133</sup>

2.353 Two conservation areas are currently on the Heritage at Risk register. The condition of these conservation areas is very important when considering any development within them or within their setting.

2.354 Within Cannock Chase District, there are 84 designated assets, and a further 546 non designated records from the HER. This indicates that the designated assets form around 15% of the potential heritage asset total. In assessing the environmental capacity, these non-designated assets need also to be considered.

### Key Issues for the Historic Environment's Capacity

- Two assets with statutory designations (Rugeley Town Centre and Talbot Street/Lichfield Street Conservation Areas) are currently on the Heritage at Risk register.
- Potential development should not place any statutory designated heritage assets 'at risk', and should consider the importance of non-designated but locally important heritage.
- A local list of buildings and structures of local architectural or historic importance would facilitate the protection of these assets as further development takes place.
- Based on existing data, it is not possible to quantify the volume of housing development that the District could accommodate with respect to the Historic Environment. However, further assessment of the Character Areas identified within the Historic Environment Character Assessment and the Extensive Urban Surveys may enable an indication to be given of the quantum of development that may be acceptable within each area.

## Theme 11: Minerals

### Why is it important?

2.355 Minerals are non-renewable natural resources that are vital for the construction, manufacturing and energy industries.<sup>134</sup> As set out in the NPPF:

*"Minerals are a finite resource, and can only be worked where they are found, it is important to make best use of them to secure their long-term conservation"*<sup>135</sup>.

2.356 Increasing development (such as housing) places increasing demand for minerals, such as sand and gravel, by the building industry. The result of this is that the mineral resource itself is depleted, and there are also a variety of potential environmental impacts caused by the minerals extraction process itself. Conversely, restoration of former minerals sites can offer opportunities for new or restored habitats and recreation.

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<sup>132</sup> West Midlands Farmsteads and Landscape Project: Summary Report, Forum Heritage Services (2010) p5

<sup>133</sup> West Midlands Farmsteads and Landscape Project: County Summary Report for Staffordshire (2010) p12

<sup>134</sup> <http://www.bgs.ac.uk/mineralsuk/mineralsyou/mineralsenvironment.html>

<sup>135</sup> NPPF p32

### *National Planning Policy Framework*

2.357 Section 13 of the NPPF states that:

*"Minerals are essential to support sustainable economic growth and our quality of life. It is therefore important that there is a sufficient supply of material to provide the infrastructure, buildings, energy and goods that the country needs. However, since minerals are a finite natural resource, and can only be worked where they are found, it is important to make best use of them to secure their long-term conservation."*<sup>136</sup>

### *Local Policy*

2.358 Policy CP16 - Climate Change and Sustainable Resource Use states that development should:

*"Consider their potential to sterilise mineral resources in consultation with the County Council. Developments within Mineral Consultation or Safeguarding Areas should not sterilise or seriously hinder the extraction of minerals. Proposals will be expected to extract any viable mineral resources prior to development, if practicable, and where this would not have unacceptable impacts upon neighbouring uses or conflict with other Core Strategy policies (see CP12, CP14, CP15, CP16). Where prior extraction is not considered feasible evidence supporting this view should be submitted and may include the impact upon the development's viability, impracticalities of prior extraction and the over-riding need for the development. Developments should also address any issues of land stability and surface hazards resulting from the legacy of past mining activity using existing evidence and via further site investigation information where appropriate to ensure safe development."*<sup>137</sup>

### *Sustainability Appraisal / Habitats Regulations Assessment*

2.359 Neither the Sustainability Appraisal or the Habitats Regulations Assessment had anything significant to say about the impact of development on mineral resources in the District.

### **Vulnerability to climate change**

2.360 The waste from Mineral extraction can contribute to climate change, and is covered under policy CP16 of the Local Plan, as stated in the 'Local Policy' section.

### **How can we measure performance?**

2.361 In terms of environmental capacity, there is a clear limit to the quantity of finite minerals resources that can be extracted from the ground. However, as more readily accessible minerals are extracted, technological advances can make it easier to extract harder to obtain minerals.

2.362 We can measure performance by ensuring that development does not sterilise mineral resources, for example in minerals safeguarding areas.

### *Proposed indicators*

2.363 Minerals Core Strategy Site Options.

2.364 Minerals Consultation or Safeguarding Areas.

### *Justification*

2.365 Consistent with national and local policy.

### **Targets / standards**

2.366 No sterilisation of minerals in Mineral Consultation Areas or Mineral Safeguarding Areas.

### **Data sources**

2.367 The following data sources were identified for Minerals.

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<sup>136</sup> NPPF p32

<sup>137</sup> Cannock Chase District Draft Local Plan (Part 1) 2012 p133

### GIS data

- Minerals safeguarding areas have not yet been established by the Staffordshire and Stoke on Trent Minerals Core Strategy. Once these areas have been established, they should be included as a constraint to development.
- Minerals Consultation Areas have been identified and mapped (from the BGS), and the identified Coal Resource Area. Surface coal resource data is also available.

### Documents

- The Minerals Core Strategy is currently on hold, but will restart after the Joint Waste Core Strategy has been adopted in 2012.
- Staffordshire Minerals and Waste Development Framework Annual Monitoring Report (2011).
- Provision of Geological Information and a Revision of Mineral Consultation Areas for Staffordshire County Council, British Geological Survey (2006).

### Application to the Environmental Capacity Study

- 2.368 Given that there Mineral Consultation Areas and/or Mineral Safeguarding Areas have not been identified by Staffordshire County Council, it is difficult to be able to comment on the existence or otherwise of mineral resources as a component of environmental capacity.
- 2.369 However, The BGS 2006 report has put forward recommendations of the Mineral Safeguarding Areas and Mineral Consultation Areas. In addition, the Minerals Core Strategy Submitted Strategic Site Proposals (June 2009) indicates where there is potential for new mineral workings or extension to existing working.

### Assessing the Environmental Capacity

- 2.370 Coal mining has been a significant part of the traditional economic base of the District. As set out in the Local Plan (2012) Part 1, there are still potential coal resources in southern parts of the District, and potential sand and gravel resources within central parts of the District.
- 2.371 **Figure 2.11a** shows the Coal Resource Area within the Study Area, this area covers the whole of the southern part of the District (approximately 50% of the District).
- 2.372 According to 2009 data, confirmed by the Staffordshire Minerals & Waste Development Framework Annual Monitoring Report 2011, there was only one operational mineral site in Cannock Chase District, being Rugeley Quarry where sand and gravel extraction takes place<sup>138</sup>. The Minerals Core Strategy submitted strategic site proposals (June 2009). This showed a potential clay extraction site at Poplars, Cannock, although this has since been withdrawn as a proposal by Biffa. A potential site in the southern border of the District at Yorks Bridge, Little Wyrley, has been put forward for coal and fireclay extraction.
- 2.373 There are several active or potential mineral extraction sites outside Cannock Chase District but close to the border of the District, most notably the western and northern boundaries (e.g. to the west of Cannock and west of Rugeley).
- 2.374 The BGS Survey suggests that, apart from the area covered by Cannock Chase Forest, virtually the whole District could be defined as either a Mineral Safeguarding Area (see **Figure 2.11b**) or a Mineral Consultation Area (see **Figure 2.11c**) on account of the presence of one or more of the following three minerals: fireclay; bedrock sand; superficial sand and gravel.

### Key Issues

- Virtually the whole of the District, with the exception of the area covered by Cannock Chase forest, has the potential to offer mineral resources, principally, fireclay, bedrock sand, and superficial sand and gravel, but Mineral Consultation Areas and Mineral Safeguarding Areas have yet to be defined by Staffordshire County Council.
- The whole of the southern part of the District is considered to be a Coal Resource Area.

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<sup>138</sup> 'Pre-Operational', 'Operational' and 'Non-Operational' Mineral Sites in Staffordshire (Staffordshire County Council, March 2009)

- Although there is only one operational mineral site within the District, there are several close to the borders of the District, which could constrain development of some settlements, in particular Cannock and Rugeley.

### 3 Constraints Mapping

- 3.1 To further assist with identifying what the constraints to development might be within the study area, for each theme we have identified the assets which could be considered as 'primary constraints' (i.e. where significant development is likely to be precluded) and those which are 'secondary constraints' (i.e. where significant development may not be precluded, but where there is the risk of negative impacts, or where additional mitigation measures may be necessary).
- 3.2 Most importantly, this approach enables the themes to be considered in conjunction with one another, and considered spatially. This will enable potential future development to be assessed against these constraints.
- 3.3 The constraints are identified in **Table 3.1** below.

**Table 3.1: Primary and secondary constraints**

Theme	Primary Constraints	Secondary Constraints	Notes
Climate Change			Not mapped as a constraint.
Air Quality	(No constraints)	Current AQMA	
Water Quality	(No constraints)	Burntwood, Rugeley (Penkridge Bank) or Cannock WwTW catchments	(awaiting GIS data – not included within current constraints map)
Water Supply	(No constraints)	SSW area is classified as a 'Single Resource Zone', so although water supply is likely to be a significant constraint it is not likely to be spatially significant.	
Flood Risk	Flood Zones 3a and 3b	Flood Zone 2	
Biodiversity	All designated sites (SBIs, LNRs, NNRs, SSSIs, SACs)	Buffer zones around all designated sites: 15km from Cannock Chase SAC 5km from other international designations 1km from national designations 500m from local designations <i>(Originally: 10km from</i>	Buffer zones are indicative only No NNRs, SPAs or Ramsars within the study area, and none within the specified distance of the 2.5km buffer zone. 15km from Cannock Chase SAC is based on the Footprint Ecology Mitigation Report, 2012 which suggests that 75% of

Theme	Primary Constraints	Secondary Constraints	Notes
		<i>international, 5km from national and 1km from local designations).</i>	visitors come from a 15km radius from the SAC, and that developer contributions should be sought from any developments within this zone.  The 5km buffer zone is equivalent to zone used within Thames Basin Heaths SPA audit and assessment of land to mitigate effects of housing development
Landscape	AONB	Buffer zone of 1km around AONB  <i>(originally 5km from AONB)</i>  Green Belt land	Buffer zone is indicative only
Open Space	Sites identified as open space within PPG17 assessment		
Soils	Agricultural Land Grades 1 & 2	Agricultural Land Grade 3.	Grade 3a land would be a primary constraint, but data are not available.
Historic Environment	Scheduled Monuments Registered Parks and Gardens	Buffer zones around all designated assets (as agreed with EH)  5km from World Heritage Sites  1km from Scheduled Monuments  1km from Grade 1 & 2* Registered Parks and Gardens  1km from Grade 1 & 2* Listed Buildings  500m from Grade 2 Registered Parks and Gardens  500m from Grade 2 Listed Buildings	Buffer zones are indicative only  No World Heritage Sites or Registered Battlefields within the specified distance of the 2.5km buffer zone  Buffer zones used are equivalent to those used in activity 2A1.1 of the National Heritage Protection Plan ('collection of evidence of development pressure').

Theme	Primary Constraints	Secondary Constraints	Notes
		500m from Registered Battlefields Conservation Areas	
Minerals	RIGS	Minerals consultation or safeguarding area (when agreed) Minerals site options	

- 3.4 It should be noted that the **buffer zones developed for the secondary constraints are indicative of the area where development may cause the most negative impacts, or where mitigation is most likely to be needed.** In practice, each location for development would need to be assessed individually for potential effects on the environment and mitigation needed. For example, the effects on the setting of the AONB or on a listed building can vary markedly depending upon their context, from very localised (e.g. a few hundred metres in locations that are well screened; to many kilometres where vistas and views are important).
- 3.5 Where possible, we have drawn on evidence to set the buffer zones, as set out in the notes column of Table 3.1, but in practice there are no defined and agreed standard zones common to all environmental assets, within which mitigation will be essential, and beyond which no mitigation will be needed. Even for an individual asset (such as Cannock Chase AONB) it is not possible to set a consistent distance all around the AONB, which can be considered the setting, as changes in topography and land cover change the implications of development in proximity to the AONB at different locations.
- 3.6 The constraints arrived at however, aim to show the zones within which mitigation is most likely to be needed, or where impacts may be most damaging.
- 3.7 In the scoping report for this work, wider buffer zones were proposed for most assets (e.g. 5km from AONB); these wider buffer zones are noted in bracketed italics in Table 3.1. However, when implemented, the secondary constraints covered the entire study area, so narrower constraints were used, as set out in the table, in order to give a clearer picture of those areas that are less constrained than others. The only exception to this is the Cannock Chase SAC, which had a buffer zone of 10km in the scoping report, and a buffer zone of 15km within this report. This wider buffer zone is drawn from a new report by Footprint Ecology which was finalised whilst the Environmental Capacity work was in progress.
- 3.8 **Figure 3.1** shows these constraints as mapped throughout the study area, based on the distances set out in Table 3.1. It is evident from the map that almost all areas of Cannock Chase District are covered by either a primary or a secondary constraint, even when the narrower constraints are applied. The only small areas where no constraints apply (according to the methodology set out above) are a small area south of the A5 Watling Street (Wedge's Mill) an area north of the A4601 near Bridgtown and some extremely small areas to the east of Rugeley.
- 3.9 As there is such wide covering of the secondary constraints, **Figure 3.2** shows the number of secondary constraints at any location, to help guide towards the most and least constrained areas. As shown in this map, very significant proportions of the District are covered by three or more secondary constraints simultaneously; this is particularly the case around Cannock, Hednesford, south of the M6 Toll around Wyrley Common, and around Rugeley.

## 4 Assessing Potential Development

- 4.1 In order to test the environmental capacity for additional development, Cannock Chase District Council provided a range of development scenarios to be considered against the baseline information presented in Sections 2 and 3 of this report.

### Development scenarios

- 4.2 There were two components to the development scenarios:

- Scale of growth.
- Location of growth.

#### Scale of growth

- 4.3 Cannock Chase District Council requested that two growth scenarios be considered representing additional development from that already included in the Draft Local Plan:
- **Growth scenario 1:** an additional 360 dwellings (i.e. 7% above the housing provision in the Draft Local Plan) plus an additional 22 hectares of employment land (i.e. 25% above employment land provision in the Draft Local Plan). Assuming a density of 35 dwellings per hectare, this would equate to an additional 32 hectares of development, including employment land.
  - **Growth scenario 2:** an additional 770 dwellings (i.e. 15% above the housing provision in the Draft Local Plan) plus an additional 22 hectares of employment land (i.e. 25% above employment land provision in the Draft Local Plan). Assuming a density of 35 dwellings per hectare, this would equate to an additional 44 hectares of development, including employment land.
- 4.4 To give a sense of scale, growth scenario 1 would be the equivalent of 45 football pitches. Growth scenario would be the equivalent of 61 football pitches.
- 4.5 The estimated housing stock of the District in 2006 (the start of the plan period) was 39,800<sup>139</sup>. 5,300 additional dwellings, as provided in the Draft Local Plan) represents an increase of 13.3% in the total dwelling stock. An additional 360 dwellings represents an extra 0.8% on top of the existing and currently planned housing stock. An additional 770 dwellings represents an extra 1.7% on top of the existing and currently planned for housing stock.

#### Location of growth

- 4.6 Three potential development locations were identified by Cannock Chase District Council for detailed analysis:
- **Location A:** south-west of Cannock within South Staffordshire District.
  - **Location B1:** Heath Hayes south-eastern extension within Cannock Chase District.
  - **Location B2:** Heath Hayes east extension within Cannock Chase District
  - **Location C:** spread across four locations (C1 to C4) around Rugeley: one to the north-east in Lichfield District (**Location C1**); one to the south of Rugeley in Cannock Chase District (**Location C2**); one to the south-west of Rugeley in Cannock Chase District (**Location C3**); and one to the north of Rugeley largely in Stafford Borough (**Location C4**).

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<sup>139</sup> ONS Table 125: Dwelling stock estimates by local authority district 2011 -2011.

4.7 These locations are shown on Figure 4.1. The locations are only intended to be indicative in order to test assumptions about environmental capacity.

### Testing the scenarios against environmental capacity

4.8 For each location, an assessment against each of the environmental themes has been undertaken. It should be borne in mind that this has been undertaken as a desk-based exercise. There will be inevitably be many more subtle and qualitative factors to take into account, that can only be established through detailed study including visits to each location to examine their character, constraints and opportunities.

4.9 Nonetheless, it is considered that this approach provides a useful starting point in attempting to understand environmental capacity.

4.10 It should be noted that the difference between the two scenarios (i.e. 11.7 hectares, equivalent to 16 football pitches) is not particularly significant for a District that covers 7,800 hectares (Cannock Chase itself covers 3,008 hectares). Growth scenario 1 would represent an increase in development of just 0.4% of the total area of the District, rising to 0.6% of the District under growth scenario 2. The additional development, with respect to housing, is less than 2% of the existing and currently planned housing stock. The difference between the two growth scenarios was not considered to be significant enough to be able to draw out material differences for most themes. Therefore, each location has been treated on its own merits for development of between 32 and 44 hectares of land.

4.11 For each environmental theme, a colour code has been used to indicate whether there is the potential for environmental capacity to be breached for that theme.

**Table 4.1: Key to Environmental capacity colour coding**

Colour code	Description
Red	Environmental capacity at significant risk of being breached
Amber	Environmental capacity at some risk of being breached or significantly eroded
Green	Environmental capacity not at risk of being breached
Grey	Risk to environmental capacity uncertain given available data

4.12 Where potential for environmental capacity being breached was identified, possible mitigation measures are suggested to avoid or reduce the significance of the effect.

### Location A: South-west of Cannock

4.13 This location lies within South Staffordshire and therefore the data gathered to examine the environmental capacity was not as comprehensive as for those locations to be found within Cannock Chase District.

4.14 Any development at this site would require cross-boundary working, and an assessment of environmental capacity within South Staffordshire District, which has not been undertaken as part of this assessment, particularly as some constraints will be exacerbated by developments within South Staffordshire which contribute to the District's own housing needs.

**Table 4.2: Environmental Capacity of Location A – South-west of Cannock**

Environmental theme	Capacity issues	Possible mitigation
Carbon emissions	This location is in close proximity to Cannock, a major settlement, which offers a	None required beyond those already included in Draft

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	range of jobs, services and facilities which should preclude the need to travel long distances. However, it is not well located with respect to rail services but is close to the M6 Junctions 11 and 12, and therefore longer distance travel is likely to be undertaken by car (e.g. commuting to Birmingham). The location is adjacent to an area identified as having district heating potential.	Local Plan policy.
Air quality	This location is close to the only Air Quality Management Area in the District, the A5 Watling Street near Bridgtown. Any additional traffic generated from development at this location is at risk of exacerbating air quality issues that already exist.	Implementation of the actions set out in the Cannock Chase Council Air Quality Action Plan
Water quality	The South Staffordshire Water Cycle Study identifies Cannock Waste Water Treatment Works as being at risk of not having sufficient capacity to cope with additional development without additional investment	Enter into discussions with the Environment Agency and Severn Trent Water to determine the extent and feasibility of investment in waste water treatment works to accommodate additional development without breaching water quality targets.
Water supply	The South Staffordshire Water Cycle Study notes that there may not be sufficient water resources to accommodate development above that currently included in the Draft Local Plan.	Enter into discussions with the Environment Agency, Severn Trent Water and South Staffordshire Water to determine the extent to which additional development can be accommodated without further demand management measures or investment in new sources of supply.
Flood risk	Location A is outside of the EA flood risk zones. There is a key flow route along the Saredon Brook (to the south of Location A) identified within the Phase 2 SWMP of Cannock, and any new development would need to ensure that volume of run-off does not increase, altering flood risk outside of this location.	Incorporate SuDS into new development to ensure that run-off is managed so that the risk of flooding is not exacerbated elsewhere.
Biodiversity	This location is within 15km of the Cannock Chase SAC (approximately 5km), which suggests that developer contributions would be sought to mitigate against the impacts of additional pressures on the SAC.	Mitigation measures would need to be taken to remediate against impact on the Cannock Chase SAC, as set out in the Cannock Chase

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	<p>Depending on the size of the development, additional open space may need to be provided, and Appropriate Assessment may be needed.</p> <p>Location A is not within very close proximity of any designated biodiversity sites, although a Local Nature Reserve is located 1km to the north. Nonetheless, the analysis of the District's environmental capacity for biodiversity identified that the biodiversity is under pressure from urbanisation effects and the effects of people pressure, which suggests that further development could place greater pressure on habitats and their associated species. The location is identified as being Lowland Heathland in the Staffordshire in the Staffordshire Biodiversity Action Plan (Ecosystem Action Plan).</p>	<p>Visitor Impacts Mitigation Report, 2012.</p> <p>A detailed ecological assessment would be required to determine the existing biodiversity of this location, its status and condition, and its potential in order to inform what mitigation measures would be required to safeguard and enhance its biodiversity interest.</p>
Landscape	<p>Location A falls within an area where the Landscape Description Unit as being 98% good. This implies that development at this location could have a significant impact on landscape character.</p> <p>Location A is within the Green Belt in South Staffordshire District.</p>	<p>Further detailed landscape sensitivity assessment would be needed to determine the integrity and sensitivity of the landscape of this location and its potential to accommodate development without significant adverse effects.</p>
Open space	<p>Location A falls within Hatherton Parish in South Staffordshire District. This parish is grouped into Locality 1 within the South Staffordshire Open Space Strategy. This locality falls below the quantity standard for amenity space, provision for young people and children, and allotments.</p>	<p>Additional open space provision would be needed to mitigate for a further drop in the quantity of open space per 1,000 people, as the locality already falls below the local quantity standard for several types of open space.</p>
Soils	<p>Location A has agricultural land classified as Grade 3, which has the potential to be best and most versatile. It is not known whether there are any contaminated land issues in this location.</p>	<p>Detailed surveys would need to be undertaken to determine the quality of the agricultural land. If it is found to be best and most versatile land, then this development would represent a significant breach of environmental capacity.</p>
Historic environment	<p>There are no nationally designated historic assets at Location C, but there are two grade 2 listed buildings within close proximity whose setting could be compromised by development. In addition, there could be the potential for unrecorded</p>	<p>Further detailed assessment would need to be undertaken to determine the potential for significant effects on designated historic assets and the likelihood of historic</p>

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	historic remains, particularly given the location's close proximity to Watling Street.	assets being present.
Minerals	Location A has the potential to be included within a Mineral Safeguarding Area or Mineral Consultation Area, on the basis of recommendations in the BGS report. The location is within a Coal Resource Area. In addition, there are a number of operational mineral workings in close proximity to Location A suggesting that mineral deposits could be commercially viable.	Consultation with Staffordshire County Council is required to determine the likelihood of Location A being included within a Mineral Safeguarding Area or a Mineral Consultation Area. Consultation with the Coal Authority to determine potential to extract coal resource prior to development.

- 4.15 It can be seen from the above analysis that there are a number of themes where development at Location A could give rise to environmental capacity issues. Only one has been identified as being 'red' (i.e. at significant risk of being breached) and that is with respect to air quality. Two themes are assessed as 'green' (carbon emissions and flood risk), and the remaining eight themes as amber.
- 4.16 There are enough question marks over the other themes to suggest that, either alone or in combination, development at Location A could give rise to significant capacity issues. This is not to say that these issues are insurmountable, since they could be addressed through investment (e.g. water quality) or through design and management (e.g. water supply). However, significant time-lags to development may occur, due to the need to ensure that mitigation measures are in place before development goes forward.

## Location B1: Cannock-Heath Hayes South-Eastern Extension

- 4.17 This location lies within Cannock Chase District, extending south and east of Cannock and Heath Hayes across existing agricultural land.

**Table 4.3: Environmental Capacity of Location B –Cannock – Heath Hayes Extension**

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
Carbon emissions	<p>This location is in close proximity to Cannock, a major settlement, which offers a range of jobs, services and facilities which should preclude the need to travel long distances. It is located in close proximity to LSOAs that have been identified as having district heating potential. It is also reasonably well located with respect to rail services at Cannock.</p> <p>It is located close to junction T7 on the M6 Toll, and therefore longer distance travel may be undertaken by car (e.g. commuting to Birmingham).</p> <p>However, the location coincides with the only area in Cannock Chase identified as</p>	<p>Apart from those already included in Draft Local Plan policy, it may be necessary to restrict the scale and location of development to allow for the potential wind energy resource to be developed.</p> <p>Potential for wind energy resource would need to be assessed more fully before development could take place.</p>

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	having the potential for three or more wind turbines. Housing development in this location could compromise the potential for wind energy to developed as a renewable resource.	
Air quality	This location is just north of the A5 trunk road, relatively near to the only Air Quality Management Area in the District, and adjacent to a further area which has been subject to a Detailed Assessment for NO <sub>2</sub> levels. Any development in this area is very likely to exacerbate existing air quality issues.	Implementation of the actions set out in the Cannock Chase Council Air Quality Action Plan  Transport and air quality assessment for the development location.
Water quality	The South Staffordshire Water Cycle Study identifies Cannock Waste Water Treatment Works as being at risk of not having sufficient capacity to cope with additional development without additional investment	Enter into discussions with the Environment Agency and Severn Trent Water to determine the extent and feasibility of investment in waste water treatment works to accommodate additional development without breaching water quality targets.
Water supply	The South Staffordshire Water Cycle Study notes that there may not be sufficient water resources to accommodate development above that currently included in the Draft Local Plan.	Enter into discussions with the Environment Agency, Severn Trent Water and South Staffordshire Water to determine the extent to which additional development can be accommodated without further demand management measures or investment in new sources of supply.
Flood risk	Two minor rivers run through this location, and within the historic flood records the Environment Agency note that a low lying portion of Hednesford Road floods when the watercourse comes out of its bank. Although the area is not within a current flood risk zone, implications for additional run off and additional load on the waste water network would need to be considered.	Incorporate SuDS into new development to ensure that run-off is managed so that the risk of flooding is not exacerbated elsewhere.  Remodel flood risk effects of any potential new development.
Biodiversity	This location is within 15km of the Cannock Chase SAC (approximately 4.2km), which suggests that developer contributions would be sought to mitigate against the impacts of additional pressures on the SAC. Depending on the size of the development,	Mitigation measures would need to be taken to remediate against impact on the Cannock Chase SAC, as set out in the Cannock Chase Visitor Impacts Mitigation

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	<p>additional open space may need to be provided, and Appropriate Assessment may be needed.</p> <p>This location is adjacent to the Chasewater and the Southern Staffordshire Coalfield Heaths SSSI, which is currently in 'unfavourable recovering' condition. It is also approximately 1200m from the Cannock Extension Canal SAC.</p> <p>Location B1 contains a number of Provisional Sites of Biological Importance.</p> <p>It is partly within the Central Farmland Ecosystem Action Plan (EAP) area and partly within the Cannock Chase EAP which has lowland heathland priority habitat.</p>	<p>Report, 2012.</p> <p>A detailed ecological assessment would be required to determine the impacts upon the neighbouring SSSI and the Cannock Extension Canal SAC, existing biodiversity of this location, its status and condition, and its potential in order to inform what mitigation measures would be required to safeguard and enhance its biodiversity interest.</p>
Landscape	<p>A significant proportion of the LDU coverage (over 50%, mainly in the south) is identified as being in poor overall condition. Around a third of the area (in the north of the location) is categorised as good. This suggests that the landscape character needs to be conserved in the northern section, and strengthened in the southern section. The poorer condition of the southern section may indicate localised areas of lower vulnerability in landscape terms, however, this should be confirmed with more detailed landscape sensitivity analysis, supported by fieldwork.</p> <p>Location B1 is entirely within the Green Belt.</p> <p>The Green Belt Review of the District identified Kingswood Lakeside sites as being in poor condition. It was also identified as having vestiges of the cultural pattern as opposed to being in a declining state. It assessed a number of sites in this area as having moderate visual impact. The land south of Heath Hayes was assessed as being able to accommodate some development, provided that mitigation measures were put in place to create new landscape frameworks to aid their assimilation, however the quantum of potential development is not defined.</p>	<p>Further detailed landscape sensitivity assessment would be needed to determine the integrity and sensitivity of the landscape of this location and its potential to accommodate development without significant adverse effects.</p>
Open space	<p>There are a number of defined open space sites within this location, including Heath Hayes Park and allotments, a sports ground, several semi-natural green spaces and green links.</p> <p>South Cannock and parts of Norton Canes</p>	<p>Additional public open space would be needed to ensure that quantity standards are maintained, and that more households did not fall into areas of deficiency for access</p>

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	have both been identified as having deficiencies in access to parks and semi-natural spaces, so development would need to ensure that accessibility issues were not exacerbated.	to parks and semi-natural green spaces.
Soils	Location B1 has agricultural land classified as Grade 3, which has the potential to be best and most versatile. It is not known whether there are any contaminated land issues in this location.	Detailed surveys would need to be undertaken to determine the quality of the agricultural land. If it is found to be best and most versatile land, then this development would represent a significant breach of environmental capacity.
Historic environment	<p>There is a Grade II* listed building (Church of St James) on the edge of Norton Canes, adjacent to the site boundary, and a Grade II listed building (New Hall Farmhouse) adjacent to the site in the north. Implications for the settings of these assets would need to be assessed.</p> <p>There are a number of Historic Environment Records, mostly relating to historic farmsteads, or to the minerals working and railway links.</p> <p>Of the four Historic Environment Character Areas which intersect Location B1, CHECZ 14 and 16, which cover the majority of the location, have been given a score of '2' relating to sensitivity to change, indicating that medium to large scale development is likely to have a moderate impact on the historic environment character of the zone. This relates to impact upon the historic assets, surviving historic landscape character and potential for below ground archaeological remains, associated with the farmsteads, to survive.</p> <p>CHECZ 13 and 12, in the east of Location B1, have a score of '1' relating to sensitivity to change, indicating that the historic environment of the zone could accommodate medium to large scale development (however, specific HEAs may suffer adverse effects).</p>	Further detailed assessment would need to be undertaken to determine the potential for significant effects on designated historic assets, and undesignated assets, together with the historic landscape character.
Minerals	Location B1 has the potential to be included within a Mineral Safeguarding Area or Mineral Consultation Area, for Fire Clay or Brick Clay on the basis of recommendations in the BGS report. The location is within a	Consultation with Staffordshire County Council is required to determine the likelihood of Location B being included within a Mineral

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	Coal Resource Area. A landfill site is located to the east of the site – possibly at site of a former minerals site.	Safeguarding Area or a Mineral Consultation Area. Consultation with the Coal Authority to determine potential to extract coal resource prior to development.

- 4.18 It can be seen from the above analysis that there are a number of themes where development at Location B1 could give rise to environmental capacity issues. Only one has been identified as being 'red' (i.e. at significant risk of being breached) and that is with respect to air quality.
- 4.19 Ten themes are identified as 'amber' (i.e. at some risk of being breached or significantly eroded). There are sufficient questions within the capacity notes for each theme to suggest that, either alone or in combination, development at Location B1 could give rise to significant capacity issues. This is not to say that these issues are insurmountable, since they could be addressed through investment (e.g. open spaces) or through design and management (e.g. landscape character). However, significant time-lags to development may occur, due to the need to ensure that mitigation measures are in place before development goes forward.

## Location B2: Heath Hayes East Extension

- 4.20 This location lies within Cannock Chase District, extending east of Heath Hayes across existing agricultural land.

**Table 4.4: Environmental Capacity of Location B –Cannock – Heath Hayes Extension**

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
Carbon emissions	This location is in close proximity to Cannock, a major settlement, which offers a range of jobs, services and facilities which should preclude the need to travel long distances. It is located in close proximity to LSOAs that have been identified as having district heating potential. It is also reasonably well located with respect to rail services at Cannock.  It is located reasonably close to junction T7 on the M6 Toll, and therefore longer distance travel may be undertaken by car (e.g. commuting to Birmingham).	None required beyond those already included in Draft Local Plan policy.
Air quality	This location is relatively close to the A5 trunk road, and therefore near to the only Air Quality Management Area in the District, and to a further area which has been subject to a Detailed Assessment for NO <sub>2</sub> levels. Any development in this area has potential to exacerbate existing air quality issues.	Implementation of the actions set out in the Cannock Chase Council Air Quality Action Plan  Transport and air quality assessment for the development location.

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
Water quality	The South Staffordshire Water Cycle Study identifies Cannock Waste Water Treatment Works as being at risk of not having sufficient capacity to cope with additional development without additional investment	Enter into discussions with the Environment Agency and Severn Trent Water to determine the extent and feasibility of investment in waste water treatment works to accommodate additional development without breaching water quality targets.
Water supply	The South Staffordshire Water Cycle Study notes that there may not be sufficient water resources to accommodate development above that currently included in the Draft Local Plan.	Enter into discussions with the Environment Agency, Severn Trent Water and South Staffordshire Water to determine the extent to which additional development can be accommodated without further demand management measures or investment in new sources of supply.
Flood risk	The area is not within a current flood risk zone, and is not identified as a higher risk area within the Phase 2 SWMP report for Cannock. However, implications for additional run off and additional load on the waste water network would need to be considered.	Incorporate SuDS into new development to ensure that run-off is managed so that the risk of flooding is not exacerbated elsewhere.  Remodel flood risk effects of any potential new development.
Biodiversity	This location is within 15km of the Cannock Chase SAC (approximately 2.5km), which suggests that developer contributions would be sought to mitigate against the impacts of additional pressures on the SAC. Depending on the size of the development, additional open space may need to be provided, and Appropriate Assessment may be needed.  This location is adjacent to the Chasewater and the Southern Staffordshire Coalfield Heaths SSSI, which is currently in 'unfavourable recovering' condition. It is also approximately 2.9km from the Cannock Extension Canal SAC.  Location B2 contains a number of Provisional Sites of Biological Importance.  The location is within the Cannock Chase EAP which has lowland heathland priority habitat.	Mitigation measures would need to be taken to remediate against impact on the Cannock Chase SAC, as set out in the Cannock Chase Visitor Impacts Mitigation Report, 2012.  A detailed ecological assessment would be required to determine the impacts upon the neighbouring SSSI and the Cannock Extension Canal SAC, existing biodiversity of this location, its status and condition, and its potential in order to inform what mitigation measures would be required to safeguard and enhance its biodiversity interest.
Landscape	The LDUs in the northern part of this location are categorised as 'Moderate' and	Further detailed landscape sensitivity assessment would

Environmental theme	Capacity issues	Possible mitigation
	<p>the southern part are categorised at 'Good'. This suggests that the landscape character needs to be conserved in the south, and strengthened in the north, and that the location may be sensitive in landscape terms. However, this should be confirmed with more detailed landscape sensitivity analysis, supported by fieldwork.</p> <p>The location is almost entirely within the Green Belt. Within the Green Belt Review (2010) the land East of Wimblebury Road was assessed as potentially being able to accommodate an urban extension to Heath Hayes.</p>	<p>be needed to determine the integrity and sensitivity of the landscape of this location and its potential to accommodate development without significant adverse effects.</p>
Open space	<p>In terms of existing open space there is one semi-natural green space within this location (with limited access).</p> <p>South Cannock and parts of Norton Canes have both been identified as having deficiencies in access to parks and semi-natural spaces, so development would need to ensure that accessibility issues were not exacerbated.</p>	<p>Additional public open space would be needed to ensure that quantity standards are maintained, and that more households did not fall into areas of deficiency for access to parks and semi-natural green spaces.</p>
Soils	<p>This location does not contain any agricultural land classified as Grade 3.</p> <p>It is not known whether there are any contaminated land issues in this location.</p>	
Historic environment	<p>This location does not contain any designated historic environment assets.</p> <p>There are a small number of HER records within the location, relating to Coopers Coppice, and Cannock Chase Colliery and associated railway.</p> <p>There are two Historic Environment Character Areas which intersect the location, HECZ9 (in the north of the location) has a score of '2' relating to sensitivity to change, indicating that medium to large scale development is likely to have a moderate impact on the historic environment character of the zone; and HECZ12 (in the south) has a score of '1', indicating that the historic environment of the zone could accommodate medium to large scale development (however, specific HEAs may suffer adverse effects).</p>	<p>Further detailed assessment would need to be undertaken to determine the potential for significant effects on undesignated assets, together with the historic landscape character.</p>
Minerals	Location B2 has the potential to be included	Consultation with

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	within a Mineral Safeguarding Area or Mineral Consultation Area, for Fire Clay on the basis of recommendations in the BGS report. The location is within a Coal Resource Area.	Staffordshire County Council is required to determine the likelihood of Location B2 being included within a Mineral Safeguarding Area or a Mineral Consultation Area. Consultation with the Coal Authority to determine potential to extract coal resource prior to development.

- 4.21 It can be seen from the above analysis that there are a number of themes where development at Location B2 could give rise to environmental capacity issues. Only one has been identified as being 'red' (i.e. at significant risk of being breached) and that is with respect to air quality.
- 4.22 Eight themes are identified as 'amber' (i.e. at some risk of being breached or significantly eroded), and two themes (Soils and Carbon Emissions) identified as 'green'. There are sufficient questions within the capacity notes for each theme to suggest that, either alone or in combination, development at Location B2 could give rise to significant capacity issues. This is not to say that these issues are insurmountable, since they could be addressed through investment (e.g. open spaces) or through design and management (e.g. landscape character). However, significant time-lags to development may occur, due to the need to ensure that mitigation measures are in place before development goes forward.

## Location C: Rugeley Options

- 4.23 Location C is comprised of four locations on the outskirts of Rugeley. Location C1, to the north of Rugeley Trent Valley railway station is within Lichfield District; Locations C2 and C3 are both within Cannock Chase District, to the south of Brereton and to the south of Etchinghill respectively. Location C4 is largely within Stafford Borough to the north-west of Rugeley
- 4.24 Data gathering for Locations C1 and C4 has not been as comprehensive as for the other areas, as these lie outside of Cannock Chase District.
- 4.25 Any development at this site would require cross-boundary working, and an assessment of environmental capacity within Lichfield District, which has not been undertaken as part of this assessment, particularly as some constraints will be exacerbated by developments within Lichfield which contribute to the District's own housing needs. For example, pressure on the Burntwood Wastewater Treatment Works will come from development in Lichfield DC as well as any development to meet Cannock Chase DC's housing needs.

**Table 4.5: Environmental Capacity of Location C - Rugeley Options**

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
Carbon emissions	These four locations are in close proximity to Rugeley, a major settlement, which offers a range of jobs, services and facilities which should preclude the need to travel long distances. All four locations are adjacent to LSOAs identified as having district heating potential.	None required beyond those already included in Draft Local Plan policy.

Environmental theme	Capacity issues	Possible mitigation
	C1 and C3 are well located with respect to rail services.	
Air quality	C3 is located approximately 1,500m from the Cannock Chase SAC, where air quality (particularly from NOx deposition) is identified as a key issue. There may be potential for development at C3 to increase traffic along the A460 (which runs within 200m of the SAC), and therefore detailed air quality modelling would be required.	Detailed air quality modelling would be required to assess the impact upon Cannock Chase SAC.
	There may be potential for the other three options to increase traffic along the A460 (which runs within 200m of the SAC), although not to the extent of C3, and therefore detailed air quality modelling may be required.	
Water quality	The sites assessed in and around Rugeley for the Water Cycle Study were categorised as 'red' for water quality, indicating that more significant mitigation measures are required in order to address the current 'poor' quality status of the River Trent.  The River Trent at Rugeley has a current overall quality status of 'poor'.	Discussions with the Environment Agency and Severn Trent Water would be needed to assess mitigation measures required.
Water supply	The South Staffordshire Water Cycle Study notes that there may not be sufficient water resources to accommodate development above that currently included in the Draft Local Plan.	Enter into discussions with the Environment Agency, Severn Trent Water and South Staffordshire Water to determine the extent to which additional development can be accommodated without further demand management measures or investment in new sources of supply.
Flood risk	A significant proportion of C1 is within Flood Zone 3a (where there is a high probability of flooding). When Zone 3a is adjusted for potential impacts of climate change, the majority of the location is within this zone.	Significant mitigation is likely to be needed for flood risk in C1, and some mitigation measures may be necessary for C2 and C3.
	Although C2 is not within a flood zone, it is intersected by a minor river, which has been subject to a number of recent historical flood events.  C3 contains a number of historic flood event, caused by issues with artificial drainage. The southern part of this location contains Flood Zone 3a.	

Environmental theme	Capacity issues	Possible mitigation
	No significant flood risk issues have been identified for C4.	
Biodiversity	<p>Although all four locations are within 15km of Cannock Chase SAC, location C3 is located particularly close (approximately 1.5km). As well as increasing recreational pressure on the SAC, development here may have particular impacts in terms of air quality. Air quality is identified as a key issue for the condition of the SAC, and there may be potential for development at this location to increase traffic along the A460 (which runs within 200m of the SAC), and therefore detailed air quality monitoring would be required.</p> <p>Location C3 is also approximately 1.5km from the Cannock Chase SSSI, which is largely in unfavourable recovering condition.</p> <p>All four locations are within 15km of the Cannock Chase SAC, and therefore have potential to increase recreational pressure on the SAC. Developer contributions would be sought to mitigate against the impacts of additional pressures on the SAC. Depending on the size of the development, additional open space may need to be provided, and Appropriate Assessment may be needed.</p> <p>C4 is less than 500m from the Stafford Brook SSSI (which is partly in favourable condition, and partly in unfavourable recovering), and close to two provisional SBIs.</p> <p>C1 is within the Central Farmland EAP, and C2, C3 and C4 are predominantly within Cannock Chase EAP, with a priority habitat of lowland heathland.</p>	<p>Detailed air quality monitoring would be required to assess the impact upon Cannock Chase SAC.</p> <p>Mitigation measures would need to be taken to remediate against impact on the Cannock Chase SAC, as set out in the Cannock Chase Visitor Impacts Mitigation Report, 2012.</p> <p>A detailed ecological assessment would be required to determine the impacts upon the nearby Cannock Chase SAC and the nearby SSSIs. Assessment would also need to include an understanding of existing biodiversity of these locations, its status and condition, and its potential in order to inform what mitigation measures would be required to safeguard and enhance its biodiversity interest.</p>
Landscape	<p>Locations C2 and C3 are adjacent to Cannock Chase AONB. C4 is approximately 200m from the AONB, and C1 some 1600m from the AONB.</p> <p>In terms of the overall condition of the Landscape Description Units (LDUs), C2 is entirely categorised as 'good', and about half of C3 is categorised as 'good'. A significant proportion of C3 is categorised as 'poor' at Slitting Mill, near the railway line.</p>	<p>As these locations are in very close proximity to the AONB, the implications of development upon the AONB would need to be assessed.</p> <p>Further detailed landscape sensitivity assessment would be needed to determine the integrity and sensitivity of the landscape of this location and</p>

<b>Environmental theme</b>	<b>Capacity issues</b>	<b>Possible mitigation</b>
	<p>C4 is predominantly in 'moderate' condition. C1 is only partially covered by the landscape assessment, the southern part of this location is in 'good' condition.</p> <p>Locations C2 and C3 are within the Green Belt in Cannock District. C4 is within the Green Belt in Stafford Borough. C1 is not within the Green Belt.</p> <p>Based on the Green Belt Review development at site C3 would have moderate visual impact.</p>	<p>its potential to accommodate development without significant adverse effects.</p>
Open space	<p>There are key deficiencies in the whole of Rugeley/Brereton for access to natural green space, and particularly to the north west of Rugeley for access to semi-natural green space. This has implications for all four options within this location.</p> <p>It is not possible to fully assess C1 and C4 for open space provision, being outside of the District, however the implications for the existing deficiencies in accessibility to open spaces for Rugeley will effect development on its outskirts.</p>	<p>Additional public open space would be needed to ensure that quantity standards were maintained, and that more households did not fall into areas of deficiency for access to parks and semi-natural green spaces.</p>
Soils	<p>Locations C1, C3 and C4 all contain significant areas of Grade 3 agricultural land, which has the potential to be best and most versatile. It is not known whether there are any contaminated land issues in this location.</p> <p>Location C2 is categorised as Grade 4 or Urban.</p>	<p>Detailed surveys would need to be undertaken to determine the quality of the agricultural land. If it is found to be best and most versatile land, then this development would represent a significant breach of environmental capacity.</p>
Historic environment	<p>Location C1 is centred upon Parchfield House, a Grade II listed building. It is also in close proximity to the Trent and Mersey Canal Conservation Area. The southern part of this location contains a Heritage Environment Record for the Water Meadow, north-west of Colton Mill.</p> <p>Location C2 is adjacent to the Brereton Conservation Area, which contains one Grade II* listed building and five Grade II listed buildings. This location contains a number of Historic Environment Records, largely relating to former minerals works and associated rail transport. Much of this area is covered HECZ8, where development is likely to have a moderate impact upon the historic environment, particularly upon the legibility of the field systems.</p>	<p>There are a significant number of heritage assets through the four locations. Further detailed assessment would need to be undertaken to determine the potential for significant effects on designated historic assets, and undesignated assets, together with the historic landscape character.</p>

Environmental theme	Capacity issues	Possible mitigation
	<p>A very significant proportion of location C3 is covered by a Historic Environment Record for Hagley Park. Much of this area is covered by HECZ4, where medium to large scale development would have at least a moderate impact upon those surviving landscape park features. It also contains part of the Historic Urban Character Area of the 'north western suburbs', from the Rugeley EUS.</p> <p>The southern part of location C4 contains a Historic Environment Record for Barrows, Bower Lane, Etchinghill.</p>	
Minerals	Location C1, C2, C3 and C4 all have the potential to be included within a Mineral Safeguarding Area or Mineral Consultation Area for either superficial sand and gravel or bedrock sand (or both) on the basis of recommendations in the BGS report.	Consultation with Staffordshire County Council is required to determine the likelihood of the four locations being included within a Mineral Safeguarding Area or a Mineral Consultation Area.

- 4.26 As shown in the table above, the four locations assessed as Location C, have considerable environmental issues which may arise if development were to take place at these locations. One indicator (water quality) has been assessed as 'red' for all four locations. Location C3 has also been assessed as 'red' for air quality and biodiversity with respect to its proximity to Cannock Chase SAC, given that the SAC is being affected by air pollution. Of the four locations, C3 is most likely to lead to increased traffic along the A460, which runs through the site. Location C1 was also assessed as 'red' for flood risk. Only one theme was assessed as 'green' being carbon emissions, and also for Location C4 with respect to flood risk. The remainder were all assessed as 'amber', suggesting that capacity constraints could apply without mitigation.
- 4.27 Given the amber or red status of the majority of the themes, there is significant potential for environmental capacity to be breached across a number of themes, were development to go ahead in these areas. This is not to say that these issues are insurmountable, since they could be addressed through investment (e.g. extraction of minerals prior to sterilisation of assets) or through design and management (e.g. historic environment character). However, significant time-lags to development may occur, due to the need to ensure that mitigation measures are in place before development goes forward.

### Identifying 'tipping points'

- 4.28 The findings above clearly illustrate that, for nearly all environmental themes and for all development locations, there are potential capacity issues. Most have been identified as 'amber', which suggests that environmental capacity is 'at some risk of being breached or significantly eroded'.
- 4.29 Cannock Chase District Council wish to know how much more development could be accommodated before 'tipping-points' are reached. Another way of phrasing this question so to ask, at what point will the scale and location of development become unacceptable?
- 4.30 As described in Chapter 1 of this report, acceptability (or 'tipping points') can be judged with reference to established targets and standards. Where standards and targets do not exist, qualitative judgements are required. In practice capacity cannot be honed down to a single

quantum figure (e.g. the number of dwellings). The design of development, in terms of its aesthetics, its provision for open space, biodiversity and sustainable drainage, its use of materials, and its efficiency of use of energy and water once occupied, can all influence how much development can be accommodated. Similarly, investment in water and renewable energy infrastructure can help to increase capacity.

- 4.31 **Table 4.6** provides an indication of where the tipping point might be for accommodating development for each environmental theme.

**Table 4.6: Potential 'tipping points' for environmental themes**

Environmental theme	Potential tipping point in Cannock Chase District
Carbon emissions	<p>Climate change is a global issue that requires an international response. However, in order for global carbon emissions to be reduced significantly, action is required at all levels, including the local. Some aspects of reducing carbon emissions lie outside the control of Cannock Chase, such as national energy policy. The Government is also keen to ensure that national standards apply to such matters as building regulations, which are used to determine energy efficiency. Similarly, Cannock Chase does not exist in isolation, and people will choose to live in the District but work elsewhere – people can be encouraged to live near to where they work but they cannot be forced to do so, and if they want to commute by a fuel-hungry car they will. All of these influences that are outside of the control of Cannock Chase make identifying a tipping point that is specific to Cannock Chase virtually impossible.</p> <p>It could be argued that a tipping point for Cannock Chase is where the trend in reductions in its carbon emissions do not meet nationally agreed targets. For those aspects that the District Council has influence over, this is most likely be achieved by setting high standards for energy efficiency in its own building stock, encouraging high standards of energy efficiency in private building stock, encouraging renewable energy generation to be incorporated into existing and new buildings, making best use of existing heat and power, (e.g. through district heating systems), providing a positive planning stance towards larger scale renewable energy projects, and reducing the need to travel by car, and the attractiveness of the car over other modes of transport.</p>
Air quality	<p>There are two tipping points for air quality that can relatively easily be identified for Cannock Chase. The first of these concerns human health, and is where pollutants in the air exceed the targets in the Air Quality Standards Regulations 2010. In this respect, the designation of an Air Quality Management Area, around the A5 Watling Street near Bridgtown, shows that the District has already breached the targets in this location, which could be considered as having passed the tipping point. There are a number of other developments that have been identified as having a potential effect on air quality – if any of these result in air quality targets not being met, then further tipping points will have been reached.</p> <p>The second tipping point is with respect to the impact of air quality on biodiversity. There is already evidence that Cannock Chase SAC and associated heathlands are being impacted upon by air pollution from traffic. The general level of nitrogen deposition already exceeds the maximum critical load for dry heath and the minimum, critical load for wet heath. Any further increase in nitrogen deposition is therefore going to further contribute to an adverse effect upon the integrity of the interest features. This suggests a tipping point has already been reached.</p>
Water quality	<p>The situation regarding water quality is a complex one. Pollution to water can occur from a number of sources, some of which are outside the control of the planning system, such as agriculture. From the research undertaken, there are clearly challenges regarding the ability to accommodate additional development in Cannock Chase without causing significant harm to water quality. Only one river in the study area is classified as being in good condition, with the others either in moderate or poor condition. The Water Cycle Study looked at a number of potential residential and employment development sites and the majority of these would require mitigation in order to protect the water environment. Around the existing settlements, new</p>

Environmental theme	Potential tipping point in Cannock Chase District
	<p>potential development in and around Rugeley is assessed as 'Red', in and around Cannock and Prospect Village and Cannock Wood are assessed as 'Amber' and only Norton Canes assessed as 'Green'.</p> <p>Although this gives cause for concern, it does not mean that a tipping point has been reached (i.e. where the effects of development on water quality breach quality standards and therefore becomes unacceptable). It may be possible to invest in new technology, upgraded WwTWs, and more sustainable forms of water management to accommodate additional demands. This could affect the phasing of development. Ultimately, there may be a limit to how much development can take place where the investment in waste water treatment either becomes too expensive or simply cannot be achieved, but this is a limit that can only be established through detailed study undertaken with the cooperation of the water companies.</p>
Water supply	<p>The situation for water supply is similar to that of water quality, although not as acute. Again, identifying a simple tipping point is not straightforward because it depends upon a number of factors, such as the efficiency of water used in development, the extent to water leakage in the current water supply system is addressed, investment in the water supply resources and network, and development elsewhere in areas served by the water companies.</p> <p>There is little doubt that water supply is an issue – the Water Cycle Study found that there is insufficient resource within the supply area to meet a development scenario of 30% greater than that proposed in the RSS. Communications with the water companies and the Environment Agency suggest that through a combination of efficient management of water through the water supply network, and improved water efficiency, the accommodation of higher levels of development is not an insurmountable issue.</p> <p>Therefore, the ability to accommodate significant increases in development beyond that already planned (in order to identify a tipping point) may be more an issue of phasing of development, securing funding for improved efficiency and water supply network enhancements, and possibly the ability of local authorities to set higher water efficiency standards than those required under the Building Regulations.</p>
Flood risk	<p>At face value, flood risk is a relatively straightforward theme with respect to identifying tipping points in the sense that either development will be in defined flood risk zones or it will not. The reality is not as simple, because account has to be taken of flood defences, the scope for incorporating flood management measures and sustainable drainage techniques within development, and the extent to which new development could increase the risk of flooding elsewhere. Two particular issues include urban run-off from hard surfaces, and the capacity of the waste water network to cope with extreme weather events (i.e. flood risk may not be from rivers over-flowing, but from over-flowing sewer systems during storm rainfall events). Unlike some of the themes covered by this research which can almost pass by without their being noticed, the effects of flood events are rapid and dramatic.</p> <p>It is clear that parts of Cannock Chase District are vulnerable to flooding and some areas have experienced flooding in the past. Cannock is now protected by a Flood Alleviation Scheme against a 1 in 100 year event (1% chance of occurring), but this does not reduce the risk of flooding to nil. The Water Cycle Study found that all potential development sites covered by that study had some risk of flooding, and all but two of the 20 potential employment sites were also at risk. For development in and around the existing urban</p>

Environmental theme	Potential tipping point in Cannock Chase District
	<p>areas, both Cannock and Rugeley were classified as 'Red', and Norton Canes and Prospect Village and Cannock Wood as 'Amber' with respect to flood risk.</p> <p>Flood risk is therefore a very real constraint on development in the District, but, again, it is not possible to identify a single tipping-point. The flood risk maps, the strategic flood risk assessments and the work undertaken for the Water Cycle Study, all give an indication of those locations that are more at risk of flooding than others. However, should it become necessary to develop locations where the risk of flooding is greater than that set out in national policy for the intended use and against the advice on the Environment Agency, a tipping point could be considered to have been reached.</p>
Biodiversity	<p>Internationally designated biodiversity sites in Cannock Chase are at risk from damage from recreation, air pollution, water pollution and water abstraction. The impacts from recreation and possibly pollution from traffic on Cannock Chase SAC may already have reached a tipping point. Less than 5% of SSSIs in Cannock Chase District are currently in favourable condition, although just over 92% are in unfavourable recovering condition. There are no clear data to tell with confidence how much the wider biodiversity interest of the District is being affected by development. However, the data for SSSIs and the SACs suggests it is highly likely to be under similar pressure.</p> <p>Development itself is unlikely to lead to direct impacts on designated sites, but it can harm the overall biodiversity resource if not sensitively designed with biodiversity objectives accommodated. Indirect effects from recreational visits, increased traffic, increased water usage, etc., can arise from activities associated with development. These are more difficult to predict than direct impacts but can be significant. The greater the amount of development, and the closer it is to designated sites, the higher the risk of significant damage.</p> <p>In order to mitigate against such risks, management plans are required that are designed to reduce the impacts of recreation and traffic on the sensitive sites, whether or not there is increased development. This may include the the creation of accessible alternative areas of natural greenspace, although this may be difficult to deliver in a District with already competing land uses. Where there are impacts from water development, these are regulated through consenting mechanisms by the Environment Agency.</p> <p>Without the introduction of successful avoidance and mitigation measures, the tipping point for biodiversity may have already been reached with respect to Cannock Chase SAC arising from recreational and air pollution impacts.</p>
Landscape	<p>Outside of the principal urban areas and transport corridors, the landscape of the District comprises a rich and diverse mosaic of landscape types, features and habitats, including heathlands and areas of afforestation/plantations, plus small sections of river valleys such as the Sow and Trent. A large part of the District's landscape is recognised for its scenic quality through national landscape designation – the Cannock Chase AONB. Other, non-designated landscapes in the District are also of value and interest not least for recreation and ecology, and as part of the setting they provide to the main towns. These landscapes also include a rich post-industrial legacy of colliery restoration, reclamation of spoil sites and restoration of former coalfields and attendant 20<sup>th</sup> century creation of new landscapes (e.g. areas such as around Newlands, Cannock).</p> <p>Although there is rich landscape heritage, it is clear from the review of data on the landscape of Cannock Chase that its landscape is already highly disturbed and only 38% of the Landscape Description Units covering the</p>

Environmental theme	Potential tipping point in Cannock Chase District
	<p>District have been categorised as being in 'good' condition, and Cannock Chase AONB is not immune from this trend. The District exhibits many of the characteristics common to those parts of the country that lie at the edge of major urban conurbations.</p> <p>Identifying a tipping point with respect to landscape is fraught with difficulty. Given that such a large proportion of the Landscape Description Units are in less than good condition, it could be argued that this tipping point has already been reached. However, development inevitably changes the character of a landscape. In some areas, development can form an integral component of landscape character. In others, development can take on a character of its own that becomes valued over time. However, in too many instances, development is delivered that bears no relationship with the landscapes within which it is built.</p> <p>There is little doubt that the landscape of Cannock Chase is under strain. Additional development, if poorly located and designed, is only likely to increase the sense of erosion and general urbanisation. Whether or not this represents an actual tipping point, though, would require further more detailed research, including the views of those who live and work in the District.</p>
Open space	<p>Although quantity standards are currently being met for parks and gardens, semi-natural sites and amenity green space, they are not being met for provision for young people, allotments and churchyards/cemeteries. Provision for all types of open space will need to increase in line with population for standards to be maintained, or for standards to be met where there is currently a shortfall.</p> <p>Accessibility standards are not being met for all types of space, although some types can substitute for others, meaning that most places are within accessible distances of at least one form of open space. However, there are limited opportunities for the creation of new large-scale open space, while at the same time there is a need for suitable alternative natural green space sites to be provided to mitigate for recreational pressure on Cannock Chase SAC.</p> <p>Development can sometimes offer the mechanism by which new open space can be created and funds for its management secured. Smaller scale, local open space, such as provision for young people should be relatively easily achievable. However, the competing pressures on land within the relatively small District of Cannock Chase mean that opportunities for creating large scale alternative greenspace is a considerable challenge.</p> <p>This is not to say that it cannot be done, but that it will be difficult, and with each additional increment of development, the tipping point is more likely to be reached. The tipping point will depend upon management of recreational impacts and the ability to deliver alternative greenspace of sufficient attraction to encourage residents to use it rather than the SAC.</p>
Soils	<p>Once developed upon, soils are lost to other uses for good. In the case of Cannock Chase, there is very little in the way of best and most versatile agricultural land that could act as a constraint on development. However there are areas of Grade 3 agricultural land that could have the potential to be classified as best and most versatile agricultural land. Similarly, although there is the potential for contaminated sites, these are unlikely to preclude development.</p> <p>Although the loss of undeveloped land to housing and other uses would be</p>

Environmental theme	Potential tipping point in Cannock Chase District
	<p>permanent, it does not appear that there is a particular tipping point with respect to soils that makes Cannock Chase out from any other District.</p>
<p>Historic environment</p>	<p>It is clear that Cannock Chase has considerable heritage interest, some nationally designated and some of local value. However, it is not possible to quantify the volume of housing development that the District could accommodate before a tipping point is reached. Further assessment of the Character Areas identified within the Historic Environment Character Assessment and the Extensive Urban Surveys may enable an indication to be given of the quantum of development that may be acceptable within each area.</p> <p>It should be noted that the existence of a heritage asset does not preclude development. There are many examples of heritage assets at risk being successfully brought back into use through new development and regeneration schemes. On the other hand, insensitive development can significantly damage the setting of a heritage asset even though that asset is not directly impacted upon by the development. In some instances, it is acceptable to record archaeological sites before they are lost to development – in others preservation <i>in situ</i> is the preferred approach.</p> <p>It is therefore difficult to be prescriptive about tipping points with respect to the historic environment, since the appropriate approach in each instance needs to be determined through detailed study of particular heritage assets and development proposals.</p>
<p>Minerals</p>	<p>With the exception of Cannock Chase forest, much of the District has mineral resources, including fireclay, bedrock sand, and superficial sand and gravel. The whole of the southern half of the District is a Coal Resource Area. However, Mineral Consultation Areas and Mineral Safeguarding Areas have yet to be defined by Staffordshire County Council.</p> <p>Unless a mineral resource is extracted before a location is developed, that mineral resource will become sterilised. Whether such sterilisation represents a tipping point or not depends upon the value of the resource concerned, the extent to which it can be viably worked, its strategic importance, and the existence of sufficient reserves elsewhere. This is why the planning system provides for Mineral Consultation Areas and Safeguarding Areas, in order to prevent such minerals being sterilised unnecessarily. It is for this process to determine when a tipping point (i.e. the unacceptable sterilisation of mineral resources) is likely to be met.</p>

## 5 Conclusions and Recommendations

- 5.1 Environmental capacity is a relative concept that is difficult to define and measure. The Cannock Chase environmental capacity study has sought to provide an objective assessment of the capacity of the District using quantitative and qualitative data, with particular reference to standards and targets where available.
- 5.2 It should be noted that this was undertaken as a desk-based study. Although judgements on capacity have been informed by available data and studies, they can only provide an indication of potential environmental capacity issues, and should not be considered to be definitive.
- 5.3 Nonetheless, it is evident from the research and analysis undertaken that Cannock Chase is characterised by a large number and wide range of environmental assets and constraints. Significant parts of the District are covered by environmental designations, such as AONB, SAC, and SSSIs, and there are significant areas at risk of flooding. Development in any such locations could be considered to have the potential to breach their environmental capacity. Cannock Chase SAC, in particular, is under pressure from urban related issues, especially recreation and pollution from traffic. In this respect, a tipping point may already have been reached as mitigation is already needed. Additional development within the vicinity of the SAC is only likely to make this need more acute, particularly given that there is a statutory requirement to ensure the ecological integrity of the SAC.
- 5.4 There are also issues with respect to water quality, water supply and air quality. To address such issues, a combination of demand management and investment would be required to ensure that environmental capacity is not breached.
- 5.5 Most of the District outside Cannock Chase AONB has the potential for minerals, which should not be sterilised by development where possible as this would represent the loss of a valuable resource.
- 5.6 There is considerable heritage interest in the District, the integrity of which could be put at risk by insensitive development.
- 5.7 Although not technically an environmental capacity issue, virtually all the District that is not already developed is designated as Green Belt, so additional development outside of existing urban areas would require the release of Green Belt land. The loss of Green Belt to development could have an impact on landscape character.
- 5.8 The above constraints were brought out in the assessment of potential development locations suggested by Cannock Chase District Council within and adjacent to the District. None were without potential environmental capacity issues, although some, such as Location C1 west of Rugeley, are more likely to give rise to capacity issues than others.
- 5.9 Despite this, the two growth scenarios that Cannock Chase District Council requested should be covered by the study would result in, at the most, development of less than 50 hectares of land, representing less than 1% of the total area of the District. This scale of development is not significant when compared to the District as a whole, and with careful planning, design and management could potentially be accommodated without environmental capacity being breached. Furthermore, the Draft Local Plan includes a number of policies, such as Policy CP16, which set clear criteria about the standards that are expected of development in order to minimise its environmental impact.
- 5.10 However, some of these standards may take time to implement (for example, the costs of implementing the Code for Sustainable Homes improvements, the lead-in times and decision-making process for investment in water infrastructure, the availability of materials/technologies being available to achieve them may cause delays to development), and measures to mitigate against potential environmental damage may also take time to put in place (e.g. the creation of alternative areas of greenspace). Therefore the overall time-lag for any development, particularly for development over and above that already accounted for within the Local Plan, may be subject

to significant delay, and would provide justification for a phased approach to delivery. In addition, the more mitigation that is required, the more this places a financial burden on development. In some instances, the tipping point in terms of financial viability of development schemes may be reached before specific environmental limits.

- 5.11 More detailed analysis would be required to determine where, in what form, and what conditions should apply to such development. This would require primary evidence gathering at the local level, and engagement with key stakeholders, such as the Environment Agency and the water companies to determine the investment required in water supply and waste water treatment to accommodate additional development as well water efficiency standards. Natural England would need to be consulted upon potential impacts on both internationally and nationally designated nature conservation sites, and English Heritage with respect to the historic environment. Discussions with Staffordshire County Council would need to be undertaken to determine the extent to which the mineral resources of the District could be developed without the risk of sterilisation.
- 5.12 For some themes, such as water quality, water supply, and air quality, modelling of potential impacts may be required. For others, such as landscape sensitivity, biodiversity and the historic environment, site-based surveys would be needed to understand the capacity of particular locations to accommodate development without unacceptable impacts.
- 5.13 Finally, it needs to be borne in mind that the concept of environmental capacity is not simply a technical matter. Many aspects of environmental capacity are about value judgements, and particular views will depend upon the circumstances of the individual or organisation concerned. Environmental campaign groups are much more likely to consider the environmental capacity of a location as being breached by development than those more concerned with promoting economic growth. A household in desperate need of a home is more likely to accept development of greenfield land than a homeowner whose view of the greenfield land could be lost to development.
- 5.14 It is the role of the planning system to weigh up the needs and views of different parties, guided by national policy, to ensure that an appropriate balance is met between delivering development that meets social and economic needs whilst ensuring that environmental capacity is respected.

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