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Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

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Summary

This report has been commissioned by the Cannock Chase Special Area of Conservation (SAC) Partnership. It provides the background and evidence base to inform two separate strategies for Cannock Chase: a car-park strategy and a site user strategy. These two strategies set out a means to provide for recreational use at Cannock Chase without compromising the nature conservation interest of Cannock Chase. The report is split into 12 discrete sections that relate to different parts of the evidence base.

Key findings relevant to both strategies

AONB strategic and contextual information

Visitor infrastructure is currently struggling to meet the practical needs of increased visitor volumes. A range of strategy and plans relating to the AONB include the AONB Management Plan, the Visitor Management Strategy, Dementia Friendly Strategy and a Landscapes of the Chase report. Measures identified in these documents that are relevant to the car-park strategy and or the site user strategy include:

- Provision of co-ordinated, high quality information, interpretation and educational material;
- Improvements to signage;
- A need for additional infrastructure including more accessible toilets, more benches, more refreshment locations;
- Development of a strategy for managing crime and anti-social behaviour;
- Use of visitor spend to maintain the AONB;
- Organising events away from fragile habitats;
- Training and support for site managers and custodians;
- Development of a traffic management strategy, which will reduce car-use and support more public transport;
- New infrastructure or improvements to existing structures will need to consider views into and from the AONB and will need to ensure a high standard of design.

Impacts of recreation on the SAC

A report from 2012 identified impacts of access to the conservation interest that included:

- Fragmentation of habitats from new desire lines and paths;
- Disturbance to wildlife;
- Trampling, leading to path widening, vegetation wear, erosion and soil compaction;
- Trampling of invertebrate nest sites;
- Damage to tree roots where paths pass close to veteran trees;
- Wild fire;
- Eutrophication (dog fouling);
- Spread of disease (Phytophthora).

These are the key impacts that future strategies need to address. Increases in visitor numbers could lead to increases in these impacts. The 2012 report suggested that visitor

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase management to minimise impacts, using signage, interpretation, press articles, prohibited access and asking that dogs be kept on leads had generally been unsuccessful.

Visitor Economy

Visitor spend is likely to play an important role in supporting many local businesses around the AONB and the growing trend in use is likely to play have a knock-on benefit to the local economy. While up-to-date information is lacking, implications for the strategies are that any recommendations need to be mindful of any impacts to the local economy. Equally, growing pressure on local resources and stretched infrastructure may deter visitors and solutions need to ensure visitors are able to experience Cannock Chase in a sustainable way.

Sensitivity mapping

We generated recreation sensitivity maps that rank areas according to the presence of archaeological and heritage features, topography, habitat and selected bird species. Locations that are mapped as sensitive are those areas with a higher density of heritage features (particularly Scheduled Ancient Monuments); undulating topography, those certain habitats such as bogs or flushes, and areas supporting the selected bird species. While there are some important caveats with the approach, from the maps we can draw the following implications:

- Areas are not uniform in their sensitivity;
- Sensitive areas encompass the SAC and areas beyond the SAC boundary;
- Less sensitive areas include areas towards the periphery of the SAC such as the areas towards Rugeley and the north-west part of the AONB;
- Chase Road is notable in that all access here relates to areas mapped as sensitive to recreation.

Key findings relevant to the site user strategy

Previous reports relating to mitigation measures on the SAC relating to access and new development pressure

Previous reports have identified a range of approaches and provide support for:

- Working directly with different site users (horse riders, cyclists, dog walkers) to establish better communication and liaison;
- Establishing a cycle forum and better information provision for cyclists;
- Developing alternative routes outside SAC for cycling and horse riding outside SAC;
- Facilitating behaviour change for dog walkers through provision of training areas, volunteer groups, reporting of irresponsible dogs, better information provision and wardening;
- Redesign and enhancement of Marquis Drive to focus access away from Brindley Heath;
- Better communication of routes and responsible behaviour for users;
- Community work through a programme of visits and liaison groups to involve local communities more and engender support for management;
- Focus activities, including specialist groups such as orienteering, events outside the SAC heathland and at times when interest less vulnerable;
- Review and rationalise path network and look to divert visitors to selected routes;
- Improve the way-marking.

Visitor Survey Results

A visitor observation survey was undertaken in 2011 and recorded visitor behaviour. Visitor surveys involving face-face interviews with visitors were undertaken in 1981, 2000 and 2010/11. These surveys involved interviews with visitors and counts. A new survey is taking place in 2018 and the results (in 2019) will allow up to date data to underpin the emerging strategies. These different visitor surveys involving interviews are not directly comparable across years. Key findings from the pre2018 surveys include:

- 1.27 million visits to the AONB were estimated in 2000; 1.9 million visitors were estimated from the 2010/11 survey at the surveyed locations only (which only represented a limited proportion of the AONB access points).

Relevant to site user strategy:

- Concern about impacts from recreation were being highlighted in 1981, which specifically mentions trampling, disturbance, dogs and erosion. The current issues are therefore not new;
- Main visitor activities (2010/11 survey) are: walking (62% interviewees); dog walking (45%), mountain biking (18%) and cycling (17%) (note that interviewees were recorded as undertaking multiple activities, hence totals above 100%);
- There has been a marked and sustained increase in cycling over time particularly in mountain biking (e.g. it was the activity with the highest proportion of interviewees in 2010/11 that have recently started using the site);
- Family visits account for a comparatively large proportion of use (both 2010/11 survey and 2000 survey);
- A high proportion of visitors are frequent visitors (e.g. 12% visited daily in 2000);
- From the 2010/11 survey: Abrahams Valley and Spring Slade Lodge were key destinations for horse riders; Birches Valley and Moors Gorse were key destinations for cyclists (with cycling also recorded at other locations including Marquis Drive, Brocton Coppice and Seven Springs);
- Visitor observation surveys provide evidence that, well within the SAC and away from access points, dog owners do not always pick up, people can drop litter and both cyclists and horse riders do not always remain on bridleways/marked routes.

Path audit

A survey of the path network (Statutory/Public Rights of Way and Managed Permissive Paths) by the SAC team is in progress. Currently, only around a third of paths assessed within the SAC have been assessed as in a good state. The audit has revealed around 12% of showed signs of eutrophication and around 22% of paths not being in use, often due to newly created paths providing an alternative route. These results indicate potential for widespread improvements to the path network to improve access but also to help direct visitors and contain impacts.

Stakeholder interviews: key points from different organisations

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

- The Forestry Commission and National Trust have both seen marked increases in visitor numbers, linked to changes in management and infrastructure. In both cases the use is focussed outside the SAC;
- Birches Valley, Shugborough and the Wolseley Centre could continue to be promoted and developed as key visitor hubs and destinations in their own right, all outside the SAC. Birches Valley has a strong orientation towards cycling;
- Growing visitor use on Staffordshire County Council land is a concern and there is a suggestion that numbers are at capacity given the current facilities and resources.
- Marquis Drive is stretched in terms of infrastructure and facilities;
- Stakeholders suggested more and more new paths are being created as cyclists and others use existing deer paths, firebreaks etc. which then become established as routes;
- There is support for more ranger time as the best way to control vandalism, anti-social behaviour and to engage with visitors, however current resources are limited.

Environmental Education

There is a niche for more education work at Cannock Chase, as existing organisations have diminished resources and facilities. There is scope to work directly with other partner organisations and gain from existing material, equipment and expertise. In order for education work to function as mitigation it will be necessary to engage with local communities and communicate messages relating to respecting the environment, the sensitive nature of Cannock Chase and the ways in which behaviour change can help.

Lessons learned elsewhere

- Face-face wardening is a widely used approach, fundamental in other mitigation schemes and there is evidence for it's effectiveness.
- Signs and interpretation are also commonly used however there is relatively little evidence for their effectiveness in ecological terms.
- In order to influence behaviour, messages need to be targeted to visitors' beliefs. Interpretation can cover a range of approaches besides the normal panels and can encompass events, installations, face-face work etc.

Key findings relevant to the car-park strategy

Previous reports relating to mitigation measures on the SAC relating to access and new development pressure

Previous reports have identified a range of approaches and provide support for:

- The production of a long-term strategy for car-parking;
- Rationalising car-parking to reduce the range of parking locations, draw parking to the edges of the SAC and a focus on designated, easily controlled, well-maintained and policed car-parks;
- Lay-bys and the parking along Chase Road being potential locations to close;
- Selected car-parks outside the SAC to be improved and a focus for horse-boxes.

Visitor Survey Results

Key findings include:

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

- Car-use accounts for a high proportion of recreation use (81% in 2000; 85% in 2010/11);
- Strong opposition among visitors to the extension of parking charges, but less opposition if charges are committed to management of Cannock Chase (2000 survey);
- Suggestions that closing Chase Road will mean displacement of access to other parts of the SAC (2010/11 survey) such that closing only the middle section of Chase Road is unlikely to reduce footfall on the SAC, as visitors would most likely park nearby and continue to penetrate the core of the SAC;
- Most visitors (2010/11 survey) came from within the area bounded by Stoke-on-Trent, the north side of Birmingham and Telford and Tamworth. A quarter of all visitors lived within 3.25km and three-quarters within 15.13km. Mountain bikers came furthest (median 11.2 km). These distances are relatively large compared to other sites in the UK and highlight that Cannock Chase is a destination to which people are prepared to travel some distance;
- Counts of parked cars from the 2010/11 survey (18 counts) recorded up to 1,095 cars at any one time around Cannock Chase, reflecting a marked variation in the numbers of people on different days.

Car-park audit: types of parking location and parking capacity

There is a high volume of informal parking locations and small car-parks which allow access to be spread across multiple locations. Just eight locations had more than 50 parking spaces and 94 locations have less than 4 spaces. Such a spread makes it harder to contain parking, engage with visitors or ensure use is focussed on key routes. As such there is scope to rationalise the number of parking locations while having relatively little impact on the overall number of car-park spaces.

Most locations and the highest total capacity are within Staffordshire County Council ownership (number: 74, capacity: 1,197), followed by the Forestry Commission (25, 644).

Car-park audit: parking condition and quality

In total, 52 locations (44% of all parking locations) are formal car-parks and these hold 86% of the parking spaces. The remaining 66% of locations are include lay-bys, gateways, verges and other informal parking areas and these account for 14% of the parking spaces. This means that while most of the parking spaces are in a small number of formal parking locations, there is a wide range of parking opportunities that are scattered and potentially difficult to manage. In particular Staffordshire County Council manage a large number of parking locations, many of which have limited capacity.

Relatively few parking locations had very good surfacing, but these included the largest car-parks. Scores for surfacing and sightlines allow the car-parks that are currently in poor condition to be identified; these are potentially ones which would require significant investment should they continue to be open.

In general car-parks along Chase Road were scored relatively poorly for surfacing and sightlines.

Anti-social behaviour issues were limited to a relatively few car-parks but were notable at certain locations along Chase Road and at some of the County Council owned areas.

Car-park audit: changes over time

Direct comparison with a 2009 review of parking capacity and the 2018 audit suggests a marked increase in parking spaces. Parking provision has therefore not been static and there could be scope to manage this change strategically in the future.

Car-park use

Counts of parked cars across Cannock Chase AONB indicate marked variation in use; for the selected car-parks, counts ranged from 239 vehicles (mid December, weekend) to 3,147 vehicles (May bank holiday). Even on the busiest days more than half of the parking locations are less than half-full. This suggests that there are some very marked peaks, yet current parking provision can accommodate many more vehicles and parking capacity does not currently limit visitor use or numbers in any way. There is potential to reduce capacity without limiting current access.

Parking locations on Chase Road tend to have less cars than other parking locations in the SAC and tend to vary less, suggesting more consistent use.

Comparing data from 2017/18 with previous counts in 2010/11 suggests a 66% increase in the number of vehicles. Locations where use has decreased are mostly small lay-bys and pull-ins and these are potentially ones which could be closed.

Stakeholder interviews: key points from different organisations

Implications for car-park strategy:

- Herringbone parking at Marquis Drive could allow more parking and better management of parking on roadsides;
- There is potential to charge for parking on the roadsides at Marquis Drive, which could lead to more use of the main car-parks and provide revenue;
- There is potential for additional, new parking outside the SAC on County Council land near the Cannock Enterprise Centre;
- Anson's Bank car-park is one of the worst for anti-social behaviours;
- To control parking, trenches would more effective as posts are more easily vandalised;
- Chase Road has been the location for recent accidents due to its poor condition, but as it is not a publicly maintained highway there is no requirement for it to be maintained. It is a sensitive location as it brings people into a sensitive area;
- The preferred option for Chase Road would be to close the middle and have more access from Camp Road instead.

Lessons learned elsewhere

Implications for the car-park strategy:

- Car-park closures can be contentious and generate public opposition; however there are examples from other parts of the UK where they have been undertaken successfully.
- Closures need to be carefully planned, carefully communicated and well resourced, with the reasoning and benefits conveyed to site users.
- Parking charges are also contentious, clear justification for charging is likely to be important and funding invested in the site and used to look after the site.

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Note: a separate map annex accompanies this report

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1. Introduction

Overview

- 1.1 This report has been commissioned by the Cannock Chase Special Area of Conservation (SAC) Partnership and provides the background and evidence base to inform two separate strategies for Cannock Chase: a car-park strategy and a site user strategy. These two strategies set out a means to provide for recreational use at Cannock Chase without compromising the nature conservation interest of Cannock Chase.
- 1.2 The report is split into 12 discrete sections that relate to different parts of the evidence base. Throughout the report boxes are used to bring out key points that are relevant to the two strategies.

Text boxes like this are used throughout the report to highlight key information for either the site-user or the car-park strategy.

The need for the strategies

- 1.3 Cannock Chase AONB (Map 1) is located relatively close to a number of urban settlements including Stafford, Birmingham, Wolverhampton and Walsall.
- 1.4 Cannock Chase represents the largest area of heathland habitat surviving in the English Midlands. Parts of the AONB are designated as being of national importance for nature conservation (as a Site of Special Scientific Interest, SSSI) and of international importance (as a Special Area of Conservation, SAC). These designations bring particular responsibilities for public bodies and infer strict legal protection.
- 1.5 Cannock Chase is a popular destination for recreation, with visitors drawn by the landscape, tranquillity and recreational opportunities. A Visitor Management Strategy for the AONB was produced in 2014 which recognised the importance of the area for recreational activities, the promotion of health and wellbeing and benefits to the local economy. However, the report also recognised that there could be conflicts between recreational visitors, residents and the natural environment.

- 1.6 The AONB is under the ownership and management of a number of different bodies (Map 1). Most of the area is owned and managed by Staffordshire County Council (the Country Park which includes the SAC and SSSI), the Forestry Commission (Cannock Chase Forest Estate) and the National Trust (Shugborough Park). Other owners include Staffordshire Wildlife Trust and a number of private landowners and a land purchase is in progress by the RSPB.
- 1.7 With increased housing development in the wider vicinity and a growing human population, recreational use is predicted to increase (Liley, 2012). There is a need to meet recreation demand and provide for recreation while in the long-term ensuring that the issues associated with high levels of recreation do not cause damage or lessen the experience for other users. Furthermore, there is a need to ensure delivery partners work together and have an agreed, strategic approach to the management of access.
- 1.8 The strategies relate to the Area of Outstanding Natural Beauty (AONB), the boundary of which encompasses the SAC and other key areas of focus, especially for key bird species.
- 1.9 The car-park strategy will:
- Facilitate enjoyment of the countryside by all ages and abilities.
 - Manage visitor impacts on sensitive natural and historic sites, particularly the Special Area of Conservation (SAC), Sites of Special Scientific Interest (SSSI), populations of Annex 1 bird species, the Area of Outstanding Natural Beauty (AONB) landscape and sensitive historic features.
 - Facilitate visitor payback (new and existing schemes), generating income to support site management.
 - Encourage positive visitor behaviour and address antisocial behaviour.
 - Consider traffic impacts on the area and support environmentally sustainable tourism.
 - Provide an implementation plan which clearly details management prescriptions and on-site works to be enacted to allow for the achievement of the purpose of the strategy.
- 1.10 The site user strategy will:
- Facilitate enjoyment of the countryside by all ages and abilities.
 - Recommend management to mitigate the negative impacts caused by informal horse riding, mountain biking, walking and dog walking upon sensitive natural and historic sites, particularly: the Special Area of Conservation (SAC); the Sites of Special Scientific Interest (SSSI); areas with high populations of Annex 1 bird species; sensitive historic features; and the landscape which forms an important component of the Area of Outstanding Natural Beauty (AONB).

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

- Review and determine the total extent of existing non-statutory routes currently in existence across Cannock Chase and recommend management to deter use of non-statutory routes where damage to SAC habitats is shown to be occurring.
- Recommend both physical management (including signage provision) and a course of educational and awareness events to reduce the future occurrence of site users deviating from the existing network of statutory rights of way and established suitable routes; particularly in the areas designated SAC and SSSI and in areas known to support high populations of Annex 1 bird species.
- Identify sections of the existing statutory network of routes (footpaths, bridleways and byways open to all traffic (BOATs)) which require re-profiling, resurfacing, or the installation of surface water redirection and attenuation measures.
- Detail the methodology, aggregate type, specifications etc. to be utilised for the re-profiling and resurfacing of routes and/or to allow for the redirection and attenuation of surface water.
- Recommend physical management and/or a course of educational and awareness events to encourage positive visitor behaviour and address current issues with: antisocial behaviour; dog fouling; horse riders deviating from the bridle way network; and littering across the site.
- Promote environmentally sustainable tourism and facilitate healthy lifestyles.
- Provide an implementation plan which clearly details management prescriptions and onsite works to be enacted to allow for the achievement of the purpose of the strategy.

1.11 Both strategies are therefore interlinked and need to fit together and complement each other. This report brings together necessary background material, evidence and results of dialogue with key stakeholders to provide the evidence base behind the strategies. The strategies themselves will be separate, concise, stand-alone documents that draw from the material collated here.

1.12 A separate map annex accompanies this report and contains all the maps referred to in the document.

2. Previous studies, current plans and relevant context

Overview

- 2.1 A range of other plans and studies of Cannock Chase provide important background, context and are highly relevant to both strategies. In particular, previous studies have summarised the impacts of recreation to the SAC and set out proposals for a series of mitigation measures. This section summarises relevant material. Visitor survey findings are summarised in a separate section (see section 3).

AONB Strategic and contextual information

- 2.2 The **Cannock Chase AONB Management Plan 2014-2019** (Cannock Chase AONB Partnership, 2014) recognises the additional pressures arising from major new housing provision. The main pressure relates to around the sheer and increasing number of visitors. Existing damage to paths and tracks is noted and increasing impacts on the designated sites is expected to mean greater pressure on other areas.
- 2.3 The plan notes that “visitors require infrastructure, e.g. centres, car parks, places to stay, signs, information and refreshments” and considers that “infrastructure to support visitors is struggling to meet the practical needs of increased visitor volumes”.
- 2.4 Specifically, the plan mentions a lack of directional and information signage, an inconsistent approach to the management of car parking, criminal and anti-social activity within AONB car parks, and the design and location of signs etc. needed for traffic management to take account of the visual quality of the area.
- 2.5 The plan includes policies for co-ordinated, high quality information, interpretation and educational material, the need to influence those who control highways and traffic issues (including signage both physical and virtual inside the AONB and outside it where it relates to facilities within the area), and an area-wide strategy with management measures that minimise crime and anti-social behaviour and maximise public safety. The plan calls for the development and implementation of a strategy which integrates all aspects of visitor access and recreation management. It also recommends that visitor spend be used to maintain the AONB.

- 2.6 On highways, the plan proposes the development and publication of a strategy for transport, working with the Highways Authority and the implementation of traffic management schemes including support for initiatives to increase the use of non-motorised or public transport.
- 2.7 The plan proposes the development “of a car parking strategy which will consider an AONB wide approach to issues including location, capacity, crime, charging and provision of alternative means of access to the AONB”.
- 2.8 The AONB Management Plan notes that “Employment within the AONB is largely confined to the core area in forestry, managing recreation and the fabric of the Country and Forest Parks and in the provision of services to visitors. Some of this employment is on the fringe or outside the AONB. Agriculture is confined to the fringe area. In addition, quarrying activity takes place at two sites within the area”.
- 2.9 The AONB Management Plan was followed by a **Visitor Management Strategy** (Craggatak Consulting, 2015). This proposed a vision for the future visitor management of the AONB:
- Visitors and businesses will make a positive and sustainable contribution to the area in support of the management of the AONB and the local economy.
 - Taking part in outdoor recreational activities will improve people’s quality of life, health and well-being.
 - More people will have better information about where they can go and what they can do in the AONB.
 - People will have the freedom to enjoy the AONB alongside a personal responsibility for doing so in a way that respects its special qualities and the legitimate activities and interests of other people.
 - Collaboration that works in the best interest of the AONB will address the conflicts between recreational users, residents and the natural environment.
- 2.10 The strategy drew attention to a number of weaknesses in the current visitor experience at Cannock; including the uncoordinated provision of information via websites, signage and visitor experience for the site; variable quality of facilities; uncontrolled events, cyclists on footpaths, night time activities and rising levels of anti-social behaviour; a perception of a lack of on-site management; and not enough sense of ownership by local businesses. The strategy also recognised the issues connected with vehicles, stating that “Uncontrolled parking and congestion are significant concerns” and that the impacts could be reduced by “an AONB-wide traffic management and car parking strategy”.
- 2.11 It suggested that the vision would be achieved via three objectives:

1. Quality of heritage: To celebrate, conserve and enhance the landscape character, habitats, wildlife and cultural heritage of the AONB by developing a welcoming, informative culture that supports
2. Quality of opportunity: To balance the desires of the people who wish to enjoy the AONB with the need to deliver a sustainable high-quality visitor experience to all, whilst conserving and enhancing its natural and cultural heritage.
3. Quality of people: To encourage and support local businesses and all frontline people to be proud ambassadors of the AONB, understand the needs of the visitors and be knowledgeable about the site and its designation.

2.12 Actions relating to these objectives included:

- Develop and implement an integrated information and interpretation strategy, with one voice for the AONB including coordination of information and facilities provided by visitor centres, engagement with local education sector, active engagement with on-line users and with basic messages easy to find and understand
- Review standard and design of all structures, services and facilities used by public and improve where necessary
- Develop an access strategy to include walkers and cyclists
- Produce a sensitivity map and assess capacity of habitats to absorb visitors without harm and introduce measures to address recreation pressures on sensitive habitats
- Site events and facilities away from fragile habitats
- Provide good information, support and training to custodians of the site and encourage teamwork
- Encourage local businesses to seek green accreditation
- Monitor impacts of formal activities and the experience, activities and preferences of visitors
- Develop and implement an AONB-wide traffic management and car parking strategy
- Develop and implement a roads management strategy
- Develop and implement an access strategy by developing walking, riding and cycling and reducing car journeys within the AONB by information available from the visitor centres

2.13 The Visitor Management Strategy also noted that there were 170 businesses within the AONB and 500 within 5km.

2.14 A further study of the AONB looked at **tranquillity mapping** (Land Use Consultants, 2007). The report mapped tranquillity based on peoples' perceptions, assessments of noise, visual features, landscape, naturalness of the area and night-time light. It examined a number of studies of tranquillity at protected

landscapes elsewhere and suggested developing a new methodology based on local perceptions and GIS analysis.

- 2.15 **A Dementia Friendly Strategy** was produced in 2016 (Carers Association Southern Staffordshire, 2016) which suggested an action plan was needed to raise awareness of the needs of dementia sufferers and their carers. This would require better awareness and understanding by those managing the AONB and by local communities and businesses; a more coordinated and integrated approach particularly at visitor centres to improve visitor welcome and experience; and the need for investment.
- 2.16 The identified problems for this group (which could also apply to others, particularly elderly or disabled people), were a lack of awareness, lack of knowledge of the AONB, difficulties of transport to AONB, how to find it and where to go, a lack of suitable activities, perceptions of it being unsafe, lack of facilities and the need for funding.
- 2.17 During consultations there was feedback from participants which identified, particular items (although, clearly there are some conflicts in these desires with regards other policies e.g. ensure natural spaces with limited signage, or consents needed). Common themes were:
- A need for better signage
 - Not enough accessible toilets
 - A need for more benches/logs to sit on
 - A need for more refreshment stops and for later closing of cafés in summer
 - That wheelchair access is limited
 - A lack of public transport
 - A lack of clarity on how to get help or who to ask and where SOS points are
 - A need for more publicity of events
 - The layout of visitor centres needed improvement
 - Donation boxes in car parks to help fund above
- 2.18 The AONB also commissioned a study of the **Landscapes of the Chase** (Ashmead Price & Warnock, 2017). No mention of car parking is made but the report does recommend that key views into and from the AONB should be conserved when considering significant new developments, and that the maintenance of recreational facilities in the Country Park should ensure a high standard of design/management. In relation to the surrounding sandstone hills and heaths the report recommended the conservation and strengthening of road side hedges and verges as valuable buffers alongside busy roads.

AONB strategic and contextual information: key points relevant to both strategies

Visitor infrastructure is currently struggling to meet the practical needs of increased visitor volumes. A range of strategy and plans relating to the AONB include the AONB Management Plan, the Visitor Management Strategy, Dementia Friendly Strategy and a Landscapes of the Chase report. Measures identified in these documents that are relevant to the car-park strategy and or the site user strategy include:

- Provision of co-ordinated, high quality information, interpretation and educational material;
- Improvements to signage;
- A need for additional infrastructure including more accessible toilets, more benches, more refreshment locations;
- Development of a strategy for managing crime and anti-social behaviour;
- Use of visitor spend to maintain the AONB;
- Organising events away from fragile habitats;
- Training and support for site managers and custodians;
- Development of a traffic management strategy, which will reduce car-use and support more public transport;
- New infrastructure or improvements to existing structures will need to consider views into and from the AONB and will need to ensure a high standard of design.

Highways

2.19 A comprehensive **highway design guidance** document was also produced for the AONB (Arup & Latham Architects, 2005). This is a richly illustrated guide covering all aspects of highway design including road surfaces and markings, signage, speed limits, verge and ditch management and tree planting. The guide did not consider the number, location, use or design of car parks and lay-bys.

2.20 Key themes relative to this report that are highlighted in the guidance include:

- The need to develop and promote a common approach to marking the boundaries of the AONB within the highway
- The need to reduce sign-clutter and avoid duplication and repetition of signs
- The need to manage motor vehicle access, egress and movement within the AONB by using a clear signage strategy to guide visitors along certain routes to the key visitor attractions.

- 2.21 A report on the possible effects of nitrous oxides from road traffic (Mathews, 2012) concluded that higher NO₂ was associated with greater levels of traffic within 20m of three of the four roads studied. However, she concluded that there was no evidence that emissions from road traffic were contributing a significant amount of nitrogen to the environment to create changes in the cover of heathland plants. Although higher pH and nitrate levels within 20 m of some roads may be creating conditions for non-heathland plant species to colonise and stressing heath plant species.
- 2.22 Traffic flow data from the county council was obtained by an earlier study (Red Kite Countryside Training Partnership, 2010) for a number of locations in and around the AONB but these all date from 2006-2008 and are some 10 years old. The highest traffic levels were on the A460 at Rugeley (Sept) and the A513 at Wolseley Bridge (Feb), and lowest levels at Upper Longdon (Mar), Gentleshaw (Jun) and Birches Valley (Sep). Traffic count data is also available for the nine locations (on the A513 at Shugborough [2], Chase Road, Camp Road, Brindley Road [2], Penkrige Bank Road, Brindley Heath Road and Rugeley Road) as graphs of daily and weekly traffic patterns for the period June – August 2013. These data are difficult to interrogate for meaningful numbers and are now rather dated. For Chase Road, for example, they show that peak traffic of about 60 vehicles an hour is between 2-3 pm in June and July, between 3-4 pm in August and between 11-12 am in September and that weekends are busier than weekdays.

SAC impacts and relevant mitigation proposals

- 2.23 Work in 2009 by Footprint Ecology identified broad measures to mitigate visitor pressures on the SAC (White, Underhill-Day, & Liley, 2009). Subsequently a report on the impacts of recreation on the SAC was produced in 2012 (White, McGibbon, & Underhill-Day, 2012) which included an on-site impact assessment and a questionnaire survey of local experts. This 2012 work was accompanied by a report recommending specific mitigation measures (Underhill-Day & Liley, 2012). This looked at a number of visitor activities on the Chase and suggested mitigation measures to reduce impacts. Measures in the two reports are summarised below.

Impacts of recreation on the SAC

- 2.24 The main physical visitor pressures noted from the site inspection included the creation of desire lines and new paths causing fragmentation of habitats and disturbance to wildlife, path widening and vegetation damage, surface erosion/deposition and compaction, trampling of vegetation and invertebrate nesting sites and wildfires. The report noted that the multiplicity of paths and

desire lines, coupled with research showing higher levels of disturbance closer to paths, suggested that disturbance to Annex I birds could be a problem.

- 2.25 In several places damage from recreational pressures was noted in Brocton Coppice especially from the use of mountain bikes. This was considered a recent trend, possibly linked to vegetation removal required for *Phytophthora* control (Sue Sheppard pers. comm.). Such damage can be more serious where tracks pass very close to the old oaks, causing soil compaction and erosion well within the area most likely to contain the roots of individual trees. Among the adverse impacts caused by this practice will be reduction in the oxygen-carrying capacity of the soil with damaging effects on soil micro-organisms, and inability of the compacted soils to properly absorb water.
- 2.26 The report was accompanied by target notes and photographs of the impacts noted during the site inspection, together with some observations of user behaviour where this helped to explain the observed impacts, groups of walkers or riders travelling abreast and causing path widening or groups diverting round obstacles or corner cutting, for example. The report noted that eutrophication from dog waste had led to non-heathland species alongside many paths and that very few paths lacked evidence of depositions of dog waste such that the evidence suggested that many dog walkers did not pick up after their dog. Some slight evidence of vandalism to signs and barriers and, (apart from signs of a large wild fire in 2010) signs of a few small fires were also noted.
- 2.27 Based on a consultation with site managers and others the report noted that although there was no consensus on whether walkers have increased in numbers over the last ten years, there was a more consistent view that numbers of horse riders have increased slightly (perhaps linked to an increase in trekking centres), but a unanimous view that there has been a marked increase in cyclists, although some of this increase has taken place away from the SAC. The view was that cyclists were the group most responsible for creating new paths, although most users stay on paths.
- 2.28 There was a consistent view that increases in visitor numbers could lead to increases in all the impacts listed in earlier reports, including damage to soils, litter, fires, disturbance, problems with dogs, path creation and widening, habitat fragmentation, enrichment and conflicts between users. However, not all problems are equally spread either temporally or spatially across the Chase. It was noted, however, that the SAC had suffered particularly from heavy use causing local soil erosion/deposition and compaction with additional trampling damage to vegetation. Heathlands and wetlands were seen as being particularly vulnerable in this respect.

- 2.29 The view was that visitor management using signage, interpretation, press articles, prohibited access and asking that dogs be kept on leads have been generally unsuccessful.

Impacts of recreation on the SAC

A report from 2012 identified impacts of access to the conservation interest that included:

- Fragmentation of habitats from new desire lines and paths;
- Disturbance to wildlife;
- Trampling, leading to path widening, vegetation wear, erosion and soil compaction;
- Trampling of invertebrate nest sites;
- Damage to tree roots where paths pass close to veteran trees;
- Wild fire;
- Eutrophication (dog fouling);
- Spread of disease (Phytophthora).

These are the key impacts that future strategies need to address. Increases in visitor numbers could lead to increases in these impacts. The 2012 report suggested that visitor management to minimise impacts, using signage, interpretation, press articles, prohibited access and asking that dogs be kept on leads had generally been unsuccessful.

Mitigation recommendations relating to site-users

- 2.30 The 2009 report included general guidance on areas where access should be enhanced and promoted to visitors, focussing on areas outside the SAC in order to redirect visitor use. These areas are reproduced in Map 2.
- 2.31 A range of other measures were suggested which are summarised in Table 1.

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

Table 1: Recommendations for strategic mitigation from White et al 2009; measures relating to car parks and transport are excluded

Measures	Aim
Provision of dog walking areas outside the SAC boundary	Dog walkers encouraged to use areas outside SAC
Clear message to dog walkers about need to pick up and keep dogs on leads	Reduction in dogs off leads and extent of dog fouling on SAC
Cycling confined to bridleways and designated cycle routes	Reduction in cycling within SAC and cycling restricted to designated routes
Provision of dedicated facilities for horse riders in areas well outside the SAC	Horse riders welcomed and encouraged outside SAC
Redesign and enhancement at Marquis Drive to focus visitor routes and numbers away from Brindley Heath	Visitor numbers reduced on Brindley Heath
Review of events and activities scheduled and promoted within AONB	Reduction in large events drawing large crowds to general area
Dedicated team of staff with a remit to cover access issues	Increased staff resource to deal with access issues and provide face-to-face contact.
Schools pack and programme of schools visits.	Promote understanding of the nature conservation importance and sensitive nature of the SAC
Web presence providing information on different activities.	Easy to access information for relevant user groups, providing clear and consistent messages.
Tailored leaflets with maps for the following user group/activities: dog walkers, cyclists, orienteering, walkers. Other groups to be included as necessary.	Groups made to feel welcome and provided with clear messages about responsible behaviour, where they can go, potential enforcement etc.
Leaflets etc. providing information on issues likely to be contentious.	Support for potentially contentious management
Interpretation highlighting responsible use and nature conservation	Promoting the nature conservation importance and sensitive nature of the site to users.
Programme of guided walks and events promoting nature conservation	Promoting the nature conservation importance and sensitive nature of the site to local residents
Enhanced community links with local residents / parish councils / community groups / volunteers etc through talks, guided walks etc.	Promoting the nature conservation importance and sensitive nature of the site to local residents.
Provision of leaflets/maps etc to promote alternative sites to visit / undertake activities.	Better understanding among visitors as to where to go and where different facilities can be found.
System for the public to report undesirable activities such as a phone number at centres, on some displays and leaflets	Encouraging visitors to act responsibly and reduction in undesirable activities.
Audit of potential sites that could function as SANGs and potential measures needed to bring them forward and make them work.	Detailed assessment of available sites and potentials to function as SANGS. Enables strategic view of SANGs network.
Phased creation of c.800ha of alternative greenspace serving people living within 12km of the SAC.	Network of alternative sites attracting some users away from the SAC.

2.32 Recommendations from the 2012 mitigation report included:

2.33 Horse riding

- Visit all local stables/trekking centres as part of a consultation to explain the importance of the SAC and the need to keep to bridleways, hear concerns and discuss solutions
- As part of these discussions examine with owners and managers of stables which routes they normally follow and what alternatives off the SAC would be available and are, or could be made, more attractive
- Set up an invitation meeting with local stables and horse riders to explain and discuss as above, including whether additional permissive paths or links are needed

2.34 Cycling

- Contact cycle groups including Chase Trails to establish a forum for cyclists where information can be exchanged, views expressed, and regular contact maintained.
- Establish methods for informing cyclists on site about the SAC and the need to keep to bridleways. These would be via contacts in car parks and distribution of printed material, including periodic campaigns with material under windscreen wipers for those vehicles with bike racks, and distribution from visitor centres, local bike hire facilities and the Birches Valley CP
- Discuss with Sustrans whether there is a need for a scoping study on the effect of the new cycle route on the SAC
- With FC examine the provision of alternatives which could attract families and long distance cyclists away from the designated sites. Reduce any active promotion of routes on or across the SAC.

2.35 Dog walking

- Set up regular liaison with local dog walkers to the SAC, building on work already carried out with dog walkers by the AONB team.
- In cooperation with FC, the AONB team and dog walkers representatives consider further initiatives with respect to dog walkers on the SAC. These should include consideration of, among other things:
 - The possibility of setting up volunteer groups with local dog walkers to encourage them to police themselves via peer pressure.
 - Review existing websites to promote locations for dog walking
 - Setting up an enclosed and safe dog training area and enlisting help from professional dog trainers to offer classes
 - Improvement to particular dog walking routes.
 - Encourage reporting of irresponsible dog owners with dogs scaring other users, chasing deer etc.

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

- Leaflets for dog walkers, signs in car parks and wardening explaining issues of disturbance and fouling by dogs and asking dog owners to keep dogs under proper control and pick up and take away dog mess
- Wardening approaches to commercial dog walkers and gun dog trainers to move to less sensitive areas off the SAC.

2.36 Education and awareness

- Discuss with FC and AONB the insertion of text and illustrations in promotional literature and signs etc. to raise awareness of the issues by drawing attention to the special nature and fragility of the SAC, the need for responsible visitor behaviour and to encourage visitors to go to areas away from the SAC. Review promotional material encouraging cyclists or horse riders to go to Sherbrook Valley and the promoted routes.
- With the AONB and FC review the desirability of producing some of the educational and promotional material as collaborative productions with joint branding.
- Produce and promote printed material which includes clear maps showing bridleways in the Country Park and on Brindley Heath, together with an explanation of the importance of the SAC and need for cyclists and horse riders to keep to bridleways. Material should include contact details for reporting incidents, fires etc.
- Redesign and enhancement at Marquis Drive to focus visitor routes and access away from Brindley Heath
- Review the funding and resource issues across SCC, FC and the AONB to scope any potential savings or fund raising initiatives through further joint working

2.37 Communications and liaison

- Review existing contacts and where necessary carry out a programme of visits and presentations to raise awareness with local schools and organisations (e.g. Parish Councils, community groups, residents' associations etc.) most likely to visit the Chase.
- Establish regular contact with local communities via liaison groups, and give these a role in decision making on expenditure on issues such as path maintenance, car park improvements and signage
- Produce an education pack for schools on heathland wildlife and the need to protect it and promote this through websites, blogs, Twitter etc.
- Review existing websites for those visiting Cannock with information and advice for each user group on walking, dog walking, riding and cycling in the SAC
- Maintain contact with orienteering, geo-caching and other specialist outdoor recreational groups and steer their activities away from SAC heathland areas, particularly (but not only) during the bird breeding season

- Liaise with schools/colleges/universities to give advice and guidance on their requirements for site based activities whilst safeguarding the SAC.
- Accompany the above initiatives with suitable press releases, articles in local newsletters, local and national specialist magazines for horse riders (e. g. BHS newsletter) and cyclists (e.g. Adventure Cyclist magazine).
- Liaise with the AONB and FC on any events to be held to minimise impacts on the SAC from additional visitors to the area. Re-scheduling some events to times outside the spring and summer may reduce disturbance to wildlife.

2.38 Routes and Signage

- Review existing bridleway network within the SAC to examine existing use levels and whether rationalisation and changes which reduce heathland fragmentation and disturbance could be made without detriment to the enjoyment of users.
- Review the path and bridleway routes within the AONB with a view to providing alternative routes and encouraging visitors to walk or ride on routes away from the SAC.
- Experiment with imaginative ways of diverting visitors from the unofficial paths across the SAC and back onto official rights of way and monitor results
- Carry out a detailed inspection of the paths and tracks in Brocton Coppice and divert those that are causing erosion or damage to the root plates or bases of veteran trees.
- Make especial provision for signage and path networks that encourage visitors arriving at the Country Park visitor centre to travel away from Brindley Heath, and visitors to the eastern edge of the Sherbrook Valley to travel onto the path and track networks to the north-east.
- Establish that main paths and bridleways offering a route away from the SAC remain attractive and passable to users.
- Install easily replaceable signs at main exits to all car parks around the SAC with information on the need to keep to bridleways, with contact details and suitable maps, and with encouragement to use of routes away from the SAC.
- Maintain a way-marking system on SAC for bridleways

2.39 Off-Site Measures

- Provision of Suitable Alternative Natural Green Spaces (SANGS) including dog walking areas off the SAC and close to settlements
- A car parking strategy across the Chase with enhanced parking provision and access in areas away from the SAC
- Alternative walking and dog walking areas on the Chase should be sought, and promoted (especially near housing areas). These will need to offer a suitable and attractive alternative to users
- Provision of information to promote visiting to alternative destinations away from the Chase

- New bus services around the Chase together with suitable promotional measures
- Traffic calming measures on the roads across the Chase where these adjoin or run close to the SAC

Mitigation recommendations: relevant for site user strategy

Previous reports relating to mitigation and avoidance measures relating to increased access from new development have identified a range of approaches and provide support for:

- Working directly with different site users (horse riders, cyclists, dog walkers) to establish better communication and liaison;
- Establish a cycle forum and better information provision for cyclists;
- Developing alternative routes outside SAC for cycling and horse riding outside SAC;
- Facilitating behaviour change for dog walkers through provision of training areas, volunteer groups, reporting of irresponsible dogs, better information provision and wardening;
- Redesign and enhancement of Marquis Drive to focus access away from Brindley Heath;
- Better communication of routes and responsible behaviour for users;
- Community work through a programme of visits and liaison groups to involve local communities more and engender support for management;
- Focus activities, including specialist groups such as orienteering, events outside the SAC heathland and at times when interest less vulnerable;
- Review and rationalise path network and look to divert visitors to selected routes;
- Improve the way-marking;
- Increased/effective environmental education on site.

Mitigation recommendations relating to car-parks

- 2.40 The 2009 report proposed that a proportion of the car-parks should be closed with the aim of reducing the range of car-park locations to a smaller number, essentially drawing parking more to the edges of the SAC and more focused into designated, easily controlled and policed car-parks. Laybys and informal parking around the SAC should be prevented through ditching / banking and some larger car-parks may also need to be closed. Given that increased access rates in the region of 9% were expected, then potentially at least 9% of car-park spaces should be removed from around the SAC.
- 2.41 The authors identified 29 car park locations that could be closed (shown here in Map 3). These locations account for 145 car park spaces, c.13% of the total of 1,086 mapped at that time around the SAC. These were selected as they represented locations that provide direct access onto the SAC and closing car-parks in these

locations would make a marked difference to how people access the SAC. Closing car-parks in these areas would potentially reduce visitor pressure in the centre of the SAC, such as around the Sherbrook Valley and around Brindley Heath. Most of the locations highlighted on the map are indicative but could be relatively simply achieved as most of them are along a single road (the Chase Road that loops past the glacial boulder), which itself could be closed as a vehicle route.

2.42 It was suggested that further measures be instituted at all car parks:

- Access and exits should be safe with suitable, well-maintained visibility splays.
- They should be named and have appropriate and consistent signage, usually wooden ladder signs
- Where possible, they should be close to roads and have vegetation removed to make them open to casual view.
- Access points, track entrances and barriers should be reviewed with the aim of reducing redundant and under-used entrances and installing improved barriers. This measure will also improve ease of access for emergency vehicles.
- Interpretation boards and information highlighting routes and promoting responsible access should be provided at all parking locations.
- A reduction in car park use without closure could also be achieved by reducing the number of spaces or by installing and enforcing car park charges.

2.43 Despite the previous failure of a bus route within the Chase, the report recommends that a new attempt be made to establish a bus route. If this is combined with the measures suggested for reducing car parking, instituting car park charges and providing additional promotion and information, the outcome could be more favourable. It is suggested that the bus should focus on dropping people at locations away from the SAC and focal points such as Birches Valley and Shugborough. The potential for the bus to carry some bicycles should be explored, for example certain scheduled buses could tow a trailer for carrying bicycles.

2.44 The report recommending specific mitigation measures (Underhill-Day & Liley, 2012) also suggested mitigation measures with respect to car parks to reduce impacts. Recommendations were:

- Review the use of Chase Road to consider closure to through traffic, closure of the central section and restriction of parking to car parks at each end, restrictions to existing car park size or other measures to limit increases to visitor numbers into Sherbrook Valley from this area.

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

- Review the car parking provision at the south western and southern end of Sherbrook Valley with a view to re-siting some car park provision nearer the visitor centre.
- Plan for the progressive removal of layby parking on the whole of the Chase over the next five years, with priority given to laybys on Chase Road and Camp Road between Chase Road and Penkridge Bank Road and take steps to encourage all visitors to use car parks only. This will facilitate future visitor management over the whole of the Chase.
- Review car parking provision for horse boxes in relation to the SAC. Consider providing better provision for parking and manoeuvring horse boxes at sites away from the SAC.
- Produce a long term strategy for car parking across the Chase. This could include:
 - A gradual redistribution of car parking from around the SAC to areas further away where local access is to less sensitive areas.
 - Contact with other authorities managing similar large sites with multiple car parks to look at best practice elsewhere.
 - A review of the distribution and capacity of car parks.
 - A review of safety and condition of access to all car parks.
 - Reviewing the need to improve access tracks to car parks close to the SAC and to change the distances of car parks from the highway to make them more or less attractive to visitors.
 - A review of car parking charges to reflect costs of management
 - Consideration of the provision of additional car parks adjoining under-used areas of the Chase combined with the closure of some car parks adjoining the most sensitive parts of the SAC.
 - Identification of any necessary works to ensure safe car park exits/entrances onto roads.
 - Identifying car parks where surfacing access tracks and providing improved signage could encourage visitors away from the SAC.
- Review the success of these measures in reducing access to the more sensitive parts of the SAC and if necessary take additional steps (e.g. by reducing car park size) to encourage diversion to less sensitive areas.
- Periodically review car park provision in the light of changes in visitor patterns and numbers.

Mitigation recommendations: relevant for car-park strategy

Previous reports relating to mitigation and avoidance measures relating to increased access from new development have identified a range of approaches and provide support for:

- The production of a long-term strategy for car-parking;
- Rationalising car-parking to reduce the range of parking locations, draw parking to the edges of the SAC and a focus on designated, easily controlled, well-maintained and policed car-parks;
- Lay-bys and the parking along Chase Road being potential locations to close;
- Selected car-parks outside the SAC to be improved and a focus for horse-boxes.

Country Park Management Plan

2.45 The Cannock Chase Country Park Management Plan 1997-2007 (Staffordshire County Council Countryside Services, 1997) is now out of date but provides some useful data on the activities at that time and the proposals for managing visitors. The plan gave priority to wildlife conservation with the level of access and type of use to be such that they could be absorbed by the habitat without harm. The plan sought to minimise public pressure on sensitive species and habitats, conflicts between users and the penetration of visitors to sensitive areas of the park, and to contain recreation activity to a level and type compatible with defined zones.

2.46 The zones were to be defined as:

- Zone 1: Public use is very high. Milford and environs, Satnall Hills, Seven Springs and Marquis Drive area
- Zone 2: Sensitive areas of high biological interest where there is scope for visitor management. Oldacre and Sherbrook Valley, heathland by military cemeteries, Moors Gorse, Brocton Coppice.
- Zone 3: Areas of high biological value where more sensitive access policies should be introduced. White House, Brindley Heath, Stile Cop and Penkrige Bank.

2.47 The plan noted that mountain biking has developed as a major use, that accidents (including one fatal and a number of serious injuries) and complaints have been numerous. The plan states that mountain bikes should be confined to bridleways but giving way to all other users, but this is not observed and a change in attitude

and behaviour is required. It was proposed to produce leaflet guides to circular routes and codes of conduct for participants. Discreet signage and waymarking is also required to ensure equestrian use is confined to bridleways.

- 2.48 The plan noted that two major improvements are required by visitors, a permanent catering facility at Marquis Drive and a winter weekday information service.
- 2.49 No new toilets were proposed, metal detection and bottle digging would not be allowed, no night time events would be approved and there would be a presumption against use of motorised transport, model aircraft, including gliders but not kites, litter bins would be provided only for events and B-B-Q facilities would be provided only in Zone 1.
- 2.50 The plan provided for no additional hard surfacing in car parks; that consultation would be needed as well as additional parking at Milford Quarry and reinstatement of the original vista at Chase Vista car park if Chase Road was to be closed as recommended in the AONB Plan. To increase security the car parks at Brindley Heath and ToCH trails would be relocated closer to the main road and the additional car park at Cannock Five colliery site would be opened in association with specific events only.
- 2.51 The plan did not envisage any additional access to the Country Park and the County Council would continue to work with others to increase the proportion of those gaining access by public transport, and would be willing to modify car parks to accommodate buses.

Cannock Chase Forest Plan

- 2.52 The Forest Plan is for the 2,684 ha area of Cannock managed by the Forestry Commission (Forestry Commission England 2015). The plan covers 2,684 ha (1,887 ha conifers, 402 ha broadleaves, 395 ha open land) and includes 52 ha of ancient woodland, former wood pasture, wet woodland, water features and heathland.
- 2.53 The plan states that "The Forestry Commission will continue to manage Birches Valley Visitor Centre as its key access point which links directly to Fairoak Valley. Fairoak Valley will be the focus of promoted trails and recreation facilities to help balance the impact from public access on the rest of the AONB and help conserve the special qualities of the AONB's character as a space for quiet enjoyment of a wild place. The promoted trails that leave the forest centre are designed to lead the public through the forest along interesting routes that incorporate varying terrain and views and help minimise the impact on more sensitive conservation areas

- 2.54 The forest is able to absorb large numbers of visitors in comparison to the more open habitats within the AONB, and The Forestry Commission will continue to work with partners to encourage and support existing events, new sustainable business and leisure facilities that are in keeping with other objectives laid out in this Forest Plan.
- 2.55 The majority of the forest is freehold (1,803 ha) and has now been designated as Open Access Land under the Countryside and Rights of Way Act 2000. The remaining 881ha is managed under a long-term lease agreement for forestry purposes and there are some restrictions on public access into these areas.
- 2.56 The Forestry Commission will continue to manage its recreation and education facilities and to work with local businesses and stakeholders to facilitate future demand for recreation and tourism.
- 2.57 Apart from the management plans for the land managed by the two largest landowners, there are also plans and/or Higher-level Stewardship Agreements for a number of other sites including the Shugborough Estate, Castle Ring, George Hayes nature reserve, Gentleshaw Common and Shoal Hill Common. These have not been reviewed as part of this report.

Cannock Chase Forest Plan

The Forestry Commission's Plan focuses recreation at Birches Valley Visitor Centre and highlights that this area is able to absorb large numbers of visitors in comparison to more open habitats. The Plan emphasises a role for Birches Valley to balance impacts across the SAC.

3. Visitor surveys and information on visitor use

Overview

- 3.1 A number of different visitor surveys, going back to the 1980s, provide information on visitor use and visitor numbers. The most recent survey was 2010/11. A visitor survey is currently taking place across the AONB and the results will be available in early 2019. These results will supersede the survey results set out here and will allow up-to date visitor information to be fed into the site user and car-park strategies. Key findings of the earlier surveys are summarised here.

1981 survey

- 3.2 The earliest questionnaire survey of visitors was carried out for the Countryside Commission in 1981 (Bostock, 1981). Interestingly nearly 40 years ago this report noted “that visitors have been indicted as vectors of considerable damage to wildlife” specifically mentioning trampling, disturbance, dogs and erosion. The purpose of the study was to investigate whether such damage to sensitive areas for wildlife could be given greater protection by increasing the distance to car parks i.e. by closing car parks.
- 3.3 Results were obtained by interviewing visitors and by observing numbers of visitors on selected paths across the Chase and checking vehicle numbers in car parks. The study took place between 1977 and 1979.
- 3.4 A number of the conclusions are still of relevance today. Better weather encourages more cars, and proportionately more walkers who walk further and may choose different routes. Walkers may also adopt different routes for outward and return journeys depending on inclines, visually direct routes, erosion etc. Where there is an aim point for walkers who park as close as possible to their objective, and where car parks were closed, walkers walked further and still achieved the same end point. This suggests that protection of sensitive features by distance will not work if there is a known objective, but could work where public roads are few and distinct objectives are rare.

2000 survey

- 3.5 A comprehensive visitor survey was carried out in 2000, funded by the Countryside Commission and the Cannock Partnership (Staffordshire University, 2000). The survey consisted of interviews with 1,002 visitors at 11 survey points on the Chase between May and December 2000; 550 interviews with residents at their homes; completion of 409 questionnaires and discussions with local children in six local

schools; a small-scale survey of occupancy levels in local accommodation; and 20 mobile counts of cars in 23 car parks. The authors calculated that there were 1.27 million visits p.a. (1.52 million if Shugborough Hall was included).

Relevant results for the site user strategy

- 3.6 In all, 92% of visitors came from home or were making a day visit with the remaining 8% staying in the area.
- 3.7 Walking was the most popular activity (81% of all respondents of whom 22% were dog walkers) followed by cycling (12%), games and children's play (11%) and picnicking (7%). All other activities were at levels lower than 5% of respondents. The importance of the Chase for cyclists (including the use of mountain bikes) nearly 20 years ago is apparent at a level twice as high as National Park data from the same period. Key visitor attractions were Marquis Drive and Birches Valley visitor centres (86% of those who responded), Shugborough (80%) and museum of Cannock Chase (40%).
- 3.8 Away from the car parks, the more passive activities such as relaxing, games and play and picnicking were at the more developed sites such as Milford and Marquis Drive whereas more active visitors favoured quieter less accessible places such as Seven Springs, Aspen, the Cemeteries, Glacial Boulder and the Sherbrook Valley.
- 3.9 Of day visitors, 18% came from within 2 miles, about 50% from within 5 miles and about 70% travelled from within a 10-mile radius with just over 12% travelling from beyond 20 miles.
- 3.10 Just over 60% of visitors visited at least once a fortnight in summer and just over half visited this often at other times of year. Twelve percent of visitors visited daily, of whom the majority were dog walkers and walkers. The Chase has an unusually high level of daily visiting.
- 3.11 Two thirds of the visits to the Chase lasted less than 2 hours and 84% were completed within three hours so most users come regularly but for relatively short duration visits. Indeed, the modal category for visit to the Chase is "up to 1 hour" which accounted for 35% of the total sample of interviews amongst site-based visitors. Cyclists tended to stay the longest followed by sight-seeing, picnicking, and walking.
- 3.12 Of all visitors, 81% arrived by car (63% of local residents), and 14% arrived on foot. Just over 3% arrived by bicycle but 12% had cycling as an activity. Nearly 60% of all visitors were family groups.

- 3.13 53% of first time visitors sought information (against 14% of those who had been before), with the most popular sources being maps (59%), route guides and leaflets (24%) and books (8%). Of the 8% who needed accommodation 42% stayed with relatives or friends, 24% were camping or caravanning and 8% in hotels or B&Bs. Most stopped for 3 days or less.
- 3.14 Visitors perceive and value the qualities of the natural environment of the Chase and appreciate the suitability of the area for particular recreations. Aspects of the Chase which they did not like were littering, conflicts between users (walkers, horse-riders and cyclists), inconsiderate behaviour, noise, fears over security of parked vehicles, lack of signposts, condition of some paths and trails, and dog fouling.
- 3.15 40% suggested additional facilities or improvements including additional toilets, refreshments, litter/dog bins, special trails, surfaced paths for wheelchairs and pushchairs, better signing, more on-site maps, more guided or self-guided walks and a more conspicuous ranger/warden service.
- 3.16 The main items of expenditure by visitors were on travel, parking and food and drink, but 70% of non-local visitors spent nothing.
- 3.17 From the questionnaire to teenage children from local schools, 96% visited the Chase regularly, mostly on foot or bike. Most popular activities were walking, playing, cycling and picnicking and they visited a wide variety of sites. Most liked the naturalness/attractiveness of the site, but dislikes included, lack of things to do, problems such as litter and theft/vandalism, lack of maintenance and signage and lack of play areas and toilets. Suggestions for improvement were specific facilities such as adventure play areas, more cycle tracks and refreshments, together with better signage/interpretation/education provision and more routes for different users.
- 3.18 Generally, all users wanted good, secure and convenient parking, good access via well maintained paths and tracks (with suitable disabled access) with adequate signage, basic services such as toilets and refreshments and the provision of adequate and suitable information.
- 3.19 Visitors were asked to score the provision of these needs and their scores are shown in Table 2. Car parking provision scored highly but condition of car parks less so. Signposting and toilet condition scores were reasonable, but provision of toilets scored lowest. Other scores were reasonable but provision of facilities for disabled was poor.

Table 2 Visitor scoring for facilities/attributes at Cannock Chase 1-5.

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

Facility/attribute	Mean score (1-5)
Provision of car parking	4.10
Condition of car parking	3.59
Sign-posting of paths	3.39
Condition of paths	3.70
Availability of toilets	2.51
Cleanliness of toilets	3.92
Information services	3.6
Facilities for the disabled	3.12

Relevant results for the car-park strategy

- 3.20 The survey found that 81% of visitors arrived by car and 14% on foot. Virtually no use was made of public transport.
- 3.21 The main activities within the eleven car parks surveyed are shown in Table 3. Some sample sizes were very small but it is clear that walking, with or without a dog, was the most popular activity from all car parks. Some activities such as picnicking, eating out and possibly play, were associated with the provision of suitable facilities. Others, such as cycling and sight-seeing/driving (where presumably the visitors remained in the car) were largely concentrated in one or two sites. A high proportion of educational visits were to Birches Valley.
- 3.22 The busiest car parks were Milford Common, Seven Springs, Marquis Drive, Birches Valley, Castle Ring and for local residents, Sherbrook Valley, Stepping Stones and The Cemeteries. Quieter sites were Aspens, Chase Road \corner, Glacial Boulder, Hazelslade Reserve and Whitehouse.
- 3.23 Concerns of visitors in relation to vehicles and car parking were:
- Inconsiderate motorists
 - Theft or vandalism to parked cars
 - Playing loud music in parked cars
 - Need for more dog bins
 - Parking charges
 - Poor road signposting
 - Fast traffic
- 3.24 Suggested improvements in relation to vehicles and car parking were:
- Improve security
 - Improve car parking
 - Vary parking charges according to duration

3.25 Respondents were asked to give their assessment of the quality of basic facilities, including car parking. Of those who responded 74% thought car parking provision was good or excellent with only 5% answering poor or unsatisfactory. This reflected the wide choice of contrasting places to park and the spare capacity at most car parks. However, 53% felt the condition of car parks was good or excellent with 13% responding poor or unsatisfactory. Marquis Drive and Cemeteries car parks have metalled surfaces, but several sites at Anson's Bank and some smaller sites off Chase Road were thought rough and potted. The car park at Birches Valley was often quite muddy.

3.26 Other comments were:

- Better vehicular access for disabled with level, surfaced parking areas and wide, marked bays
- Strong support for traffic calming on main roads
- Strong opposition to extension of parking charges, strongest among local residents
- Less opposition if charges are committed to management of the Chase
- Greater flexibility in charging e.g. concessionary parking for residents
- Better security (security cameras were suggested).

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

Table 3: Numbers and percentages of types of use associated with 11 car parks (activities of more than 20 people in bold).

		Milford Common	The Punchbowl	Seven Springs	Marquis Drive	Birches Valley	Castle Ring	The Cemeteries	White-house	Glacial Boulder	Chase Rd corner	Aspen
Total number of interviewees	N	285	77	160	422	402	198	66	26	15	28	14
Walking	N	166	56	122	252	208	153	46	16	11	21	12
	%	58.2	72.7	76.3	59.7	51.7	77.2	70.0	61.5	73.3	72.4	85.7
Play	N	28	3	5	35	71	3	1	1	-	1	2
	%	9.8	3.9	3.1	8.3	17.7	1.5	1.5	3.9	-	3.5	14.3
Cycling	N	18	7	14	54	56	15	-	2	1	-	-
	%	6.3	9.1	8.8	12.8	13.9	7.6	-	7.7	6.7	-	-
Running	N	3	-	-	8	3	5	3	2	1	1	-
	%	1.1	-	-	1.9	0.8	2.5	4.6	7.7	6.7	3.5	-
Picnicking	N	14	4	6	23	23	9	5	1	1	-	-
	%	4.9	5.2	3.8	5.5	5.7	4.6	7.6	3.9	6.7	-	-
Relaxing	N	24	-	1	19	7	1	2	-	-	1	-
	%	8.4	-	0.6	4.5	1.7	0.5	3.0	-	-	3.5	-
Riding	N	1	-	1	-	2	1	1	-	-	1	-
	%	0.4	-	0.6	-	0.5	0.5	1.5	-	-	6.9	-
Eating out	N	12	1	-	2	5	2	1	-	1	1	-
	%	4.2	1.3	-	0.5	1.2	1.0	1.5	-	6.7	3.5	-
Educ. visit	N	-	-	-	1	7	2	-	-	-	-	-
	%	-	-	-	0.3	1.7	1.0	-	-	-	-	-
Bird/nature watching	N	2	4	8	3	8	4	-	2	-	1	-
	%	0.7	5.2	5.0	0.7	2.0	2.0	-	7.7	-	3.5	-
Sight seeing Driving	N	17	2	3	25	12	3	7	2	-	1	-
	%	6.0	2.6	1.9	5.9	3.0	1.5	10.6	7.7	-	3.5	-

2010/11 visitor survey

3.27 The latest visitor survey was carried out for the AONB between autumn 2010 and summer 2011 and consisted of counts of people at set locations (tally counts), counts of cars at parking locations (snapshots) and interviews of visitors by volunteers and LA staff. However, there were some issues with survey methodologies, particularly with regards to uneven survey effort, which meant there are some limitations to the data (see Liley, 2012 for details)

Relevant results for the site-user strategy

3.28 There were 4,809 completed questionnaires, with walking (62%), dog walking (45%), mountain biking (18%) and cycling (17%) the most popular activities (with interviewees stating that they carried out more than one activity). Mountain biking stood out as an activity with a markedly higher proportion of people who have started visiting the site in the last five years compared to other activities.

3.29 Map 4 shows the distribution of interviewees undertaking different activities as pie charts across the different locations surveyed in 2010 / 2011. The most frequent activities across most survey points were dog walking (orange), walking (green) and mountain biking / cycling (red). On FC land there is a well-developed cycling path network, potentially absorbing many of the cyclists from Birches Valley and Moors Gorse, the car parks with the highest proportions of cyclists. However, other locations popular with cyclists (e.g. Chase Road Corner, Whitehouse, Springslade Lodge) are close to the SAC, and many cyclists here are likely to venture out onto the SAC.

3.30 About 60% of visitors stayed up to 2 hrs, 84% up to three hrs with those playing games, mountain biking or orienteering tending to stay longer than other users and dog walkers tending to stay for the shortest time. About half of visitors come, at least at times, with their family.

3.31 About 85% of visitors came by car, with some 13% on foot, 6% by bike and 1% on horseback. The commonest reason for visiting the interview location was attractive scenery followed by good for walking, close to home, good for dogs, good/easy parking and feel safe.

3.32 Most visitors came from within the area bounded by Stoke-on-Trent, the north side of Birmingham and Telford and Tamworth. A quarter of all visitors lived within 3.25km, half within 6.24km and three-quarters within 15.13km.

Mountain bikers came furthest (median 11.2 km), followed by cyclists (6.7km), birdwatchers (6.6km) and walkers (6km), with dog walkers (4.2km) and runners (4.6) coming the shortest distance.

- 3.33 Map 5 illustrates the other locations on or near Cannock Chase likely to be visited by interviewees depicted as pie charts. These were categorised into locations within the SAC (red), various / unsure locations (yellow) and sites outside the SAC (green). Survey points where a relatively high proportion of alternative SAC locations were given, are individually named. This is an important aspect to consider, as it may determine the effectiveness of planned car park closures. The highest proportion of visitors potentially displaced to other locations on the SAC occur along Chase Road and the Brocton Coppice area. Visitors that remain on the SAC are most likely those which seek a specific experience on the Chase. This indicates that closing only the middle section of Chase Road is unlikely to reduce footfall on the SAC, as visitors would most likely park nearby and continue to penetrate the core of the SAC. Larger sections of these roads will have to be closed to result in effective visitor displacement.

Relevant results for the car-park strategy

- 3.34 From 18 separate counts at 105 different parking locations the total number of vehicles ranged from 166 (midweek in June) to 1,095 (a Sunday in early July). Highest counts tended to be at weekends with Marquis Drive and Birches Valley by far the busiest locations. Elsewhere there were no clear patterns with diffuse, scattered parking, and only five locations with no cars from all counts.
- 3.35 The numbers of people per hour (Table 1 in Liley 2012) to each of 30 sampled sites (all car parks except Stepping Stones, Sherbrook Valley, Fair Oak Pools, Oldacre Lane and Abraham's Valley) varied according to the time of year and whether it was a weekend or weekday. Although some counts were missing, Marquis Drive, Birches Valley, Milford Common, Castle Ring and Seven Springs were consistently within the ten busiest car parks, (both weekdays and weekends, spring/summer and autumn/winter) followed by Brocton Coppice, Moors Gorse, Fair Oak Pools, Whitehouse and Spring Slade Lodge (spring/summer and autumn/winter) and Punchbowl, Kingsley Wood Road and Abrahams Valley (spring/summer) and Stepping Stones and Toc H Trail (autumn/winter).
- 3.36 From tally data (Table 2 in Liley 2012), at almost all car parks visitors came to walk or dog walk in the greatest numbers. However, at Abrahams Valley

horse riding was the most popular activity with high numbers also at Spring Slade Lodge, and at Birches Valley and Moors Gorse cycling was the most popular activity cited by 37% and 93% of visitors respectively, as their reason for coming. Cycling was also popular at Marquis Drive, Whitehouse, Brocton Coppice and Seven Springs. Overall, 33% of visitors were walkers, 26% dog walkers and 24% cyclists, with 83% of visitors walking with or without a dog or cycling.

- 3.37 From visitor questionnaires (Table 3 in Liley 2012), walking or dog walking was the first or second most popular activity at all car parks, except at Spring Slade Lodge where eating out, and Moors Gorse where mountain biking, were more popular than dog walking. Mountain biking was the second most popular activity at Birches Valley (where nearly 70% of all cars with cycle racks were recorded in the car counts with a further 15% on roadsides at Marquis Drive). At Chase Road Corner, dog walking and cycling were equally popular.
- 3.38 Of the other minority activities, horse riding was most popular at Castle Ring, West Cannock Farm, Gentleshaw Common, Seven Springs, Abrahams Valley and Brook Lane Corner. Playing games was most popular at Birches Valley, Brocton Coppice, Milford Common and Marquis Drive and running at Castle Ring, Marquis Drive, Seven Springs, Brook Lane Corner and Abrahams Valley. Only 1% of those questioned at all sites were orienteers, but 8% were eating out (with other popular sites being Toc H Trail, Milford Common and The Cutting), and 7% were birdwatchers with the most popular sites being Seven Springs, Stepping Stones, Aspen and Kingsley Wood Road.
- 3.39 At fifteen out of the 30 car parks where questionnaire surveys were undertaken, over 90% of visitors arrived by car and over 80% arrived by car at a further seven. Between 70% and 80% arrived by car at Gentleshaw Common (70%), Castle Ring (76%) and Abrahams Valley (78%). Sixty-eight percent arrived by car at Chase Corner Road, 60% at Oldacre Lane, and just 15% at Hazel Slade, 26% at West Cannock Farm and 33% at Brook Lane Corner (Table 14 in Liley 2012).
- 3.40 Estimated annual visitor numbers (Table 23 Liley 2012) were highest at Birches Valley (321,000), Marquis Drive (157,000), Milford Common (117,000) and Moors Gorse (112,000), with 97,000 at Ansons, 92,000 at Fair Oak Pools and over 80,000 at Castle Ring, Spring Slade Lodge, Seven Springs and Brocton Coppice. Of the remainder only Whitehouse (68,000) and Stepping Stones had more than 50,000 with Brindley Bottom (24,000), Duffields (21,000) and Oldacre Lane (19,000) having the lowest numbers.

Visitor observation survey

- 3.41 A vantage point survey was undertaken in August 2011, with visitor numbers and observations were recorded from 8 fixed locations in the Sherwood and Oldacre Valley, on Brindley Heath, Moors Gorse and a single roving surveyor in Brocton Coppice (Liley & Lake 2012). During 144 hours, 1,201 groups of people were observed on the heaths and 90 in the woodland. Of these 44% were accompanied by dogs, 24% were cyclists and 22% were walkers without dogs. There was some variation between points with the highest numbers of dog walkers at Firewatch Point, Brindley Heath, Oldacre Valley, west bank and Aspens. Cyclists were in highest numbers at Katyn firebreak, and horse riders at Brocton Field. Overall the highest numbers of visitors were along the Sherbrook Valley, and Heart of England Way, near Aspens, at Brocton north of the Oldacre Valley and near Glacial Boulder.
- 3.42 Most dogs were with walkers, 87% were off leads and about half were seen to stray 15m or more from their owner (30% in the woodland observations), although the proportion of these which might be considered to have been under control was not known and the proportion off paths was not recorded. Forty-six instances of dog fouling were observed with no pick-up, some 8% of all groups, however this is believed to be an under-estimate. Six percent of groups were seen to drop litter and one or more people were seen to stray off the paths in 8.6% of groups. Both cyclists and horse riders were recorded away from the bridleways.

Visitor Survey Results

A visitor observation survey was undertaken in 2011 and recorded visitor behaviour. Visitor surveys involving face-face interviews with visitors were undertaken in 1981, 2000 and 2010/11. These surveys involved interviews with visitors and counts. A new survey is currently taking place in 2018, as an immediate recommendation of this report, and the results (in 2019) will allow up to date, robust data to underpin the emerging strategies. These different visitor surveys involving interviews are not directly comparable across years. Key findings from the pre2018 surveys include:

- 1.27 million visits to the AONB were estimated in 2000; 1.9 million visitors were estimated from the 2010/11 survey at the surveyed locations only (which only represented a limited proportion of the AONB access points).

Relevant to site user strategy

- Concern about impacts from recreation were highlighted in the 1981 visitors survey report, which specifically mentions trampling, disturbance, dogs and erosion. The current issues are therefore not new;
- Main visitor activities (2010/11 survey) are: walking (62% interviewees); dog walking (45%), mountain biking (18%) and cycling (17%) (note that interviewees were recorded as undertaking multiple activities, hence totals above 100%);
- There has been a marked and sustained increase in cycling over time particularly in mountain biking (e.g. it was the activity with the highest proportion of interviewees in 2010/11 that have recently started using the site);
- Family visits account for a comparatively large proportion of use (both 2010/11 survey and 2000 survey);
- A high proportion of visitors are frequent visitors (e.g. 12% visited daily in 2000);
- From the 2010/11 survey: Abrahams Valley and Spring Slade Lodge were key destinations for horse riders; Birches Valley and Moors Gorse were key destinations for cyclists (with cycling also recorded at other locations including Marquis Drive, Brocton Coppice and Seven Springs);
- Visitor observation surveys provide evidence that, well within the SAC and away from access points, dog owners do not always pick up, people can drop litter and both cyclists and horse riders were observed away from bridleways.
- Relevant to car-park strategy Car-use accounts for a high proportion of recreation use (81% in 2000; 85% in 2010/11); Strong opposition among visitors to the extension of parking charges, but less opposition if charges are committed to management of Cannock Chase (2000 survey); Suggestions that closing Chase Road will mean displacement of access to other parts of the SAC (2010/11 survey) such that closing only the middle section of Chase Road is unlikely to reduce footfall on the SAC, as visitors would most likely park nearby and continue to penetrate the core of the SAC;
- Most visitors (2010/11 survey) came from within the area bounded by Stoke-on-Trent, the north side of Birmingham and Telford and Tamworth. A quarter of all visitors lived within 3.25km and three-quarters within 15.13km. Mountain bikers came furthest (median 11.2 km). These distances are relatively large compared to other sites in the UK and highlight that Cannock Chase is a destination to which people are prepared to travel some distance;
- Counts of parked cars from the 2010/11 survey (18 counts) recorded up to 1,095 cars at any one time around Cannock Chase, reflecting a marked variation in the numbers of people on different days.

Visitor economy

- 3.43 National data on recreation use and engagement with the natural environment (Natural England & Office of National Statistics, 2018) shows that more people are frequently visiting nature than ever before, an upward trend that holds across different sectors of the population. Nationally 156 million people visit AONBs annually, spending in excess of £2 billion and supporting thousands of jobs and businesses¹.
- 3.44 The visitor economy is an important part of the local economy within Cannock Chase AONB. Visitor spend boosts revenue to local cafes, pubs, shops, cycle hire, stables, tour guides and accommodation. Relatively little data are however available. Previous work (Red Kite Countryside Training Partnership, 2010) refer to 22 businesses as embedded within the AONB environment, with a substantial proportion of trade dependent on the area as a resource and source of demand. A further 21 businesses were thought to have some demand linked to the AONB and a further 24 a 'basic' relationship. These figures are however drawn from work undertaken by Staffordshire University in 2006 and are likely to be very dated now. It is clear that visitor numbers have increased steadily since 2006 and in particular Cannock Chase draws mountain bikers from across the country. In Footprint Ecology visitor surveys within the last year, at other parts of the country, including East Anglia and London, mountain bikers have indicated Cannock Chase as one of the other locations they visit, highlighting the increasing profile.

Visitor Economy

Visitor spend is likely to play an important role in supporting many local businesses around the AONB and the growing trend in use is likely to play have a knock-on benefit to the local economy. While up-to-date information are lacking, implications for the strategies are that any recommendations need to be mindful of any impacts to the local economy. Equally, growing pressure on local resources and stretched infrastructure may deter visitors and solutions need to ensure visitors are able to experience Cannock Chase in a sustainable way.

¹ Figures from the [landscapes for life website England infographic](#), accessed 21/09/18

4. Footpath and signage survey

- 4.1 During 2018 audits of footpaths and signage in the area were conducted by the SAC team. Data collected is briefly presented here to provide some context.

Path network

- 4.2 There are a large number of paths across Cannock Chase, ranging from formal rights of way including national trails, a small number of promoted routes and informal tracks and paths. The AONB includes 383 statutory rights of way (public footpaths, bridleways and byways open to all traffic). The distribution of the formal Public Rights of Way in and around Cannock Chase is provided in Map 6.
- 4.3 There are a number of promoted routes for the public, some which follow these, for example, the Staffordshire Way, Heart of England Way and the Way for the Millennium. Beyond these, other tracks across the Chase are common and include the advertised Tolkien Trail, and the Forestry Commission's advertised route for walking and cycling, the 'Sherbrook Trail' or 'blue route', and mountain biking trails (see Map 7). Map 8 shows the distribution of all the above, plus other access paths recognised from OpenStreetMap (within the AONB boundary only)²

SAC footpath survey

- 4.4 The SAC partnership is currently auditing the path network in the area – all Statutory/Public Rights of Way and Managed Permissive Paths. To date, the audit has only surveyed the Statutory Public Rights of Way on SAC land. However, where a Public Right of Way was found to be “not in use” but its route had apparently been replaced by a nearby ‘Managed Permissive Paths’ this permissive pathway was surveyed instead. Auditing of the paths is the first step to instigating any potential changes in the path network on the site.
- 4.5 The distribution of paths is shown in Map 9 and amounts to roughly 86km of Public Rights of Way (or effective replacement Managed Permissive Path) passing through SAC designated land. Of this 86km, approximately 19km (22%) was classified as “not in use” by the SAC team i.e. with the route of the right of way overgrown, often in favour of other newly created paths – see

² www.openstreetmap.org © OpenStreetMap contributors”

Map 9 (route of replacement Managed Permissive Path was audited instead). In addition, there were a large number of discrete access issues, also shown in Map 9. Most related to water and erosion issues (45 locations, 43% of issues and 35 locations, 34% respectively), and often around Pepper Slade, the Penkrige Bank area, Broc Hill and Gospel Place.

- 4.6 As part of the audit, individual sections of path were assessed for a wide range of factors, including; general access condition (Maps 10 and 11), maintenance condition (Maps 12 and 13), surfacing, camber, drainage, widening, erosion and eutrophication (Map 14). Roughly 21% of the path length was in a poor state for maintenance, and 35% in good state. Most paths were wide, with 54% of paths greater than 2m, 24% between 1 - 2m and 22% less than 1 m. It is also worth noting that 60% of sections showed signs of widening. Evidence of eutrophication along edges of paths was also recorded and roughly 12% showed signs of eutrophication – see Map 14.

Path audit: implications for site user strategy

Path audit of Statutory/Public Rights of Way and Managed Permissive Paths is in progress. Currently, only around a third of Public Rights of Way within the SAC have been assessed as in a good state. The audit has revealed around 12% of Public Rights of Way showing signs of eutrophication and around 22% of paths not being in use, often due to newly created paths providing an alternative route. These results indicate potential for widespread improvements to the path network to improve access but also to help direct visitors and contain impacts.

Road signage

- 4.7 Signage on roads, in and around the Chase, is largely characterised by the presence of the brown tourist signage to direct traffic within the Chase, primarily to the one of the five visitor centres. There are approximately 56 of these signs, as shown in Map 15. Otherwise, there is a general adopted policy of limited signage within the Chase to reduce the intrusion of too much man-made features in the “wild” landscapes of Cannock Chase.

SAC signage audit

- 4.8 The SAC partnership is currently auditing the signage along the path network. The signage audit, as with the path audit, is thus far limited to the Statutory Public Rights of Way.

- 4.9 The initial results show that distribution of signage is often highly clustered and hotspots are often at the start of paths (e.g. at car parks) – see Map 16. Most signs are discrete way makers (91, 46%), but also some information panels (50, 25%). Only 6 (3%) individual signage features included any maps and only 26 (13%) included location name/info.

5. Capacity and condition of car parks and laybys

- 5.1 The term 'car parks' throughout this report refer to any parking locations – laybys, roadside parking, formal and informal car parking locations. These locations have already been mapped by the SAC partnership. In this section of the report we present the results of an audit of car-parks, undertaken by Footprint Ecology in April 2018, as part of the work to underpin the parking strategy. A map of all car-parks is shown in Map 17.
- 5.2 Actual count data (i.e. levels of use of car-parks) is considered separately in section 6.

Parking audit: type and capacity

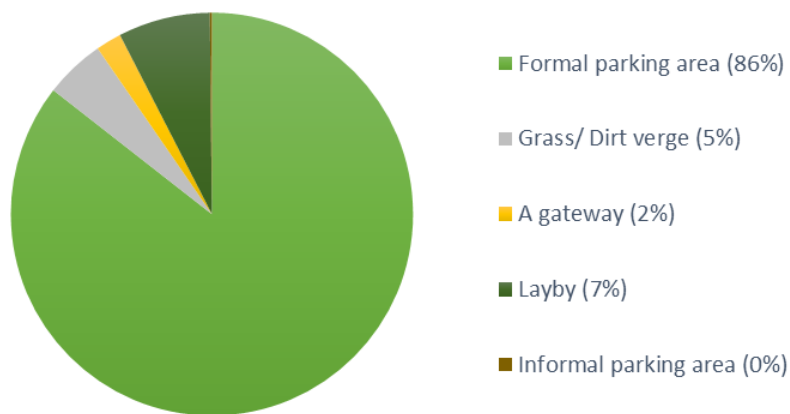
- 5.3 Parking locations were first categorised into one of the five options:
- Formal parking area
 - Informal parking area (e.g. dead end of housing)
 - Layby (formal layby e.g. often hard surfaced, dashed road marking to indicate a pull in)
 - Grass/ Dirt verge (no indication from road markings that this should be a layby)
 - A gateway (providing access to site)
- 5.4 The number of parking spaces was then estimated, with consideration given to the maximum number of spaces likely. For example, if an organised group were to use a layby for a meeting, how many cars would they fit in. This approach was taken such that these capacities can be used with the car parking transect surveys to accurately estimate the percent to which each car-park was full.
- 5.5 A total of 118 parking locations were surveyed, following the list of parking locations currently surveyed in the ongoing vehicle counts. Table 4 and Figure 1 give the number of locations, parking spaces and average number of spaces for each location type.

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

Table 4: Summary of the types of parking locations, number of these, number of spaces in total and typical size of each.

Parking type	Number of locations	Estimated number of spaces	Mean estimated number of spaces
Formal parking area	52	2,036	39.2
Grass/ Dirt verge (no indication from road markings that this should be a layby)	34	115	3.4
A gateway (providing access to site)	21	49	2.3
Layby (often hard surfaced, dashed road marking to indicate a pull in)	9	176	19.6
Informal parking area (e.g. dead end of housing)	2	4	2.0
Total	118	2,380	20.2

Parking Capacity



Parking Locations

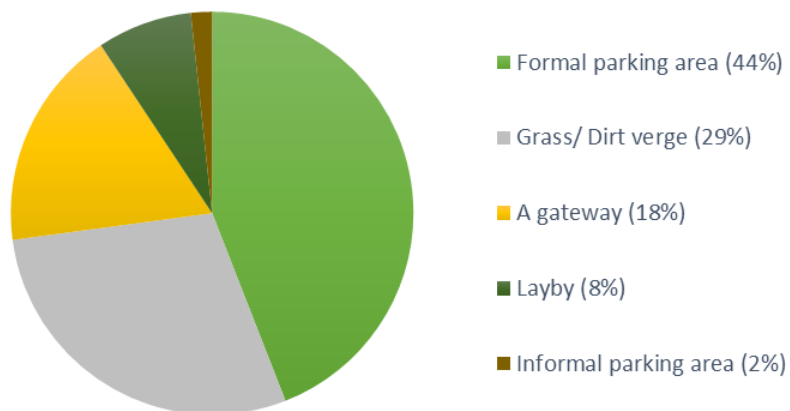


Figure 1: Summary of parking locations and spaces by car-park type (from Table 4)

Evidence base to inform a car-park strategy and a site users strategy for Cannock Chase

- 5.6 From Table 4, the overall number of parking locations on Cannock Chase is 118, with a total capacity of 2,380 spaces of which 86% were formal parking spaces. Table 5 summarises the number and capacities of parking locations categorised under parking type and landowner. The spatial distribution of the sites is shown on Map 18.
- 5.7 The average number of spaces was 4.5 spaces (median value) or 20.2 spaces (mean value). Just eight locations had more than 50 spaces and 94 less than four spaces. Highest numbers of spaces at individual parking locations were Birches Valley (around 510 spaces), Shugborough (around 300 spaces) and Chasewater (around 208 spaces). Otherwise there were many informal parking locations (e.g. laybys, grass / dirt verge) on both SCC (34 locations, 205 spaces) and FC land (21 locations, 54 spaces), on the latter, mostly parking around Forestry access gates.
- 5.8 Maps 15 and 16 show the spatial distribution of parking locations by capacity and owner, with sized circles representing the highest capacities. This highlights that on both Chase and Camp Road parking is largely distributed across small pull-ins, whereas larger formal car parks are rare. Most locations and the highest total capacity are within Staffordshire County Council ownership (number: 74, capacity: 1,197), followed by the Forestry Commission (25, 644).

Table 5: Summary of the total number of parking locations (total number of spaces) for different parking types split by landowners.

Landowner	Formal car parking	Other parking locations	Total
FC	4 (590)	21 (54)	25 (644)
SCC	37 (984)	37 (213)	74 (1197)
SWT	1 (8)	3 (31)	4 (39)
NT	3 (335)	1 (9)	4 (346)
Other	7 (119)	4 (37)	11 (156)
Total	52 (2,036)	66 (344)	118 (2380)

Car-park audit: types of parking location and parking capacity

There is a high volume of informal parking locations and small car-parks which allow access to be spread across multiple locations. Just eight locations had more than 50 parking spaces and 94 locations have less than 4 spaces. Such a spread makes it harder to contain parking, engage with visitors or ensure use if focussed on key routes. As such there is scope to rationalise the number of parking locations while having relatively little impact on the overall number of car-park spaces.

Most locations and the highest total capacity are within Staffordshire County Council ownership (number: 74, capacity: 1,197), followed by the Forestry Commission (25, 644).

Parking audit: surface type

5.9 The most frequent surface type was gravel/stone (67 locations, 57%), followed by grass / dirt (26, 22%) and concrete / tarmac (25, 21%); (Table 6). Gravel / stone accounts for the highest proportion of surfacing type on all landholdings, except for the SWT where 2 (50%) parking locations have grass / dirt. Few locations have concrete or tarmac surfacing.

Table 6: Number (%) of parking locations for different landowners showing their parking surfacing type. Percentages are calculated from row totals and the highest values in each column are shown with bold text.

Landowner	Number of locations	Concrete / tarmac	Gravel / stone	Grass / dirt
FC	25	3 (12)	16 (64)	6 (24)
SCC	74	18 (24.3)	41 (55.4)	15 (20.3)
SWT	4	1 (25)	1 (25)	2 (50)
NT	4	0 (0)	3 (75)	1 (25)
Other	11	3 (27.3)	6 (54.5)	2 (18.2)
Total	118	25 (21.2)	67 (56.8)	26 (22)

Quality of parking locations: surface quality

5.10 The surface quality of every parking location was given a score from poor (i.e. if dirt surface: muddy and uneven, if tarmac surface: broken up and potholes) to very good (i.e. if dirt surface: flat and compacted, if tarmac surface: little wear). Overall, the frequency of surface quality was relatively evenly distributed among parking locations (Table 7). Thirty parking locations (25.4%) were in good condition, followed by 29 (24.6%) in average condition and 29 (24.6%) in acceptable condition. Relatively few sites were in a very

good state (13, 11%), including the two largest car parks: Birches Valley and Shugborough.

5.11 The highest proportion of parking sites in very poor condition were recorded for the SWT (2, 50%) and the FC (6, 24%) (see Table 7). These were mostly the locations where the owners are not actively encouraging visitors. The SCC had about half of its parking locations in 'average' or 'poor' condition. Parking locations in 'good' condition were most frequent on land owned by 'other' (6, 54%). The NT was the landowner with the highest proportion of sites in very good condition (1, 25%).

Table 7: Number (%) of parking locations for different landowners showing the existing surface quality from poor to very good. % are calculated from row totals. Highest value for each row is highlighted in bold.

Landowner	n	Very Poor	Poor	Average	Good	Very Good
FC	25	6 (24)	5 (20)	5 (20)	6 (24)	3 (12)
SCC	71	9 (12.2)	19 (25.7)	22 (29.7)	17 (23)	7 (9.5)
SWT	4	2 (50)	1 (25)	0 (0)	1 (25)	0 (0)
NT	7	(0)	2 (50)	1 (25)	(0)	1 (25)
Other	11	0 (0)	2 (18.2)	1 (9.1)	6 (54.5)	2 (18.2)
Total	118	17 (14.4)	29 (24.6)	29 (24.6)	30 (25.4)	13 (11)

5.12 The access surface quality (i.e. the quality of the area between the car-park and the road) was rated³ as good for most locations (43 locations), followed by 42 sites with moderate and 33 sites with poor access surface quality (Table 8). The surface quality was lowest at informal locations and informal parking with poor surface quality was most prevalent on FC land. In contrast, parking locations with good access surface were more often formal (21, 49%) than informal (15, 35%). Formal car parks provided the highest proportion of total parking with good access surface quality on 'other' land (5, 71%) and land owned by the SCC (12, 32%).

Quality of parking locations: access sightlines

5.13 Access sightlines were rated in a similar way to the other quality measures. Sightlines relate to the visibility at the turning out of the car-park and how easy it is to see approaching vehicles.

³ Ratings were from 0 (bad surface quality, access sight line, access surface) to 3 (good surface quality, access sight, access surface)

- 5.14 Overall, the access sightlines were good at most locations (65), compared to 37 sites with moderate access sightlines and 16 sites with poor access sightlines. Informal locations like grass / dirt verges contributed the largest proportion of sites to the poor sightline category (13 locations, 81%). High proportions of pull-ins with poor access sightlines occurred on land owned by 'other' (2, 100%), FC land (6, 85%) and SCC land (5, 83%). This is a potential safety concern, as hidden access increases the risk of road traffic collisions. The highest proportion of parking locations with good access sightlines were formal (32, 49.2%), and less often, informal (29, 44.6%).

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Table 8: Summary showing the number (%) of locations by parking type and landowner detailing their access surface quality (poor, moderate, good). Percentages are expressed as the proportion of total locations for a given access surface quality category.

Landowner	Formal			Informal		
	Poor (unsafe access e.g. heavily potholed)	Moderate	Good (e.g. flat)	Poor (unsafe access e.g. heavily potholed)	Moderate	Good (e.g. flat)
FC	(0)	2 (50)	2 (50)	9 (42.9)	9 (42.9)	3 (14.3)
SCC	14 (37.8)	11 (29.7)	12 (32.4)	7 (18.9)	14 (37.8)	16 (43.2)
SWT	1 (100)	(0)	(0)	1 (33.3)	(0)	2 (66.7)
NT	(0)	1 (33.3)	2 (66.7)	(0)	1 (100)	(0)
Other	(0)	2 (28.6)	5 (71.4)	1 (25)	2 (50)	1 (25)
Total	15 (28.8)	16 (30.8)	21 (40.4)	18 (27.3)	26 (39.4)	22 (33.3)

Table 9: Summary showing the number (%) of locations by parking type and landowner detailing their access sight lines (poor, moderate, good). Percentages are expressed as the proportion of total locations for a given access sight category.

Landowner	Formal			Informal		
	Poor (unsafe access e.g. blind corner)	Moderate	Good (e.g. clear sight lines)	Poor (unsafe access e.g. blind corner)	Moderate	Good (e.g. clear sight lines)
FC	(0)	(0)	4 (100)	7 (33.3)	6 (28.6)	8 (38.1)
SCC	1 (2.7)	14 (37.8)	22 (59.5)	5 (13.5)	10 (27)	22 (59.5)
SWT	(0)	(0)	1 (100)	(0)	1 (33.3)	2 (66.7)
NT	1 (33.3)	1 (33.3)	1 (33.3)	(0)	1 (100)	(0)
Other	(0)	3 (42.9)	4 (57.1)	2 (50)	1 (25)	1 (25)
Total	2 (3.8)	18 (34.6)	32 (61.5)	14 (21.2)	19 (28.8)	33 (50)

Quality of parking locations: key locations for poor quality parking in terms of surfacing and sightlines

5.15 Scores for these three factors were summarised by highlighting those locations where parking quality was poor or very poor on the basis of surfacing, access surfacing and sight lines as shown in Map 21. The percentage of locations scoring each of these is expressed for each parking type and land owner in Table 10. FC has no formal car parks which have low quality, but all their other locations (which were not formal parking sites) have some issues. SWT has just one formal car park which rated as poor quality, but otherwise SCC has the highest proportion of formal parking areas which score poorly.

5.16 The lowest scoring 30 car-parks are listed in Table 11, which essentially summarises the locations that are in the poorest current condition.

Table 10: Percentage scoring 'poor' or 'very poor' values (1 out of 3 or ≤ 2 out of 5) for quality of parking surfacing, access surfacing or sightlines. Cell values in red highlight the parking locations where more than half of the locations have issues regarding surfacing or access.

	Formal parking area	Grass/ Dirt verge	A gateway	Layby	Informal parking area	Total
FC	0% (4)	100% (7)	61.5% (13)	100% (1)	-	64% (25)
SCC	54.1% (37)	68.2% (22)	28.6% (7)	16.7% (6)	0% (2)	51.4% (74)
SWT	100% (1)	100% (2)	-	0% (1)	-	75% (4)
NT	33.3% (3)	100% (1)	-	-	-	50% (4)
Other	0% (7)	50% (2)	100% (1)	0% (1)	-	18.2% (11)
Total	42.3% (52)	76.5% (34)	52.4% (21)	22.2% (9)	0% (2)	51.7% (118)

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Table 11: Thirty lowest ranked parking locations for parking surface, access surface and sightlines averaged. Those scoring an average of less than 2.5 across all three are shown.

Parking location	Type	Estimated spaces	Surface score	Access surface score	Sight score	Average score
59: 2nd pull in on Penkrigde Bank Road	Verge	1	1	1	1	1.0
58: 1st pull in on Penkrigde Bank Road	Verge	2	2	1	1	1.3
114: Shoal Hill Pull in 2, B5102	Verge	2	2	1	1	1.3
22: Pull in after Chase Vista Car Park	Verge	2	1	1	3	1.7
40: Pull in 1 after Bednall Belt Car Park	Gateway	2	1	1	3	1.7
67: Pull in after Penkrigde Bank Car Park	Verge	1	1	1	3	1.7
70: Pull in before Flints Corner 1	Gateway	1	1	1	3	1.7
79: Pull in 1 just after turn into Marquis Drive	Verge	1	1	3	1	1.7
3: Punchbowl Car Park	Formal parking	22	2	3	1	2.0
39: Bednall Belt Car Park	Formal parking	17	2	1	3	2.0
42: Pull in 3 after Bednall Belt Car Park	Gateway	2	2	3	1	2.0
43: Pull in 4 after Bednall Belt Car Park	Verge	2	2	3	1	2.0
72: Pull in before Birches Valley, FC barrier 3	Gateway	2	2	1	3	2.0
80: Pull in 2 just after turn into Marquis Drive	Verge	1	2	3	1	2.0
84: Pull in after Campfield Car Park	Verge	2	2	3	1	2.0
100: 1st barrier before Beaudesert, Rugley Road	Gateway	3	2	3	1	2.0
106: Stile Cop Car Park	Formal parking	35	2	3	1	2.0
112: Shoal Hill Pull in 1 after Tavern, B5102	Gateway	1	2	3	1	2.0
11: Sister Dora Car Park	Formal parking	9	3	1	3	2.3
14: Car park opposite Brocton Lodge (Golf Green)	Formal parking	12	3	1	3	2.3
24: Coppice Hill pull in	Formal parking	4	1	1	5	2.3
27: Coppice Hill main Car Park at the end of the track	Formal parking	28	1	1	5	2.3
33: Pull in 20 yards after Glacial Boulder	Verge	2	1	1	5	2.3
55: Aspens main Car Park	Formal parking	18	1	1	5	2.3
60: 3rd pull in on Penkrigde Bank Road	Gateway	1	1	1	5	2.3
66: Pull in between Kingsley Wood Rd & Penkrigde Bank Rd	Verge	22	1	1	5	2.3
68: Pull in after Penkrigde Bank Car Park	Verge	2	1	1	5	2.3
86: Duffields Car Park	Formal parking	12	3	1	3	2.3
97: Gentleshaw Common pull in opposite pub	Verge	6	1	1	5	2.3
99: Gentleshaw Common main Car Park	Formal parking	8	1	1	5	2.3

Quality of parking locations: Feeling of safety and evidence of antisocial behaviours

- 5.17 Each parking location was given a 'safety feel' rating between 1 (feeling unsafe, signs of drug use / antisocial behaviour) and 5 (feeling very safe). These scores are highly subjective and very much dependent on the presence of activities or evidence of recent activities and whether these had been cleared up. However, they are of some value and are briefly discussed.
- 5.18 The average safety feelings for different parking locations and landowners are pooled in Table 12. Overall, laybys had the highest safety feeling (mean 4.2), followed by formal car parks (3.8) and informal parking locations (3.8). Formal car parks were rated as safest for the Forestry Commission (4.3), followed by 'other' owners (4.1) and the Staffordshire Wildlife Trust (4). The lowest mean safety ratings were given to informal parking locations belonging to 'other' owners (3.5) and the Forestry Commission (3.6). The only score lower than 3 for safety was Anson's Bank (CP No 45), where ASB issues are highly public and well known.
- 5.19 Furthermore, during auditing the presence of any antisocial behaviours (ASB) at each of the locations scored a single point for the presence of the following: evidence of litter, vandalism, car theft or other behaviours. Scores are created for the presence of each of these factors, ranging from 0 to 4, and summarised in Table 12. Map 22 shows the antisocial behaviour scores across the Chase, illustrating that most sites appear not be overly affected by ASB. On the whole, formal car parks scored the highest (average score of 0.75), followed by laybys (0.7) and informal locations (0.6). The formal car parks with the highest antisocial behaviour were owned by the SWT (1) and the SCC (0.9). Laybys had the highest average ASB scores on FC (1), SWT (1) and 'other' land (1). While informal parking generally had relatively low ASB scores (ranging between 0.3 and 0.9), it had an average score of 2 on land for which ownership is 'unclear'. Some locations appeared to have specific issues with antisocial behaviour. In Fives Valley car park (CP No 87) we found signs of littering, vandalism, car damage and other ASB. The pull-in en-route to the Coppice Hill main car park (CP No 26) had issues with littering, vandalism and other ASB. Other locations with ASB include Bednall Belt (CP No 39), Nine Gates (CP No 85), Brindley Heath (CP No 90), Hednesford Hill Nature Reserve (CP No 92).

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Table 12: Average scores for safety feel, access / surfacing, antisocial behaviour and facilities shown for the different types of parking (formal and informal) split by landowner. The highest values (for ASB the lowest) in each column are marked in green, while the lowest scores are shaded red.

Landowner	Average safety feel rating, 1 (feels unsafe) and 5 (feels safe)			Average ASB score for presence of four ASB factors. Values range between 1 (little ASB) and 4 (lots of ASB)			Average facilities score for the presence of fifteen different types of facilities. Values range between 1 (few facilities) and 15 (lots of facilities)		
	Formal	Informal	Overall	Formal	Informal	Overall	Formal	Informal	Overall
FC	4.3	3.6	3.7	0.5	0.9	0.8	4.0	0.2	0.8
SCC	3.6	4.1	3.8	0.9	0.4	0.6	3.5	0.7	2.1
SWT	4.0	4.3	4.3	1.0	0.7	0.8	7.0	5.0	5.5
NT	3.7	4.0	3.8	0.7	1.0	0.8	5.3	0.0	4.0
Other	4.1	3.3	3.9	0.3	0.7	0.4	4.9	1.0	3.7
Total	3.7	3.9	3.8	0.8	0.6	0.7	3.9	0.7	2.1

Quality of parking locations: Facilities

5.20 Presence / absence of facilities was recorded for each location and summed to create a total facilities score. The presence of 15 individual facilities were scored, ranging from information signs, car park boards, interpretation, restrictions indicated, through marked walks, way-marker posts or poster board, up to visitor centres, café or toilets. This ranged from 0 to a maximum of 15 (if all the above features are present; Table 12, Map 23). On average, facilities were better in formal car parks (3.9) than in laybys (1.9) and informal locations (0.6; Table 12). The SWT maintains the formal car parks with the highest facilities scores (7), followed by the National Trust (5.3). Laybys owned by the SCC or the SWT had acceptable facilities (3.3 and 4). Informal parking had low facilities scores for most landowners (0 – 2) but were unexpectedly well developed on SWT property (5.5). Many of the informal parking locations (e.g. on Chase and Camp Road) have no visitor facilities provided at all, while some formal car parks are well developed. These include Shugborough Hall (CP No 6; score of 15), Milford Common (CP No 10; score of 9), Birches Valley (CP No 69; score of 12), parking on roadsides around MD (CP No 81; score of 11), Cannock Chase Visitor Centre (CP No 82; score of 15), Museum of Cannock Chase (CP No 91, score of 11) and Chasewater South Shore (CP No 118; score of 12). Such locations may provide a good visitor experience and could be the most suitable candidates for increasing capacity.

Quality of parking locations: Level of screening

5.21 The amount of screening for parking locations was considered both from within the Chase looking towards the parking locations and from the main road to the car park (whether it was visible from the road) (Table 13). Car-parks that are not visible from the road are those that will be potentially more at risk from anti-social behaviour and more likely to have issues such as thefts from vehicles etc. Car-parks that are highly visible from within the Chase (as opposed to just from the road) are those that are potentially more visually intrusive from a landscape perspective.

5.22 National Trust locations around Shugborough were the most hidden from the road, with just one of the four visible from the road. Of the other owners SCC had the most parking locations (14 locations) not visible from the road, such that 81% of locations were visible.

5.23 Viewed from within the Chase looking back to the parking location most locations were either part screened or hidden from within the Chase. FC parking locations were particularly well screened in contrast to SCC locations which were the most open (as a result of recent clearance for visitor's security).

Table 13: Level of screening around parking locations, recorded as whether the parking location was visible from the road, and the level of screening around the parking location when viewed from within the Chase.

Land owner	Percent parking locations visible from the road (number)	Screening from within the Chase				
		Open	Little screening	Part screened	Hidden	Completely hidden in woodland
FC	92% (23)	(0)	(0)	5 (20)	15 (60)	5 (20)
SCC	81% (60)	2 (2.7)	9 (12.2)	38 (51.4)	19 (25.7)	6 (8.1)
SWT	100% (4)	1 (25)	(0)	1 (25)	2 (50)	(0)
NT	25% (1)	(0)	1 (25)	1 (25)	1 (25)	1 (25)
Other	91% (10)	(0)	(0)	2 (18.2)	8 (72.7)	1 (9.1)
Total	83% (98)	3 (2.5)	10 (8.5)	47 (39.8)	45 (38.1)	13 (11)

Car-park audit: parking condition and quality

In total, 52 locations (44% of all parking locations) are formal car-parks and these hold 86% of the parking spaces. The remaining 66% of locations are include lay-bys, gateways, verges and other informal parking areas and these account for 14% of the parking spaces. This means that while most of the parking spaces are in a small number of formal parking locations, there is a wide range of parking opportunities that are scattered and potentially difficult to manage. In particular Staffordshire County Council manage a large number of parking locations, many of which have limited capacity.

Relatively few parking locations had very good surfacing, but these included the largest car-parks. Scores for surfacing and sightlines allow the car-parks that are currently in poor condition to be identified; these are potentially ones which would require significant investment should they continue to be open.

In general car-parks along Chase Road were scored relatively poorly for surfacing and sightlines.

Anti-social behaviour issues were limited to a relatively few car-parks but were notable at certain locations along Chase Road and at some of the County Council owned areas.

Changes in parking capacity over time

- 5.24 The 2009 report (Liley *et al.* 2009) listed 85 parking locations with a total capacity of 1,086 spaces. This is substantially different from the 2,380 spaces listed in the current audit. These two are however not directly comparable, as the 2009 report related to a different geographic area (e.g. Shugborough and Chasewater were not included in the 2009 report) and the car-park capacities were estimated by different people.
- 5.25 We matched those locations which were within 30 metres in the two studies, or where they were obviously the same (e.g. from a name given). This allowed us to match 63 of the 85 locations from the 2009 report to current parking locations (22 car parks and 107 spaces could not be matched). A more robust approach was not possible, but this was considered still useful and the most appropriate with the data available.
- 5.26 Of these matched parking locations, 18 showed an increase in spaces (an overall increase of 491 spaces), 19 showed a decrease (decrease of 72 spaces), and 16 no change. The largest increase was at Birches Valley from 200 to 510 spaces, and greatest decrease was at Whitehouse car park. This resulted in an overall increase from 979 spaces in 2009 to 1,398 spaces in 2018 at these 63 paired locations - a percentage increase of 43%.

Car-park audit: changes over time

Direct comparison with a 2009 review of parking capacity and the 2018 audit suggests a marked increase in parking spaces. Parking provision has therefore not been static and there could be scope to manage this change strategically in the future.

6. Use of car-parks (transect count data)

Overview

6.1 Car-park counts were commenced in 2017 as part of a regular monitoring programme undertaken by the SAC partnership. Some brief analysis of data collect so far is presented in this section, which provides useful baseline information on the levels of use and distribution of access by vehicle within the AONB.

Data collection

6.2 The current transect count covers 120 parking locations as part of the regular monitoring (new car parks, such as the Wolseley Centre will be added in the next year but are yet to be surveyed). Count data available to date reflects a single year covering August 2017 through to August 2018, with 18 different counts undertaken (Table 14).

6.3 Generally, the number of parking locations surveyed have increased over this period as the count is refined and new car parks added, such as the most recent addition of the Wildlife Trust Wolseley Centre.

Results

6.4 Not all car-parks were counted in all transects. We therefore filtered the results to include only the subset of locations which were consistently recorded in all transects (n=97). The results are summarised in Table 14. This table omits some key large car parks (e.g. Shugborough) and therefore the totals are not representative of the total volume of visitor use (arriving by car), but comparison between dates is reliable. For each transect, the number of vehicles as a percentage of the average across all car parks for the subset (mean = 274). This suggest use on the May bank holiday was 250% greater than on an average transect.

Table 14: The dates of the 18 transects organised by week of year, rather than in date order. Details of parking dates, number of locations included in count and total vehicles in the count are shown – however these cover a varying number of parking locations and composition of parking locations so total vehicles are not comparable between counts. The final column provides the vehicle totals for a consistent subset and the percent change compared to an average transect.

Transect number (Week of year)	Transect date	Type of day	Parking locations counted	Total number of vehicles	Total number of vehicles from subset of counts (percentage of count compared to average)
10 (3)	14/01/2018	Weekend	120	294	142 (52%)
11 (6)	05/02/2018	Weekday	120	377	166 (61%)
12 (8)	18/02/2018	Weekend	118	867	374 (136%)
13 (11)	14/03/2018	Weekday	119	437	211 (77%)
14 (16)	21/04/2018	Weekend	120	1,245	441 (161%)
15 (19)	07/05/2018	Bank holiday	119	3,147	686 (250%)
16 (23)	03/06/2018	Weekend	120	1,341	464 (169%)
17 (24)	15/06/2018	Weekday	120	281	132 (48%)
18 (29)	15/07/2018	Weekend	120	1,051	366 (133%)
1 (34)	21/08/2017	Weekday	104	396	140 (51%)
2 (35)	28/08/2017	Bank holiday	104	1,338	445 (162%)
3 (38)	19/09/2017	Weekday	106	323	175 (64%)
4 (40)	01/10/2017	Weekend	117	790	390 (142%)
5 (42)	18/10/2017	Weekday	118	309	158 (58%)
6 (46)	17/11/2017	Weekday	118	330	211 (77%)
7 (47)	25/11/2017	Weekend	119	572	181 (66%)
8 (51)	17/12/2017	Weekend	120	239	112 (41%)
9 (51)	20/12/2017	Weekday	118	326	142 (52%)

6.5 Figure 2 shows the change in use across the year –expressed using the percentage fullness of parking locations. The averaged percent fullness of all parking locations on a single date ranged from 11% to 53% (week 6, February weekday and week 19, May bank holiday).

6.6 Fullness estimates were useful to show that many locations appear underutilised; 45 parking locations were on average less than 20% full and 100 on average less than 50% full. Even on the May bank holiday, 43 locations were less estimated as less than 20% of their capacity and 60 locations less than 50% full.

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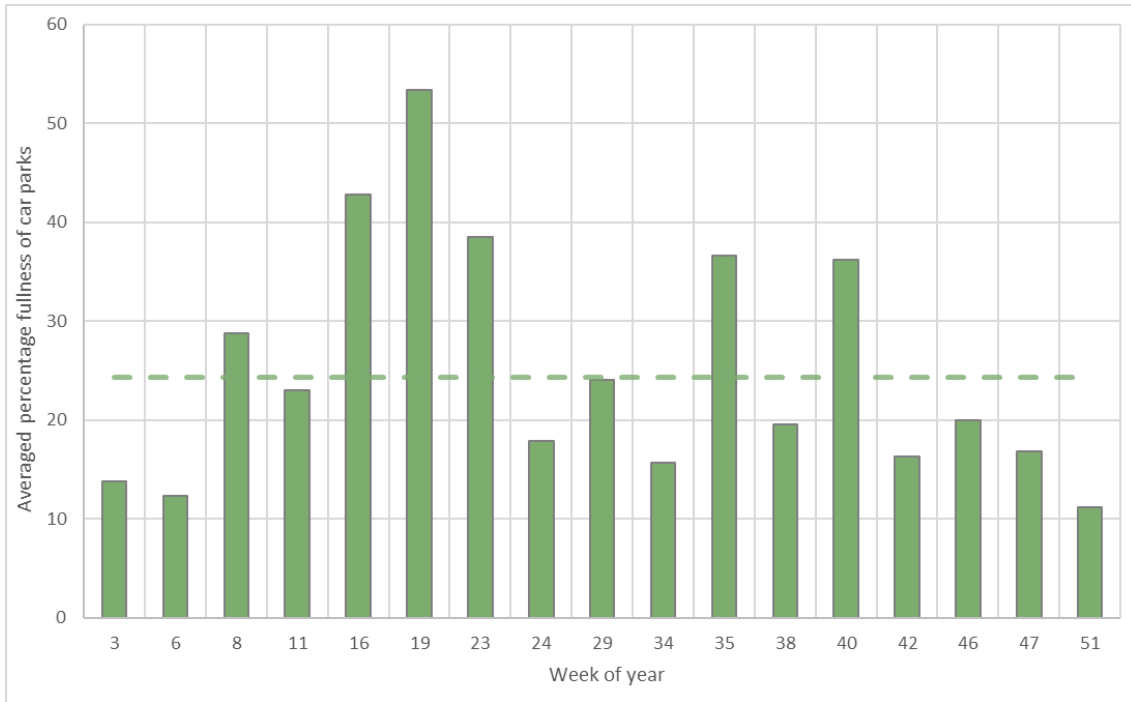


Figure 2: The average percent fullness of parking location shown over time (weeks of the year), dashed line indicates the average across the year.

6.7 Looking within different parts of the SAC, values on Chase Road were lower than all other locations (pooled) and varied less; a mean of 2.38 vehicles per transect with a standard error of ± 0.27 , compared to 3.40 ± 0.49 outside of Chase Road.

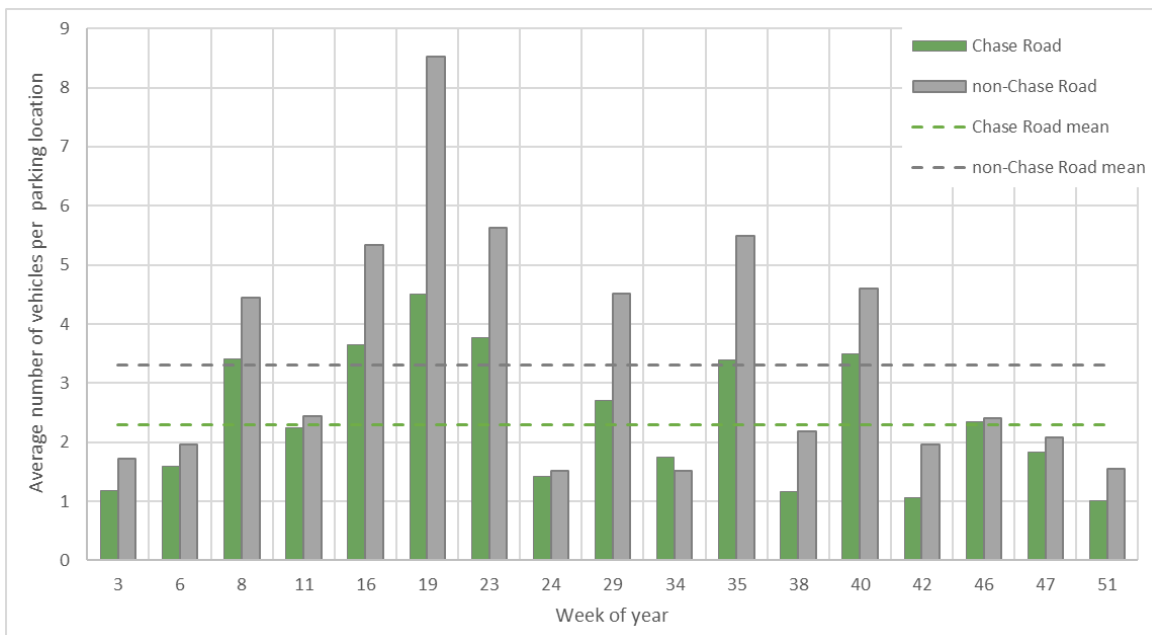


Figure 3: The average number of vehicles recorded at each car park, comparing locations along Chase Road to all others.

6.8 Another way to account for the varying number of locations surveyed in each transect was to examine the average number of vehicles recorded for each parking location. The average number of vehicles recorded for each parking location is shown in Map 24 and the top ten ranked parking locations are given Table 15.

6.9 The average number of vehicles recorded from all 120 car parks surveyed for all surveys is 893 vehicles. Using the maximum values recorded at each parking location, the sum of all these maximum values was 3,477 vehicles.

Table 15: Top ten ranked parking locations with greatest average number of vehicles across all transects. The maximum count of vehicles on a single transect count and the number of times each car park was surveyed is also given.

ID	Parking location name	Number of times surveyed	Average number of vehicles	Maximum count of vehicles
69	Birches Valley Car Park	15	248.9	798
6	Shugborough Hall, National Trust Car park	10	178.3	872
81	Parking on both sides on road networks around MD	17	96.3	380
118	Chasewater, South Shore Car park	17	59.1	367
82	Cannock Chase VC Car Park and overspill	18	27.5	92
1	Seven Springs Car Park	18	18.1	46
3	Punchbowl Car Park	18	13.3	59
65	Penkridge Bank Road Car Park	18	12.8	51
62	Whitehouse Car Park	18	12.4	42
10	Milford Common	18	12.2	69

6.10 The transect counts also record the different types of vehicles seen. These include cars, cars with cycle racks, and horse boxes, which can be used to infer some hotspots for these activities. The number of cars with cycle racks and horse boxes recorded across all transects was expressed as a percentage of the total number of vehicles recorded across all transects. These values are shown for the top ten ranked parking locations for the percentage of cycle racks in Table 16 and horse boxes Table 17.

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Table 16: Top ten ranked parking locations with greatest percentage of vehicles with cycle racks across all transects. The average number of vehicles across all transects is also given.

ID	Parking location name	Average number of vehicles on a transect	Average number of cars with cycle racks on a transect	% of cars with cycle racks (total number in brackets)
109	Moors Gorse Car Park	11.1	4.6	32.7 (65)
107	Pull in after Stile Cop LHS	5.2	2.0	28.2 (22)
65	Penkridge Bank Road Car Park	12.8	4.0	24.2 (56)
68	Pull in after Penkridge Bank Car Park, RHS	0.5	0.1	22.2 (2)
106	Stile Cop Car Park	6.1	1.7	22 (24)
80	Pull in just after turn to Marquis Drive, LHS	0.9	0.3	17.6 (3)
41	Pull in after Bednall Belt Car Park	0.8	0.1	14.3 (2)
69	Birches Valley Car Park	248.9	38.5	11.3 (423)
36	Pull in after Chase Road Corner Car Park	0.6	0.1	10 (1)
81	Parking on both sides on road networks around MD	96.3	10.9	8.7 (142)

Table 17: Top five ranked parking locations with greatest percentage of vehicles with horse boxes across all transects. The average number of vehicles across all transects is also given.

ID	Parking location name	Average number of vehicles on a transect	Average number of vehicles with horse boxes on a transect	% of vehicles with horse boxes (number in brackets)
4	Punchbowl Car Park	13.3	1	5.8 (14)
54	Aspens Car Park pull in as you enter	1.9	0.1	2.9 (1)
55	Aspens Car Park	2.1	0.1	2.9 (1)
74	Flints Field Car Park	4	0.1	2.8 (2)
108	Flaxley Green Car Park	2.3	0.1	2.4 (1)
1	Seven Springs Car Park	18.1	0.5	2.2 (7)

Comparison with previous counts

- 6.11 In 2010/2011, vehicle counts at 105 locations were undertaken across different seasons, with a total of eighteen transects completed. The total number of vehicles recorded on an average transect in this survey was 401 vehicles across all the parking locations surveyed. Compared to the ongoing 2017/18 transects which has a current estimated average of 893 vehicles this represents a 122% increase.
- 6.12 However, this comparison is not rigorous as the locations covered are different and the 2017/18 transects cover a greater number of sites (e.g. Chasewater included). We therefore selected only those locations which were comparable, matching those locations which were within 30 metres in the two studies, or where they were obviously the same (e.g. from a name given).
- 6.13 From the 2010/11 and 2017/18 a subset of 83 matched parking locations was examined. These data showed an average of 311.4 vehicles in 2010/11 and 518.9 in 2017/18 – around a 66% increase. The level of change at individual parking locations is shown for the top 10 decreases and increases in Table 18.

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Table 18: Top 10 ranked decreases and increases in the change in average number of vehicles between the 2010/11 and 2017/18 transect surveys at individual parking locations. (Note some car parks which have shown large decreases have been closed since the 2010/11 transect surveys and are indicated with an asterisk).

ID	Parking location name	Average number of vehicles 2010/11	Average number of vehicles 2017/18	Difference in averages	Percentage change in number
Top 10 decreases					
66	Pull in between Kingsley Wood Rd & Penkridge Bank Rd	1.0	0	-1	-100
42	Pull in 3 after Bednall Belt Car Park	0.4	0	-0.4	-100
43	Pull in 4 after Bednall Belt Car Park	0.2	0	-0.2	-100
23	Pull in just before Coppice Hill left turn	0.3	0	-0.3	-100
112	Shoal Hill Pull in 1 after Tavern, B5102	2.1	0.1	-1.9	-94
5	Pull in before main Shugborough entrance	0.4	0.1	-0.4	-88
4	Satnall Hills Car Park	7.8	1.3	-6.4	-83
13	The Cutting Car Park 2	3.8	1.2	-2.6	-69
88	Pull in after AONB brown signs	1.1	0.4	-0.7	-63
102	Beaudesert Old Park Car Park and pull in opposite	3.9	1.5	-2.4	-61
Top 10 increases:					
69	Birches Valley Car Park	88.8	248.9	160.0	180
3	Punchbowl Car Park	1.1	13.3	12.2	1100
109	Moors Gorse Car Park	3.2	11.1	7.8	243
56	Commonwealth Cemeteries Car Park	2.6	5.7	3.1	122
12	The Cutting Car Park	1.0	3.2	2.2	217
2	Coldman's Slade Car Park	0.3	1.3	1.0	300
29	Pull in after Freda's Grave, Chase Road	0.3	0.9	0.7	240
53	Quarry back entrance Pottal Pool, Badger Slade Wood	0.1	0.3	0.2	400
73	Pull in before Birches Valley, FC barrier 4 before Marquis	0.1	0.3	0.2	140
94	Nunswell Pull In (previously car park)	0.1	0.2	0.1	112

Car-park use

Counts of parked cars across Cannock Chase AONB indicate marked variation in use; for the selected car-parks, counts ranged from 239 vehicles (mid December, weekend) to 3,147 vehicles (May bank holiday). Even on the busiest days more than half of the parking locations are less than half-full. This suggests that there are some very marked peaks, yet current parking provision can accommodate many more vehicles and parking capacity does not currently limit visitor use or numbers in any way. There is potential to reduce capacity without limiting current access.

Parking locations on Chase Road tend to have less cars than other parking locations in the SAC and tend to vary less, suggesting more consistent use.

Comparing data from 2017/18 with previous counts in 2010/11 suggests a 66% increase in the number of vehicles. Locations where use has decreased are mostly small lay-bys and pull-ins and these are potentially ones which could be closed.

7. Stakeholder interviews

Overview

7.1 Interviews were conducted with key stakeholders in March 2018 by Footprint Ecology staff with SAC partnership staff also present. The aim of the interviews was to capture information relating to current management, current issues relating to their management and any future aspirations. Key stakeholders were:

- Forestry Commission
- National Trust
- RSPB
- Staffordshire County Council Ecologists
- Staffordshire County Council Archaeologists
- Staffordshire County Council Rights of Way
- Staffordshire County Council Works Team
- Staffordshire County Council Ranger Team
- Staffordshire Wildlife Trust

7.2 Interviewees were subsequently sent a form and interactive map to formally record less anecdotal information, such as data on visitor numbers, educational visits, changes to car parks, and asked to score the importance of adverse impacts and the effectiveness of certain management measures. Only a brief interview was undertaken with the RSPB, without detailed discussion of car parks or forms completed, as they are yet to establish their formal presence in Cannock.

7.3 A brief synopsis of the position of each organisation is presented and subsequently the consensus for individual topics discussed.

Overviews for each organisation

Forestry Commission

7.4 The Forestry Commission plans to continue to increase visitor use within the Forestry Commission estate and visitors are viewed as equal in importance to forestry operations. New facilities at Birches Valley are to be provided (e.g. café, toilets), including increasing car parking provision. The trails can get busy and the Forestry Commission would like to put in another formal route. Issues such as parking in front of access gates and new path creation are of concern, but resources are limited to effectively police these.

National Trust

- 7.5 The National Trust took over management of Shugborough Hall in 2016⁴, and recently acquired more land on Cannock Chase from the County Council. The Hall is outside the SAC, but the newly acquired land is within the SAC. Visitor numbers more than doubled in the first year of taking over the management of the hall and the National Trust wish to increase this number further. However, the ideal for the National Trust would be a reasonably consistent level of visitor across the year, avoiding big events and spikes in visitor numbers on certain days/seasons. Access to the recently acquired SAC area and the car parks located there are not promoted, and the National Trust is more likely to close these than promote access and charge for parking.
- 7.6 National Trust are willing to assist in absorbing some visitor pressure from the SAC. Dog walkers are a key group, these are potentially a core visitor group for National Trust and growing this business could include some dog day events or family days along with day to day actions to facilitate these visits. They are able to absorb some cycling visitor pressure at Shugborough, especially family audiences, but will be unlikely to offer something for mountain bikers. The Trust wishes to have more partnership working, including some generic signage but at the same time would need to protect their branding and identity at Shugborough.

RSPB

- 7.7 The RSPB are currently in the process of acquiring a reasonable area of the Chase – including heathland, woodland and quarry land. As such, they are still yet to take on active management and establish a formal presence, this is likely to be completed in 2018. The land currently has formal and informal access, but at low levels with no dedicated car park. Current parking is by informal, verge-sides, down unsurfaced roads. RSPB wish the site to continue to have very low-key access as the site is not to be a show-case, high-footfall site. Parking may become more formalised, but with a similar level of spaces (down Kingsley Wood Road) and access more carefully managed. The site will not have any offices or visitor infrastructure.
- 7.8 Organised events on the site are likely to be minimal and while local staff numbers are yet to be determined, a low level of staff presence is likely. Staff

⁴ Shugborough was originally given to the National Trust in lieu of death duties in 1966. The Trust least the estate to Staffordshire County Council, who surrendered the lease in 2016.

will gain support from regional hubs and work with partners in Cannock Chase. The RSPB views partnership working to be important and can potentially provide some advisory roles and education away from the reserve, keeping the RSPB land as low access.

Staffordshire Country Council

- 7.9 Interviews included the Staffordshire County Council ecologists, public rights of way staff, heritage staff, the works team and ranger team. Given the range of people interviewed and the variation in roles there were inevitably some differences in the views expressed.
- 7.10 There is a view that the Council land is at capacity in terms of visitor numbers and that the parking at Coppice Hill (CP Nos 25-27) is the biggest issue as it brings people straight into some of the most sensitive parts of the SAC.
- 7.11 The County Council generally receives few complaints with regards to Cannock Chase, as people expect it to be wild and free. There are no persistent ongoing issues as such, although there is always a public response to general management operations such as bracken spraying. Most of these responses are minor access issues and can be resolved with user groups. People are often lost and do not know whose land they are on and this has implications when emergency services are trying to get to them.
- 7.12 The overall volume and increasing numbers of visitors is a concern. Some parts of the County Council owned land were thought to have too many visitors, cyclists and horse riders. Cyclists were regarded as one of the most damaging, increasing in number and most likely to open up new paths from deer tracks. The County Council has produced a video with advice for cyclists, but the effectiveness of this is unknown. The volume of dog mess from dog walkers and damage by horse riders are also issues of concern.
- 7.13 Marquis Drive was particularly highlighted in relation to visitor capacity issues, on busy summer days most of the available staff time is taken up policing BBQs, emptying bins and dealing with access issues. The infrastructure (toilets and café) at Marquis Drive Visitor Centre are inadequate and there are issues around the parking there.
- 7.14 The archaeological interest was highlighted. Scheduled ancient monuments (SAM) are the highest priority/concern and are legally protected. Other key historic interest features are primarily those from the Great War (camps and training features, some of which have international significance) and recent

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LIDAR shows these are extensive across the area (with the exception of some plantations).

- 7.15 Many footpaths respect the heritage features, but new paths may be very damaging. Any changes to individual paths would need consultation on a case-by-case basis so as to avoid damage to archaeological features.
- 7.16 Current access management includes destination management plans and events management protocols to guide visitor numbers and access decisions. The Council permit access for a range of organised cycling, running and orienteering events (informed by an HRA for these; see Hoskin, Lake, Underhill-Day J., & Panter, 2017).
- 7.17 Separating different users by signage is unlikely to work, especially if this is not enforced by staff on the ground. National Trust appear to be opening up new trails, which may relieve pressure on the SAC, and the Forestry Commission could do the same. To control parking, trenches would be most effective as posts are more easily vandalised.
- 7.18 County Council land has more parking than is currently necessary, but the response to closing car parks would result in an extremely negative response from some locals who are already suspicious of any changes. It was thought that alternatives would need to be offered and carefully managed engagement would be necessary. Concern was expressed that closure of any large car parks would result in more layby/verge parking.
- 7.19 The closure of informal parking areas (e.g. laybys) should be prioritised, as issues of fly tipping, vandalism and anti-social behaviour occur at all of them, and these would just move around if one or two 'problem' sites were closed. The screening around parking locations is one of the main issues. A layby on Chase Road has been closed in the past and objections were made, but soon forgotten – the rest of Chase Road could be closed in stages over several years. Vandalism to barriers is a regular occurrence when people want access with 4x4s to the site. Any new barriers which close car parks would be at risk of being vandalised, but the levels of vandalism could be coped with.
- 7.20 It was noted that signage and access furniture on site are largely discouraged by AONB policies (encouraging only low key, minimal and appropriate signage), and people may take little notice of signage, particular long-time visitors. New, unobtrusive and good signage was identified as necessary to show ownerships, paths and consistent naming of areas.

- 7.21 Lots of the issues of vandalism, anti-social behaviour and other minor issues can be stopped by presence of staff on sites, but current resources limit this. Feedback suggested the behaviour patterns of occasional visitors are easier to influence than the patterns of regular, habitual visitors. Also, while other means of engagement/interpretation (e.g. signage, digital) are helpful, they are no substitute for an enthusiastic person on site. Finally, stakeholders were keen to see it made easier to visit alternative sites away from the SAC or Cannock Chase generally.
- 7.22 Stakeholders from Staffordshire County Council also identified a landscaped amphitheatre area next to the Cannock Chase Enterprise Centre (near to Marquis Drive) as potentially able to absorb more access. The area is currently closed with barriers restricting parking/vehicle access (although it is utilised for some infrequent events and informal access). Given its location outside the SAC, with good views and existing (unused) parking infrastructure, this could be used carefully to relieve pressure from the more sensitive areas.

Staffordshire Wildlife Trust

- 7.23 The Staffordshire Wildlife Trust has no land holdings in the Chase as such, but Gentleshaw Common and George's Hayes reserve are both within the AONB, and the Wolseley Centre is a key visitor hub just outside the AONB. The SWT currently has no intention to increase visitor footfall on either of the two nature reserves, but does wish to increase visitors to the Wolseley Centre, especially engaging with young people. This would involve increasing parking, renovation of current buildings and more education facilities to attract more people. Education/interpretation on the SAC could also feature at the Wolseley Centre, but the Trust also wishes to improve education facilities off-site at the John O'Leary Centre. Education of young people is a

key aim and currently this attracts 15,000 per annum with the aim of increasing the numbers further.

Stakeholder interviews: key points from different organisations

Implications for site user strategy

- The Forestry Commission and National Trust have both seen marked increases in visitor numbers, linked to changes in management and infrastructure. In both cases the use is focussed outside the SAC;
- Birches Valley, Shugborough and the Wolseley Centre could continue to be promoted and developed as key visitor hubs and destinations in their own right, all outside the SAC. Birches Valley has a strong orientation towards cycling;
- Growing visitor use on Staffordshire County Council land is a concern and there is a suggestion that numbers are at capacity given the current facilities and resources.
- Marquis Drive is stretched in terms of infrastructure and facilities;
- Stakeholders suggested more and more new paths are being created as cyclists and others use existing deer paths, firebreaks etc. which then become established as routes;
- There is support for more ranger time as the best way to control vandalism, anti-social behaviour and to engage with visitors, however current resources are limited.

Implications for car-park strategy

- Herringbone parking at Marquis Drive could allow more parking and better management of parking on roadsides;
- There is potential to charge for parking on the roadsides at Marquis Drive, which could lead to more use of the main car-parks and provide revenue;
- There is potential for additional, new parking outside the SAC on County Council land near the Cannock Enterprise Centre;
- Anson's Bank car-park is one of the worst for anti-social behaviours;
- To control parking, trenches would more effective as posts are more easily vandalised;
- Chase Road has been the location for recent accidents due to its poor condition, but as it is not a publicly maintained highway there is no requirement for it to be maintained. It is a sensitive location as it brings people into a sensitive area;
- The preferred option for Chase Road would be to close the middle and have more access from Camp Road instead.

Summary of individual topics

Current activities and conflicts between site users

- 7.24 There are currently many conflicts between different user groups; cyclists, horse riders, dog walkers and walkers and many accept that there will always be conflicts. Some stakeholders felt that more could be done to attempt to separate user groups. Although on the ground this may be harder as they wouldn't want to create more paths.
- 7.25 It was frequently stated that many users find themselves lost and therefore it is hard to expect certain user groups to stick to set paths for different activities if these are not clear.

Current changes and future patterns in behaviours

- 7.26 Activities such as drones, electric bikes, night time cycling, wild camping were noted to be on the increase. Quad biking was, at one time, felt to be an increasing activity, but recent new ditches have in part helped stem this. It was noted that there was increased use of the site by ethnic communities, some with large families and some engaged in particular washing rituals, resulting in facilities receiving greater use at busy times.

Facilities

- 7.27 There are large planned renovations/increases in facilities at NT Shugborough, FC Birches Valley and SWT Wolseley centre. Aspirations for the County Council land including a complete renovation of the Marquis Drive visitor centre, renovation of the John O'Leary centre, and more and better interpretation. The Council are currently reviewing their countryside estate.
- 7.28 There is an urgent need for renovation of facilities at Marquis Drive, with the site already felt to be at capacity at peak times of the year and unfeasible to manage due to running costs. Improvements at Marquis Drive would relieve pressure from the rest of the County Council land, but parking charges would probably be needed to raise revenue to maintain the site (and changes to parking charges would need to be accompanied by improvements to the facilities in order to meet expectations). A pay barrier system and herringbone parking along the road would be options. Parking charges at other, more remote locations may generate relatively little income due to vandalism costs.

- 7.29 In some areas, where facilities have been added in recent years, there is the suggestion that they are already not meeting demand e.g. increased BBQ facilities at Marquis Drive Visitor Centre.

Educational and recreational events

- 7.30 The stakeholders were asked to provide information on educational and recreational events they hold on their land holdings or elsewhere in the Chase, as well as events held by external organisations on their land. Individual events are listed in Table 20 and summarised into totals in Table 19. It should be noted many of these figures provided are highly approximate and there is a degree of error, nonetheless they serve to give an idea of the scale of events being conducted.
- 7.31 The different organisations have differing agendas, drivers (e.g. funding/ memberships) and approaches to engagement. It should be noted that events by Staffordshire Wildlife Trust are mostly at the Wolseley Centre – located just outside the AONB – and most other events (particularly Forestry and National Trust) are usually well-off SAC land, but still within the AONB.
- 7.32 Key organisations that carrying out events are primarily the Forestry Commission, also National Trust and Wildlife Trust, and to a lesser extent County Council. Educational events include small scale year-round events by National Trust and Wildlife Trust, local school events by the County Council and Wildlife Trust, and forest school activities by the Forestry Commission. Most of these educational events are small in scale and focussed to particular target groups, with the exception of the fundraising/education events by the County Council which can be large single events.
- 7.33 Other recreational activities include large single events run by the Forestry Commission or Wildlife Trust, and smaller scale events some of which are regular. The National Trust carries out a programme of activities and small events all year round with varied attendance. This includes guided walks to see specific wildlife six times a year. They also run community engagement activities for responsible dog use two-four times per year. Staffordshire County Council hosts school visits and educational events approximately 3 times per year, with a footfall up to 500 people. Local guided heathland walks are held and attract up to 15 attendees per event. Forestry Commission runs some of the largest events with the music concerts and Christmas events attracting a combined figure of around 58,000 visitors.

- 7.34 Both the NT and the SCC noted that external organisations frequently organise activities on the Chase. Local cycling events on SCC land by the local bike club have around 10-40 attendees and seem to be getting more frequent. The local horse-riding club uses the SCC land about 100 times per year on a formal permit system, with about 5 horse riders attending each time, however visits are likely to be less in future years. Commercial dog walking is an informal, frequent occurrence with typically about 4-5 dogs. All SCC events now follow the protocol (see Hoskin et al., 2017). The Wildlife Trust also has a reasonable number of external events, but most day centres, school visits, courses and group walks or other activities. However, the largest number of these events was by far the Forestry Commission - often related to a wide range of cycling and running events.
- 7.35 Some stakeholders report cut backs in education, with FC reporting a reduction from four/five staff to one staff member as a result of a change in national policy and the current approach focuses on 'ranger in a bag' kits, with some staff led forest school events. Staffordshire County Council ranger teams and works teams do not have the resources or capacity to spend time on education (e.g. wildlife groups, community/school liaison, fire safety etc.).

Table 19: Summary table of estimated annual number of attendees for events by different organisations. Note all figures are highly approximate.

Stakeholder	Educational Events	Recreational Activities	Events By External Organisations
National Trust	3,445	290	48
Staffordshire County Council	1,315	156	1,800
Staffordshire Wildlife Trust	9,036	9,460	800
Forestry Commission	904	58,000	8,028
Total	14,700	67,906	10,676

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Table 20: Summary of educational events and recreational activities held by stakeholders, and events held by external organisations on their land. Frequency of events are stated in bold, number of attendees are underlined and finally any likely changes stated. All considered highly approximate.

Stakeholder	Educational Events	Recreational Activities	Events By External Organisations
National Trust	Annual programme of activities, trails and small events; all year ; <u>varied attendance (around 2% of visits)</u>	Guided walks to see specific wildlife (e.g. small pearl-bordered fritillary) and discuss habitat management; max. 6 per year ; <u>10-20 attendees</u>	Local Orienteering Club use Satnall Hillst
	Community engagement activities for responsible dog use off SAC; 2-4 times per year ; <u>10-20 attendees</u> ; plans for extending to nesting season	Volunteer work parties; 20 times per year in winter ; max. 10 attendees	Search and Rescue used Satnall Hillst
Staffordshire County Council	Local school visits; estimated twice a year ; <u>30-45 attendees</u>	Local heath group guided walks, meet at enterprise centre; 12 times per year ; <u>10-15 attendees</u> ; plans to reduce to two events per year	Local bike club use site on every weekend in summer; 50 times per year ; <u>10-40 attendees</u> ; seem to be getting more frequent
	Fundraising / education events at visitor centre; 3 times per year ; <u>300-500 footfall per event</u>	County Natural History Society; once in last 5 years , <u>30 attendees</u> ; less frequent expected in future	Horse riding club; formal permit for twice a week, 100 times per year ; <u>5 attendees</u> ; owner thinking of fewer events
	Fungal foray; once a year ; <u>10-15 attendees</u>		Shugborough OEC; informal and regular, especially in spring and summer ; <u>approx. 10 attendees</u> ; no changes agreed
	Staff university study day; once a year ; <u>25-30 attendees</u>		Orienteering; varied times per year ; <u>varied number of attendees</u> ;
			Commercial dog walking; informal and regular ; <u>usually 4-5 dogs</u> ; no changes agreed
		Commercial horse riding, at least 3 horse trekking centres; informal and regular (avg. every other day) ; <u>usually 10-20 people</u> ;	
Staffordshire Wildlife Trust	Birthday parties; 60 times per year ; <u>c.40 attendees</u>	Family Engagement Events; 70 times per year ; <u>30 attendees</u> plan to increase	School visits; 4 times per year ; <u>attendees varies (assumed avg 15)</u> . Likely decrease

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Stakeholder	Educational Events	Recreational Activities	Events By External Organisations
	Evening group visits; 20 times per year ; <u>25 attendees</u>	Large Public Engagement Events; 2 times per year ; <u>c. 1500 attendees</u> . Likely reduce to one a year	Day centres; weekly, 40 times per year ; <u>8 attendees</u>
	Training Courses (Adults); 30 times per year ; <u>15 attendees</u>	Guided walks; 8 times per year ; <u>20 attendees</u>	Group Walks/Activities; 15 times a year <u>20 attendees</u> ;
	Leisure Courses (Adults); 45 times per year ; <u>12 attendees</u>	Conferences; 200 times per year ; <u>avg. 21 attendees</u>	Courses; informal, 8 times a year ; <u>usually 10-20</u> Likely decrease
	School Visits by local schools; 85 times per year ; <u>40 attendees</u>		
	Parent & Toddler Sessions; 72 times per year ; <u>18 attendees</u>		
	Holiday Play sessions; 30 times per year ; <u>15 attendees</u> . Plans to increase		

† Both total less than 100. For the purposes of a calculation this was assumed as groups of around 12 visiting twice a year.

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Table continued

Stakeholder	Educational Events	Recreational Activities	Events By External Organisations
Forestry Commission	Bike course; 4 times per year; <u>18 attendees</u>	Music concerts; 3 times per year in July; <u>6,000 attendees</u>	Orienteering; informal and regular, 4-5 times per year; <u>10-20 attendees</u> , no changes agreed
	Forest school; 3 times per year; <u>30 attendees</u>	Christmas tree sales centre and grotto; Once per year in November / December; <u>40,000 attendees</u>	Trig Point Race, once a year in January; <u>120 runners approx.</u> , no changes agreed
	Gruffalo related; 6 times per year; <u>51 attendees</u>		FC 4 X 4; 11 times per year; <u>no attendance indicated</u> ; no changes agreed
	Pond dipping / 'mini beasts'; 6 times per year; <u>40 attendees</u>		Run & Ride Series; Once per season; <u>175 attendees</u> ; no changes agreed
	Shelter building; 7 times per year; <u>28 attendees</u>		Racer's Guild; 6-8 times per year on Sundays; <u>100 attendees</u> ; no changes agreed
			Evans Cycles (Demo); Once a year over 1 week; <u>200-300 attendees</u> ; increase in participants planned
			School X Country; Once per year in March; <u>200 attendees</u> ; no changes agreed
			Equestrian; Twice per year in March & September; <u>100 attendees</u> ; increase in participants planned
			Chase Walk; Once per year in March; <u>600 attendees</u> ; possibly stopped
			Leisure Lakes Demo Day; Once per year in March; <u>450 attendees</u> ; possibly increase participants
			Orienteering Regional Event; Twice per year; <u>500-600 attendees</u> ; no changes agreed
			Road CC Demo Day; Once per year in April; <u>100 attendees</u> ; new event with potential for growth
			Midlands XC; Once per year in May; <u>350-400 attendees</u> ; no changes agreed
			Cycle Republic Demo Day; Once per year in May; <u>350-400 attendees</u> ; possibly stopped
			10k Runs; Twice per year in August; <u>500 attendees each</u> ; possibly growing attendance
		Wide Horizon Walks; Twice per year in summer; <u>200 attendees</u> ; no changes agreed	
		Swinnerton's; Once per year in October; <u>60 attendees</u> ; potential for growth	
		Cancer Research; Once per year in November; <u>400 attendees</u> ; no changes agreed	

Adverse site impacts

- 7.36 Stakeholders were asked to score site impacts, rating different impacts from 0 (no impact) to 10 (most severe impact). The results by individual stakeholders are summarised in Table 21.
- 7.37 The National Trust reported that the most adverse impacts were new path creation and disturbance to breeding birds (both a rating of 10), followed by dog fouling (8) and fly tipping (7). Staffordshire Wildlife Trusts concerns were focused on path erosion (9) and path widening (9), followed by disturbance to birds (8) and then new paths and fire (7). The SCC indicated considerably more impacts than other stakeholders and rated these much higher. This may relate to higher visitor numbers and possibly more sensitive features being on SCC owned land. New path creation was rated as the most significant adverse impact (10), followed by fire (8-9), dog fouling (8), spread of disease (8), path widening (7-8) and disturbance to deer (7-8). Harvesting (e.g. fruits and fungi) was indicated as having the lowest impact across stakeholders.
- 7.38 Anti-social behaviours, including fly tipping and vandalism were noted to be more common in more remote car parks (e.g. most recently top of Kingsley Wood Road), but equally these can occur anywhere in the Chase. Anson's Bank car park is one of the worse for anti-social behaviours, but otherwise anywhere can be a problem. Screening around parking locations was considered to be an encouragement to antisocial behaviours, particular any daytime activities.

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Table 21: Summary of adverse site impacts operating on land owned by different stakeholders on Cannock Chase. The different landowners were not aware of points made by other parties, and discrepancies in points raised does not necessarily imply disagreement. The most important adverse effects are stated in bold (i.e ≥ 7). NR denotes not rated, ? indicates uncertainty regarding impact.

Stakeholder	Path surface erosion	Path widening	New path creation	Litter	Fly tipping	Dog fouling	Disturbance to breeding birds	Fire	Vandalism	Harvesting	Spread of disease	Disturbance to deer	Noise	Other
National Trust	5	5	10	5	7	8	10	5	5	0	5	3	4	NR
SCC person 1	5	5	5	2	1	3	3	?	5	NR	10	2	NR	NR
SCC person 2	7	7-8	10	6-7	5	8	7-8	8-9	7	4	8	7-8	7	7
SCC person 3	10	10	10	10	10	10	7	7	5	NR	8	NR	3	10
Wildlife Trust	9	9	7	5	NR	6	8	7	6	2	4	2	NR	NR
Forestry Commission	2	2	4	5	3	4	2	1	7	2	5	2	1	NR

Management measures taken

- 7.39 Leading on from this, landowners were asked to state the measures they had taken to mitigate these site impacts, their effectiveness and an indication whether these methods would be considered for future use.
- 7.40 The NT has already used a variety of measures to control visitor behaviour, including temporary signage, temporary fencing, temporary barriers, guided walks, free poo bags, events for dog walkers and direct contact with clubs. Temporary fencing and barriers had the greatest effect (each a 7), while the provision of free poo bags was less effective (3). The overall experience with these measures seems to have been positive, as all measures are to be used in the future.
- 7.41 Measures so far having been introduced by the SCC include temporary signage, temporary fencing, guided walks and events for dog walkers. Most other measures, particularly aimed at dogs, have not been previously used. However, the County Council will consider trialling temporary barriers (providing this is possible on common land), free poo bags, dog bins, dog training areas and cycle barriers in the future. The implementation of most of these controls appears to depend on available funding. Furthermore, other options such as Public Space Protection Orders (PSPOs) to control dogs are used elsewhere in the County, however the Council are reluctant to adopt a more positive approach at Cannock Chase.
- 7.42 The Wildlife Trust reported temporary features; barriers, signage and fencing as the most effective measures (all scoring ≥ 8). Additionally, noting that dead hedging short section of paths as a barrier caused no issues with people continuing to use old footpath and once the barrier disintegrated, erosion was no longer visible and so people mainly stuck to the main path.
- 7.43 There was generally a common consensus that presence of staff was a key factor in promoting appropriate behaviour/ deterring inappropriate behaviours, but this approach is extremely time consuming and staff (mostly FC and SCC) said they simply do not have the time.

Management measures to prevent new path creation

- 7.44 Stakeholders often suggest cyclists were creating new paths, using existing deer tracks which are then opened up further by walkers, while firebreaks are often used as paths, particularly by horse riders. As such, more and more new paths are being created.

- 7.45 We wanted to know what measures the different landowners have taken to dissuade visitors from using unofficial routes in the past, how these measures were delivered, their outcome / visitor response and an overall score from 0 (not working at all) to 10 (working very well; Table 22).
- 7.46 On their land the NT has closed off unofficial routes using tree felling, placing brash barriers, providing alternative paths, fencing and face-to-face engagement / patrolling. Tree felling was given the highest score (8), but it was sometimes unpopular with visitors. Brash barriers (7) and alternative path provision (7) were both seen as effective, but do not deter visitors that have specific targets on site. Fencing (5) was rated lower, because it was only deemed effective in small areas (e.g. exclusion zones). Despite its effectiveness, face-to-face engagement was given the lowest score (4) because it is expensive and time consuming.
- 7.47 The SCC has officially closed paths through site notices with explanatory notices (but usually time limited). These were rated as efficient (8) for most visitors, although some people are antagonised by them or choose to ignore them (e.g. long-term phytophthora signage). Some people noted the grazing infrastructure as part of a recent project worked well to prevent desire lines.

Signage and interpretation

- 7.48 Stakeholders frequently commented that the AONB signage strategy (brown road signs with white deer, often on purple background) is too obtrusive and detracts from a wilderness feel and that too much signage is detrimental. But most agreed that it is confusing for the public when there are different signage designs and types depending on who owns what, where people are, and what they are required to do in different parts of the Chase.
- 7.49 Most stakeholders would agree to some standardised signage provided they can still maintain their own brand identity alongside this.

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Table 22: Summary of the measures introduced by different Cannock Chase stakeholders on their respective land parcels, their effectiveness (from 0: not effective to 10: extremely effective) and whether these measures would be used or used again in the future. U = Has been used, NU = has not been Used, Y = Yes, N = No, ? indicates uncertainty about effectiveness or future use.

Measure	Stakeholder	Temporary signage	Temporary fencing	Temporary barriers	Guided walks	Free poo bags	Dog bins	Spraying dog poo	Events for dog walkers	Dog training areas	Cycle barriers	Contact with clubs	Other events	Other
Has been Used / Not Used	National Trust	U	U	U	U	U	U	NU	U	NU	NU	U	NU	
	SCC person 1	U												
	SCC person 2	U	U	NU	U	NU	NU	NU	U	NU	NU	U	NU	
	SCC person 3	U	U	NU	NA	NA	NA	NA	NA	NA	NU	NA	NA	
	SWT	U	U	U	U	U	U	NU	U	NU	NU	U	NU	
	FC	U	U	U	U	NU	NU	NU	U	U	NU	U	U	
Effectiveness	National Trust	5	7	7	5	3	6	-	-	-	6	6	-	-
	SCC person 1	1												
	SCC person 2	5	8		?			?	?	?		?		
	SCC person 3	4	7											
	SWT	8	8	10	5	7	6		5			2		
	FC	4	7	2	4				6	7		3	8	
Would use again?	National Trust	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	-
	SCC person 1	N (not in same way)												
	SCC person 2	Y	Y	T	T		T	?	T	T	T	T	T	
	SCC person 3	Y	Y											
	SWT													
	FC								Dog T.A.G.					

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Table 23: Summary of the measures used by the different Cannock Chase stakeholders on their land to dissuade visitors from using unofficial routes, including how the measure was achieved, its outcome/response and score (0 not working at all to 10 working very well).

Measure	Stakeholder	Tree felling	Brash barriers	Alternative paths	Fencing	Face-face engagement / patrolling
How achieved?	National Trust	Tree felling over paths	Piles of brash over entrances to paths			Talking to people on ground, explaining management
	SCC	Temporary signage for area closure	Barrier tapes	Cones	Temporary signage for fire access	
Outcome/response	National Trust	Tends to work, but not always popular	Works if alternative paths are in suitable condition	Good network of paths is best step to avoid new paths developing; doesn't work if people have dedicated on-site target	On the whole fences tend to get cut; works in small areas (e.g. deer exclusion zones)	Works well, but very time consuming
	SCC	People ignore and use route regardless	People ignore and use route regardless	People ignore and use route regardless	People ignore and park regardless	
Score 0 (not working) – 10 (working very well)	National Trust	8	7	7	5	4
	SCC	4	4	4	3	

Changes to car parks

- 7.50 Stakeholders were asked to consider what changes they felt were needed with regards to car parking. This included the closure of existing parking locations, expansion or reduction of parking, or opening of completely new parking locations.
- 7.51 Staffordshire Wildlife Trust are to increase parking at the Wolseley Centre. The National Trust car park at Shugborough is not considered long-term or permanent and could increase in a future improvement to accommodate more visitors. The County Council has no current plans to increase parking capacity but could consider this at somewhere like Nine Gates (however Council stakeholders suggested increases for parking capacity would be better suited at FC car parks). The Forestry Commission have an existing plan to increase the amount of car parking at Birches Valley from around 450 spaces (750 with guided parking by staff and overflows) to 750 'self parking' spaces.
- 7.52 Parking charges were discussed, and these are already in place at some parking locations e.g. Birches Valley and the County Council car-parks at Marquis Drive, and these can bring in much needed revenue to organisations. It was suggested that this could be formalised better at larger car parks e.g. the roads around Marquis Drive. But it was often felt that parking meters in quiet locations would be too costly to maintain following any likely vandalism. In the interviews, the SCC suggested five locations as suitable for charging, totalling 270 spaces. The NT have not identified any locations as suitable for charging but would be supportive of charging at suitable locations across the SAC. NT would be willing to consider closing parking locations within the SAC to avoid undermining charging by partners. The suggested locations for charging are shown in Map 25.
- 7.53 No indications were given regarding which car parks may be increased or decreased in size. However, the NT may close pull-in No 5 and car parks Nos 2 and 3 (Table 24). The SCC would like to close the pull-ins Nos 80 and 67 on its land. It was also suggested that there could be closures on Chase Road (Nos 28, 29, 31-34, 37 and 38), which is in the northern part of the SAC. The SCC also highlighted potential closures on Camp Road (pull-ins Nos 40-43, 46-48, 51 and 52).
- 7.54 A few laybys / car parks were proposed for a charging scheme, including Milford Common, Marquis Drive, Brindley, Coppice Hill, Aspens, Chase Vista, Punchbowl, Chase Road Corner and Cutting.
- 7.55 Map 25 shows changes to car parks suggested in stakeholder interviews. Most locations (total of 23) suggested for closure are on Chase and Camp Road under

SCC ownership, and would result in little net loss of parking spaces. The car parks with the highest capacities suggested for closure are Nine Gate (No 85, capacity: 39), Anson's Bank (No 45, capacity: 20) and Glacial Boulder (No 32, capacity: 18). Overall, if all proposed sites were to be closed, this would result in a net loss of 161 spaces on Cannock Chase (Table 24), which would have to be absorbed at other locations on site.

- 7.56 Parking locations could be closed, but interviewees highlighted that if this was discouraging any antisocial behaviour then the implications of displacement needed to be considered. Also, laybys would need careful management as people felt new ones appear all the time and people will create new ones.
- 7.57 Closure of some car parks in recent years have been met with mixed responses. The car park at the Katyn memorial was closed several years ago with little objection. By contrast a recent closure of Anson's bank car park was met with some fierce opposition, the decision overturned, and it was subsequently reopened.

Chase road/Camp road

- 7.58 With most stakeholders Chase Road was discussed. It is most people's opinion that Chase Road is not used as a through road, but only by those 'visiting' the site – which can be simply driving along the road, or parking and not leaving the car. Chase Road has been the location for recent accidents and claims against Staffordshire County Council due to its poor condition, but it is not a publicly maintained highway so has no requirement to be maintained as such. Stakeholders felt that the location of the road was an issue as it is bringing people into a sensitive area. However, it is recognised that it provides a benefit to those with limited mobility, those wanting views or short walks and for many visitors Chase Road is Cannock Chase.
- 7.59 Options for closing all or parts of Chase Road were discussed with suggestions including: one end could be closed so it is no longer a through road; a reduction in parking spaces or locations could be put in place; or Chase Road could be closed altogether. It was stressed by stakeholders that closure would be very controversial, and alternatives may need to be provided - one suggestion was that if Chase Road was closed, more access from Camp Road could be provided instead. Some stakeholders noted that Chase Road has been closed at certain times anyway e.g. during the Foot and Mouth outbreak or when travelling communities have tried to use it.

- 7.60 Closing a middle section was considered a suitable option by many, providing the remaining lengths are open enough not to attract anti-social behaviours. Methods to enforce a closure could include barriers, but it was recognised that this would risk being vandalised, and ongoing maintenance costs may be high. Ditches may also be an effective deterrent around the edges, but rights of way would still need to be maintained.

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Table 24: Summary of changes to car parks/laybys mentioned by the different stakeholders on Cannock Chase. Representatives were asked about potential ideas for car park closures, changes in capacity and suggestions for where they would introduce charges. Car parks are sorted by priority and car park Nos are indicated in bold

Stakeholder	Which car parks/laybys would you like to close?	Which car parks/laybys would you like to increase?	Which car parks/laybys would you like to decrease?	Which car parks/laybys are most suitable for charging?
National Trust	5 (not intended for parking), 2, 3 (likely to close as not suitable for charging)	6 (main Shugborough car park may need more)	NA	NA
SCC	80, 67; 25-29*, 30*-34*, 37*-38* (* all Chase Road); ^40-^45, ^46-^48, ^51-^52 (^ all Camp Road), 108, 106, 27	More car parks on FC land (highest priority), 85, 81. 82.	85	81, 65, 62, 106, 90, 27, 55, 21, 3, 35, 12

Table 25: Summary of the total number of parking locations (total capacities) for different parking types split by landowners.

Landowner	Formal	Informal (incl. laybys)	Total	Number of car parks proposed for closure	Number of proposed car parks for charging
FC	4 (590)	21 (54)	25 (644)	2 (2)	-
SCC	37 (984)	34 (205)	71 (1189)	23 (137)	5 (270)
SWT	1 (8)	3 (31)	4 (39)	-	-
NT	3 (335)	4 (17)	7 (352)	2 (22)	1 (22)
Other	7 (119)	3 (27)	10 (146)	-	-
Total	52 (2036)	66 (344)	118 (2380)	-27 (161)	-6 (292)

Stakeholder interviews: key points from specific topics

Implications for site user strategy

- Visitors often struggle to find their way and get lost. Clearer signposting will help and allow the potential for clearer segregation between users.
- Drones, electric bikes, night-time cycling and wild camping are increasing and future management may need to accommodate or respond to these activities more.
- Organisations such as the Staffordshire Wildlife Trust, National Trust and RSPB are geared to outreach work and there may be scope through partnership working to utilise the organisational expertise and skills of these different organisations.
- Path surface erosion, path widening, new path creation litter, fly-tipping, dog fouling and the spread of disease are issues that are of the most current concern to stakeholders.
- Face-face ranger presence, temporary signage and temporary barriers/fencing are measures supported by stakeholders and could be key components in the strategy.

Implications for car-park strategy

- There are some opportunities to introduce parking charges at some County Council car-parks.
- Any introduction of parking charges on roadsides near Marquis Drive or increase charges at the car-parks there will need to be accompanied by an improvement in the facilities, in order to meet expectations.
- Reducing screening around car-parks and opening them up is likely to reduce anti-social behaviour issues. Such behaviour, including fly-tipping and vandalism are more common in the more remote car-parks which are therefore likely to be the more costly to maintain and manage.
- Birches Valley, Shugborough and Wolseley Centre could grow in parking capacity in order to accommodate more visitors.
- Stakeholders support a reduction in parking locations and a number of locations are identified as being beneficial to close. In particular, Chase Road is not a publicly maintained highway, is costly to maintain and there have been recent accidents. Closing of the central part of the road was considered a suitable solution by many stakeholders.

8. Environmental Education

- 8.1 The SAC team conducted interviews and have assessment the level of environmental education conducted by relevant organisations in Cannock Chase. The SAC team were looking to assess the scope of education being conducted and identify new ways of delivering education work with these organisations. We draw on their findings and present a brief summary here for context.
- 8.2 Organisations who were interviewed were: the AONB, Entrust - Outdoor Education Centres, Forestry Commission, Inspiring Healthy Lifestyles, National Trust, Staffordshire County Council, and Staffordshire Wildlife Trust.

Cannock Chase AONB

- 8.3 There is no AONB team currently in post and both officers have left their roles. The AONB did not have a formal educational plan or programme to avoid replicating the work of other organisations. Previous education has always involved working with other organisations, including events such as fire awareness and dog owner awareness days. Such events were found to be worthwhile but took a lot of time and effort to organise and were unsustainable for the team to continue with. Current resources include a large amount of literature (leaflets; booklets etc), their own transport (minibus) and a tent/gazebo for events and stalls, all with associated 'Cannock Chase' branding.

Entrust - Outdoor Education Centres

- 8.4 Entrust are a school's service provider, with four Outdoor Education Centres in Staffordshire, at Shugborough, Chasewater, Laches Wood and Standon Bowers - all but Standon Bowers use Cannock Chase regularly. Environmental education is a core to the service provided, covering a wide range of subjects such as flora and fauna, conservation, the country code and diseases. They aim to encourage children to be outside, enjoy the natural environment, to reduce stress and take them away from 'screen-time'. They also want to teach transferable skills, build confidence and encourage the younger generation to think about related careers in the environmental sector. Most customers are primary age schools and groups of walkers and mountain bikers. The OEC's would appreciate any information from other sites/land owners and managers of Cannock Chase to help communicate important messages.

Forestry Commission

- 8.5 Forestry Commission now has just one education team member at Birches Valley, who's role is now focussed on 'marketing and communications' to derive an income from education and work with the third-party contractors who operate on site. Almost all education is therefore self led, most commonly as the 'Ranger in a Bag' option – a bundle of resources which can be hired out, alongside with a classroom. The education work does not generate much profit and therefore, while staff are keen to do more, they are constrained by finances. Staff are keen to work with the SAC Partnership, and other landowners/organisations, but aware that any investment/events project should aim to make a profit.

Inspiring Healthy Lifestyles

- 8.6 Inspiring Healthy Lifestyles (IHL) are a social enterprise and charitable trust working to inspire people to be active, creative and healthy on behalf of local authorities (Wigan, Selby and Cannock Chase). They have worked to promote and communicate ideas/issues across to the public which are a priority for the district. Any work promoting the Chase as a resource is done so respectfully and responsibly, for example encouraging people to utilise other closer green spaces rather than visiting Cannock Chase. They are interested in opportunities to work with the SAC Partnership and find they know the local's attitudes and behaviours well, with good contacts.

National Trust

- 8.7 All events at Shugborough are generally low-key and small-scale and this applies to education too. Schools and groups can turn up at no cost and are also free to use the onsite facilities. In addition, family events are popular, as well as all self-lead activities. The NT feels comfortable with this current set up and have limited resources to offer schools (e.g. no learning rooms/ classrooms) and would not charge schools unless they did provide such facilities. However, they are keen to develop relationships with schools and find out what it is that they would want from an educational offer at Shugborough, and work with the SAC partnership and other organisations.

Staffordshire County Council

- 8.8 Staffordshire County Council (SCC) is responsible for two visitor centres: Marquis Drive and Chasewater Innovation Centre. However, the visitor centre at Marquis Drive is not fit for purpose, is outdated and is at capacity. The education building here (John O'Leary centre) lacks facilities and is also outdated – investment opportunities are limited, and staff resource is stretched. Furthermore, both sites are lacking in people to lead and facilitate education with no dedicated staff, so

this relies on others spare/personal time. There are also café staff on both sites, but none have received any formal training in education. Primary schools use the education facilities and currently charges have been kept low, but this may change. There is concern that a lot of the schools that would most benefit can't afford higher rates. Secondary schools tend to not make site managers aware of visits and conduct their own self-lead trip/excursion – this can be a problem where large groups are accessing sensitive areas without any guidance.

Staffordshire Wildlife Trust

- 8.9 Education is a significant part of Staffordshire Wildlife Trust (SWT) remit, mostly based out of the Wolseley Centre. There is set of educational programmes, for groups and schools, including a package for secondary schools which fits the curriculum. Education raises awareness of the natural environment and is also an important source of revenue for the Wildlife Trust. However, the Staffordshire Wildlife Trust will lose their education rooms in September (2018) as part of a redevelopment at the Wolseley Centre and have a wider desire for a site on Cannock Chase to run educational programmes and access onto the Chase. They are interested in opportunities working with the SAC Partnership other landowners/organisations and see a benefit to a Chase-wide partnered school visits programme.

Environmental Education: implications for the site-user strategy

There is a niche for more education work at Cannock Chase, as existing organisations have diminished resources and facilities. There is scope to work directly with other partner organisations and gain from existing material, equipment and expertise. In order for education work to function as mitigation it will be necessary to engage with local communities and communicate messages relating to respecting the environment, the sensitive nature of Cannock Chase and the ways in which behaviour change can help.

9. Lessons learned from elsewhere

Overview

9.1 In this section we draw on approaches used elsewhere and literature on the effectiveness of different approaches to highlight best practice. The section is not intended to be a comprehensive review of access management and car-park management, but instead to focus on key questions and use selected examples to illustrate what best practice might look like.

Approaches used in other strategic mitigation schemes

9.2 There are a range of existing strategic mitigation schemes which have been established to facilitate development while ensuring adequate protection for European sites. These schemes focus on recreation impacts and provide useful context and precedents for Cannock Chase. In Table 26 we summarise the range of approaches used in some of these other schemes, focussing on those that are well established and have been running for some time. A key point to note is that all the schemes rely on rangers to deliver an on-site presence and they also all include alternative greenspace (Suitable Alternative Natural Greenspace: 'SANGs') to divert access away from the European sites. These two approaches seem to be fundamental and widely accepted as a key component of the mitigation packages.

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Table 26: European site mitigation schemes and specific mitigation in-place. Ticks indicate where a particular approach is included within the mitigation approach. ZOI refers to zone of influence (e.g. for collection of developer contributions). Hyperlinks relate to project specific websites or equivalent (where established).

Area	Zoi	SANGs	Wardens	Dog Project	Codes of Conduct	Refuges	Engagement	Other	Issues & sites addressed by mitigation strategy	Relevant references for mitigation measures
Dorset Heaths	5km	✓	✓	✓				Range of measures includes BMX park, fire hydrants on heaths. Monitoring includes car-park counts, sensors, visitor surveys and bird monitoring.	Recreation and urbanisation; 2 heathland SACs/SPA	South-east Dorset local planning authorities (2016)
Thames Basin Heaths	5km	✓ 8ha per 1000 residents	✓				✓	Monitoring includes car-park counts, sensors, visitor surveys and bird monitoring.	Recreation and urbanisation; heathland SPA	Burley (2007); Joint Strategic Partnership Board (2008).
South-east Devon	10km	✓	✓	✓	✓	✓	✓	Other measures include patrol boat on estuary	Recreation and urbanisation; sand dune SAC, heathland SPA/SAC and estuary SPA.	Liley <i>et al.</i> (2014);
Solent	5.6km	✓	✓		✓			Bird Aware Project established with strong branding. More site-specific projects and awareness raising work still being developed. Monitoring includes car-park counts, visitor surveys, tests for ranger effectiveness and sensors.	Recreation impacts for 3 coastal SPA sites	Bird Aware Solent (2017); Liley & Tyldesley (2013)
Cannock Chase	15km				✓		✓	Measures relating to car-parking and on-site access infrastructure being developed	Recreation impacts to heathland SAC	Underhill-Day & Liley (2012)

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Area	Zol	SANGs	Wardens	Dog Project	Codes of Conduct	Refuges	Engagement	Other	Issues & sites addressed by mitigation strategy	Relevant references for mitigation measures
North Kent	6km		✓	✓	✓	✓			Recreation impacts for 3 coastal SPA sites	Liley & Underhill-Day (2013)

Comparisons of different approaches

- 9.3 Expert opinion on the effectiveness of different mitigation measures to reduce bird disturbance was collected by Ross *et al.* (2014). One key finding from the scoring exercise was that scores for all the individual measures ranged widely, indicating that measures are potentially site-specific in terms of their effectiveness and that it cannot always be assumed that a particular measure will always be successful (or unsuccessful). Staff, resources, local geography and other site-specific issues are likely to be important local factors influencing effectiveness; approaches used in one location may not necessarily easily be transposed to other locations.
- 9.4 Nonetheless, the measures that were generally recognised as the most effective were on-site visitor engagement, new habitat creation, hides and screening. Measures that were not scored so highly included codes of conduct, general off-site information provision, changing parking charges and dog control orders⁵ (relating to putting dogs on leads, limiting number of dogs or picking-up).
- 9.5 Many of the measures, such as path surfacing, fencing, screening, hides etc., are routinely used around the country to manage and influence access. While there is a general acceptance that such approaches can influence behaviour, there is relatively little experimental or similarly robust evidence for the effectiveness for different mitigation measures (see Batey, 2013; Ross et al., 2014 for overview). It is difficult to test individual measures because they rarely occur in isolation, for example signage will usually accompany interpretation, face-face engagement etc. A general rule is that it appears that few visitors to protected sites are aware of their importance for nature conservation (Booth, Gaston, & Armsworth, 2009) and this lack of awareness may influence behaviour. Raising awareness of nature conservation issues is therefore potentially an important component of mitigation approaches.

Key components used elsewhere

On-site rangers/wardening

- 9.6 On-site wardens/rangers fulfil a range of roles and are fundamental component of strategic mitigation schemes at other heathland sites such as the Dorset Heaths, the Pebblebed Heaths and the Thames Basin Heaths. In these locations the rangers have unique project branding and are an on-site presence, clearly visible

⁵ Note that the legislation has since changed and these are now included within Public Space Protection Orders, PSPOs.

to visitors and their role is to cover a range of locations, talking to visitors, pointing out wildlife, noting where there are issues and directly approaching any visitor whose behaviour is likely to cause a problem. When issues or incidents arise (such as fires, escaped livestock, illegal activities) they can respond quickly and are on hand to help, for example directing the emergency services.

- 9.7 The presence of rangers/wardens along with signage has been shown to be effective for breeding terns, with Little Terns breeding more successfully when measures were in place (Medeiros et al., 2007). Work on the Solent (Liley & Panter, 2017) has compared visitor behaviour and bird disturbance with and without the presence of the mitigation wardens. The results showed slight positive effects of ranger presence, particularly in terms of the overall number of birds disturbed. This was only the second year of the ranger team and the Bird Aware branding (including the new website and leaflet) and key messages for the project had only just been developed over the winter. Monitoring of the ranger presence and bird disturbance will continue (see Liley, Stillman, Austin, & Panter, 2015 for context and background).
- 9.8 A study from Scotland (York & Morris, 2013) compared access over time using trail cameras to determine whether there was a change in visitor behaviour following a concerted awareness raising campaign (conducted by on-site rangers) aiming to reduce disturbance to Capercaillie from people and dogs. The results highlighted a positive change, with a measurable difference in the proportion of dogs on leads and a reduction in the number of visits with dogs.

Signage and interpretation

- 9.9 Signs and interpretative material are widely used to convey key messages and attempt to influence visitor behaviour, for example asking people to stick to paths, follow particular routes or keep their dog on a lead. Some examples are shown in Figure 4
- 9.10 The effectiveness in terms of the nature conservation impact of signs and access restrictions have been tested in few locations. A meta review of six studies concludes they are likely to be significant in reducing disturbance at bird nest sites (Williams et al., 2017).
- 9.11 A trial in the USA compared the reproductive success of Common Terns before and after the introduction of a series of educational programmes aimed at recreational boat users (Burger & Leonard, 2000). The study showed rates of disturbance decreased and breeding success increased following the education programmes.

- 9.12 Jenkinson (2016) reviews options for the management of access on the Solent and considers the role of signage in detail, providing examples of best practice. He highlights that behaviour is influenced by a range of factors, in particular dog owners are likely to be particularly influenced by other dog walkers, peers and people who share their values, such as vets. He suggests signage is likely to be ignored if others have their dog off lead or if – for example – advice from their vet is to let the dog run about to lose weight. In order to maximise effectiveness Jenkinson advocates the importance of clear and credible messages.
- 9.13 Much of the research on interpretation and how it best works to influence behaviour has been carried out in Australia, and best practice is set out by Ham *et al.* (2009). Ham *et al.* have applied work on the Theory of Planned Behaviour to interpretation and advocate that messaging needs to be determined by understanding the target audience's beliefs.
- 9.14 Some authors (e.g. TellTale Ltd., 2017) advocate that signage, interpretation and other such measures will not necessarily in themselves be effective in reducing impacts. Fundamentally they suggest that a step-change in attitudes and behaviour requires a sophisticated, co-ordinated and long-term approach. Increasing the connection visitors have with a place and the wildlife is argued to lead to better protection. Such a connection cannot necessarily be achieved through quick wins, but requires transformational projects closely linked to the local community. They highlight that interpretation for awareness-raising and pride-building can include community projects, face-face work, installations, events and publications. Interpretation is much more than a few panels at car-parks and entry points.

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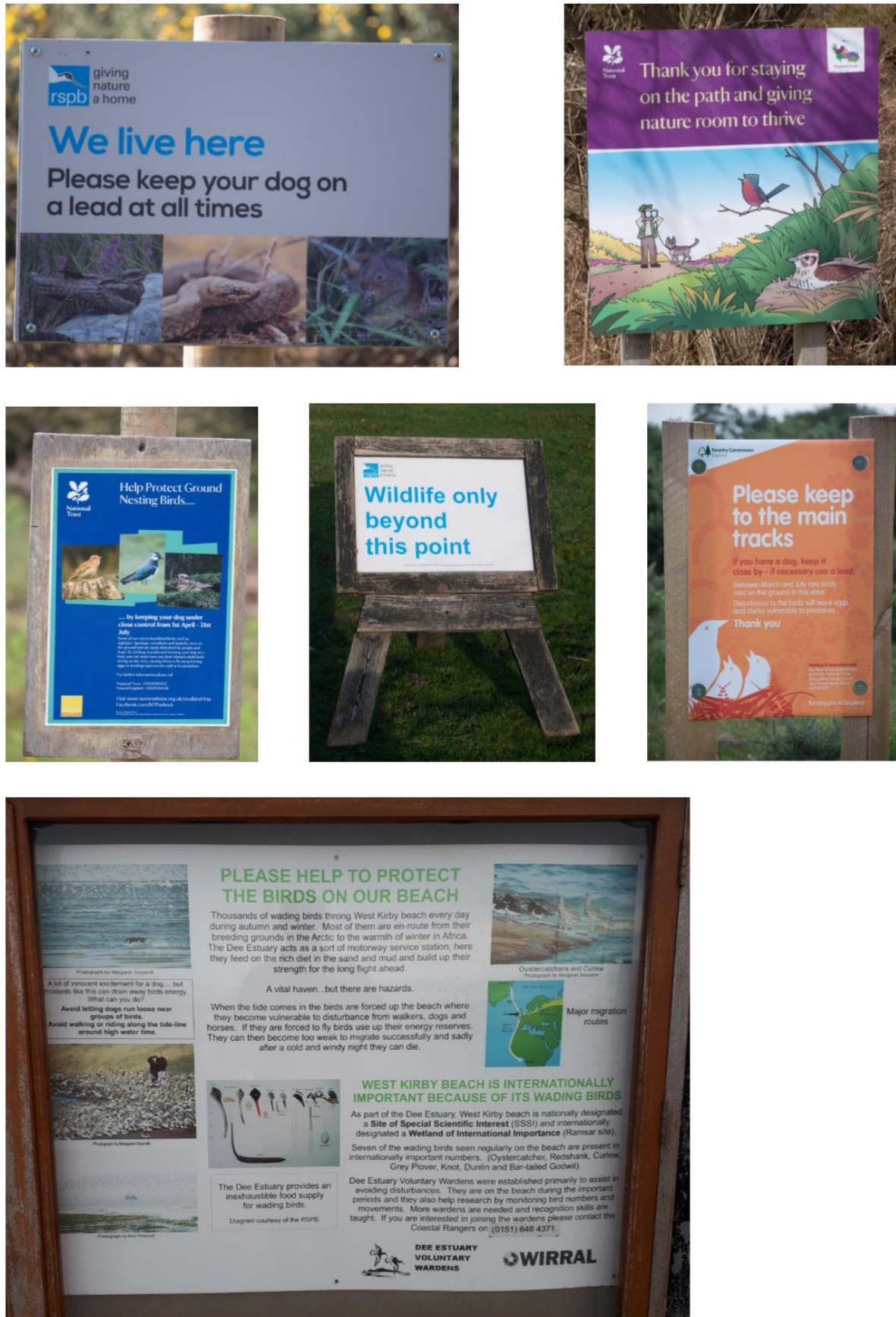


Figure 4: Selected examples of signs and messages relating to access and nature conservation

Car-park closures and parking management

- 9.15 The importance of parking to visitors is born out in other heathland visitor surveys, for example on the East Devon Pebblebed Heaths good/easy parking was a factor underpinning the choice of site visited for around 17% of interviewees (Liley, Panter, & Underhill-Day, 2016).
- 9.16 There are relatively few case-studies that document management of car-parks to resolve nature conservation issues related to access. One published study from Holland shows that manipulating the number and location of parking spaces can be used to manage both the number of cars and the distribution of cars (Beunen, Jaarsma, & Regnerus, 2006). Any effects related to parking charges were however only temporary, suggesting that the introduction of parking charges will not necessarily reduce visitor numbers or changes in visitor distribution.
- 9.17 In the New Forest, car-park closures during the bird breeding season have been instigated at selected car-parks in order to reduce visitor use in particularly sensitive locations. There has been no monitoring of access alongside these closures to determine how visitor use has changed.
- 9.18 Car-park charging, or closure of car-parks is often contentious, for example there was considerable public opposition to car-park closures in the New Forest. Visitor questionnaire work in the Cairngorms National Park indicated that users were supportive, but that support is conditional on the nature of the charging system, the type of location and the landowners commitment to hypothecating user fees for reinvestment in facilities and the management of the site (Phillip & Macmillan, 2009). The Cairngorms study concluded that a park-wide charging scheme was justified if fundamentally based on hypothecation.
- 9.19 At Burnham Beeches, a woodland and heathland SAC site managed by the Corporation of London, car-parking has been rationalised over-time and an ornamental drive bisecting the site closed to traffic. Parking and visitor facilities have been concentrated at the least sensitive part of the site, rationalising the number of locations where visitors can park. Parking charges were introduced and targeted to peak times (weekends and bank holidays), outside of which any contribution was voluntary. More recent access management measures have included requirements to keep dogs on leads within a third of the site. These measures have been introduced over an extended period during which time visitor numbers have continued to increase (see Wheater & Cook, 2016). The changes have been carefully implemented, well resourced and considerable consultation and engagement were undertaken.

Lessons learned elsewhere

Implications for the site user strategy:

- Face-face wardening is a widely used approach, fundamental in other mitigation schemes and there is evidence for its effectiveness.
- Signs and interpretation are also commonly used however there is relatively little evidence for their effectiveness in ecological terms.
- In order to influence behaviour messages need to be targeted to visitors' beliefs. Interpretation can cover a range of approaches besides the normal panels and can encompass events, installations, face-face work etc.

Implications for the car-park strategy:

- Car-park closures can be contentious and generate public opposition; however there are examples from other parts of the UK where they have been undertaken successfully.
- Closures need to be carefully planned, carefully communicated and well resourced, with the reasoning and benefits conveyed to site users.
- Parking charges are also contentious, clear justification for charging is likely to be important and funding invested in the site and used to look after the site.

10. Relevant designations & legislative context

Overview

- 10.1 This section of the report sets out the designated interest features relevant to the AONB area, including landscape, nature conservation, geological and heritage.

AONB

- 10.2 Cannock Chase AONB was designated in 1958 and covers 68 square kilometres. The AONB designation places responsibility upon public bodies to “have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty”.
- 10.3 The AONB status provides protection for the landscape and views, for example paragraph 172 of the National Planning Framework ensures that *“Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues.”*

European site interest/SAC

- 10.4 An area of 1,236.9 ha of Cannock Chase was designated (in June 2005), as a Special Area of Conservation (SAC) under the provisions of the European Habitats Directive, and a slightly larger area (1,264.3 ha) was notified as a Site of Special Scientific Interest (SSSI) in 1987 (Map 26).
- 10.5 Cannock Chase was designated as a SAC for its European Dry Heath habitat which it is regarded as one of the best areas in UK, and for its North Atlantic Wet Heaths although this was not a primary reason for SAC designation. The dry heath vegetation types, together with some areas restored recently from scrub invasion, occupy some 76% of the SAC. In addition to the important vegetation communities, Cannock Chase’s dry heathland supports populations of several scarce invertebrates and is an important breeding site for the Annex I species; European nightjar, Dartford warbler and woodlark. These bird species are listed on the Annex I of the European Birds Directive, and responsibilities therefore relate to securing the habitats of these species across their range, even where they are out with a European wildlife site. However, it should be noted that around two fifths (2017 – 43% nightjar and 48% woodlark) of the Annex 1 birds breeding on Cannock Chase AONB, occur outside of the SAC boundary.

- 10.6 The SAC status means any plan or project that could affect the SAC and is not necessary to the management of the European site for nature conservation will require a Habitats Regulations Assessment (HRA) before the plan or project can be authorised.

SSSI

- 10.7 The Cannock Chase SSSI notification includes the sessile oak and birch woods at Brocton Coppice with an important beetle assemblage associated with the veteran oak trees, the extensive heathland with a mix of Oceanic and continental northern plant species including the main British station for hybrid bilberry, together with spring fed mires and wet heath, pools and extensive alder carr. The moths and beetles are an especially prominent feature of the important invertebrate community. The SSSI also includes a major breeding concentration of fallow deer and a significant national population of nightjar.
- 10.8 The last assessments of the condition of Cannock Chase SSSI (dating from 2010-2013) assessed 5% of the area as in favourable condition, 92% as unfavourable recovering and 3% as unfavourable no change. This last category covers part of the valley mire systems which are drying out.
- 10.9 There are several other SSSIs within the AONB (map 26) of which the largest is Gentleshaw Common in the south-east. This is just under 80 ha and is one of the largest heathland areas in the county supporting dry, humid and wet heath with floristic elements of oceanic, western and northern heaths together with acid grassland and birch and oak woodland. The whole site, which is managed by the Staffordshire Wildlife Trust, is in unfavourable recovering condition.
- 10.10 Another SSSI at the northern edge of the AONB is Rawbones Meadow, consisting of 20ha of low lying flood meadows with an interesting flora and assemblage of breeding birds. The whole site is in unfavourable recovering condition. Another small SSSI is Stafford Brook, just to the north-west of Rugeley, a combination of carr woodland, and marshy acid grasslands and fen with a wide diversity of herbaceous plants and shrubs. Of the 7ha, 42% is in favourable condition and 58% unfavourable recovering.

Geological Interest

- 10.11 Finally, there is the small 6.5 ha geological SSSI owned by Staffordshire CC at Milford Quarry with excellent three dimensional exposures of the Lower Triassic Pebble Beds. Staffordshire CC also own and manage the extensive Chasewater

Country Park which includes the SSSI just outside the AONB boundary to the south.

Common Land

10.12 Some 20.8% of the AONB is Common Land with 8 commons totalling some 1420 ha. Only two of these, Gentleshaw Common and Haywood Warren/Satnall Hill have grazing rights registered and the latter also rights for estovers, turbary, minerals and pannage (Table 27).

Table 27: Commons at Cannock Chase Cannock Chase

Name of Common	Area Ha	Owners
Cannock Chase	701	Part of Cannock Chase CP-Staffordshire CC/FC
Haywood Warren & Satnall Hills	376	Part of Cannock Chase CP-Staffordshire CC/DEFRA
Brindley Heath	148	Part of Cannock Chase CP-Staffordshire CC
Gentleshaw Common	83	Staffordshire Wildlife Trust
Shoal Hill	69	South Staffs DC/Cannock Chase DC, managed by SHC Joint Cttee
Penkridge Bank	20	Part of Cannock Chase CP-Staffordshire CC
White House	15	Part of Cannock Chase CP-Staffordshire CC
Castle Ring	7	Cannock Chase DC
Milford Common	1	Part of Cannock Chase CP-Staffordshire CC

10.13 Commons legislation is complex. The public has the right to walk on all commons where previously there was no legal access, under the Countryside and Rights of Way Act 2000. Some commons already had a right for the public before that act and those rights persist. Where anyone wants to erect a work on common land, such as fences, they must apply for the consent of the Secretary of State for Environment in England or the Welsh Government (section 38 of the Commons Act 2006) in addition to any planning or other consent that is required.

Scheduled Ancient Monuments and other heritage features

10.14 Heritage features are shown in Map 27. The AONB includes eight Scheduled Ancient Monuments:

- Essex Bridge - a packhorse bridge over the River Trent at Shugborough;
- Great Haywood Canal Bridge - built in 1772, just north of Essex Bridge;
- A saucer barrow at Spring Hill;

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- A medieval moated site at Church Farm Colwich;
- Messines Model - a model of Messines Ridge in Belgium a WW1 battle site;
- Rugeley Camp trench model - a WWI model of typical trench design;
- Castle Ring - an iron age hillfort and medieval lodge;
- Courtbanks - a moated site and iron smelting bloomery.

10.15 Of these, the saucer barrow at Spring Hill, the Rugeley Camp model and Castle Ring are within the main body of the AONB with public access. The Messines model is within the Cannock Country Park but is buried.

10.16 There are 70 listed buildings, five conservation areas, two registered parks and gardens (Shugborough Park and The German Military Cemetery) and 459 historic assets partly or wholly within the AONB (Red Kite Countryside Training Partnership, 2010).

Other legislation

Environmental Impact Assessment (EIA)

10.17 EIAs are required for projects under EU Directive 2011/92/EU, as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment and transposed into various 'EIA Regulations'. These relate to different sections and types of projects, such as town and country planning, nationally significant infrastructure projects, water management, forestry etc. Relevant projects require an Environmental Impact Statement (EIS) also known as an Environmental Statement (ES) and for the 'competent authority' to take into consideration the environmental information before authorising the project.

11. Sensitivity Map

Overview

11.1 In the previous section we outlined the various designations relevant to Cannock Chase. In this section we consider the distribution of certain sensitive features in order to identify areas that are likely to be particularly sensitive to recreation impacts. The whole of the SAC is subject to strict legal protection and contains nature conservation interest features that are vulnerable to impacts from recreation. The SAC boundary is not however determined by archaeological features and the distributions of some species may extend outside the SAC. By combining data in GIS, it is possible to highlight areas that are relatively less or more sensitive to recreation use. The aim is to produce maps that, at a strategic level, can be useful to help guide broad areas where access should be focussed and areas where the aim should be to reduce or limit visitor use.

Methodology

11.2 We considered four different aspects of sensitivity:

- Archaeological and heritage features
- Topography
- Habitats
- Species (birds)

11.3 For each aspect we used existing data on the distribution of these features and where necessary conducted analysis or appropriate ranking of these. For each aspect of sensitivity, we present a map of the data used for each and then a summary grid, which is consistently used for all aspects and for final summary maps.

11.4 A 50m hexagonal grid was used to produce these 'heatmaps' of sensitivities, and this provides a total of 32,518 cells. All grid maps use a consistent colour scheme of low sensitivity areas in dark blue, through light blue, yellows and oranges to the high sensitive areas in dark red.

Archaeological and heritage features

11.5 Cannock Chase has a wealth of heritage and archaeological features recognised by recent LIDAR data provided by SCC Historic Environmental Records. Of notable importance are the 1st and 2nd World War structures, including practice trenches, training areas and tank tracks and other structures and earthworks.

- 11.6 Some of these historic features are more sensitive than others to impacts from permitted forms of recreation (e.g. access on foot, mountain bikers, horse riders) in particular due to soil erosion. Of least concern are features such as trackways or features which had already been destroyed:
- The current 21st-century quarry site (from sand and gravel extraction)
 - All spoil heaps/slag heaps
 - All “destroyed monuments” (now destroyed by recent quarry workings)
 - All “levelled earthworks”
 - All trackways (including large areas of tank tracks)
- 11.7 Of highest priority are the Scheduled Monuments on the site (World War features, historic bridges, hill forts and barrows). All other archaeological features from LIDAR data were then treated equally. With regards to other heritage assets, Registered Parks and Gardens were thought to be much less sensitive to visitor pressures and therefore were not taken into account (but are presented in Map 23). The “footprint” of the remaining sensitive features is shown in Map 27 – note that features are often overlapping, and a transparency has therefore been used to visualise these.
- 11.8 The density of these features was mapped and then overlaid using a standard 50 m hexagonal grid. This considered all historic and heritage features equally and counted the number of these in each grid cell, with the exception of the Scheduled Monument features which were given the highest value.
- 11.9 Although the sensitivity map treats all archaeological features equally, this is unlikely to be the reality on the ground and the map indicates hotspots for the most sensitive features. It is recommended that individual features be examined in more detail and discussed with the Environmental Records if small-scale changes are planned, for example changes to visitor routes.
- 11.10 In producing the sensitivity map, shown in Map 28, the number of archaeological features from LIDAR was summed using the 50m grid cells. The maximum count of archaeological features in a single cell was 39. All grid cells with Scheduled Monuments were given a value of 40.

Topographical sensitivity

- 11.11 LIDAR data as used by the Staffordshire County Council Heritage team to examine archaeological features was provided and used by us to identify the topographic sensitivities in Cannock Chase. Data from digital elevation models (at a resolution

of 25 x 25cm cells), were used to examine the degree of undulation. The raw elevation data is presented in Map 29.

- 11.12 Areas with high levels of undulating topography are more likely to be sensitive to erosion by visitors and rainfall. The degree of undulation in the 50m hexagonal cells was calculated by using the standard deviation of all elevation values. A higher standard deviation value indicates a wider 'range' in all the data values (as opposed to a simple measure of the range in values e.g. maximum minus minimum). Therefore, the higher values indicate more undulating terrain, while lower values indicate more consistent, flat land – as shown in Map 30. This approach helps highlight the undulating areas with valleys and archaeological features rather than just slopes.

Habitat sensitivity

- 11.13 Habitat data was provided by a combination of SCC and NT for the whole ANOB, and included a mix of NVC and Phase 1 approaches. The habitats were scored for the sensitivities for contamination, damage and fire, following the approach taken for the whole of Wales in 2010 (see Liley et al., 2010). These scores were reviewed, and where necessary amended for the local context to Cannock, based on the consultancy team's experience and discussion with local ecologists. Each habitat had scores for the three aspects:
- Contamination includes impacts such as litter, nutrient enrichment and the spread of exotic species. Scored as a single all year round value.
 - Damage considers harvesting and the impacts of footfall on vegetation and erosion of substrates. Scored for spring, summer, autumn and winter.
 - Fire section addresses the impacts of fire (accidental or arson) on animals, plant communities and the soil. Scored for spring, summer, autumn and winter.
- 11.14 The scores for each habitat are given in Appendix 1.
- 11.15 Sensitivities of individual habitats are shown in Maps 31- 33 for contamination (single all year value), damage (as an average across all four seasons) and fire risk (as an average across all four seasons).
- 11.16 Final sensitivity maps use the average value for any habitat present in a cell for the maximum damage from recreation (Map 34), maximum fire sensitivity across seasons (Map 35), and final combined sensitivity (average across maximum scores for fire, damage and contamination, Map 36).

Bird species

- 11.17 Bird data from West Midland Bird Club 2017 Cannock Chase Bird Survey, were provided via RSPB, in the form of point locations at a 100m resolution (e.g. from 6 figure grid references). From these data we selected breeding records (with a status of both 'confirmed' and 'probable or possible') for rare or sensitive species. Rare species were those listed as birds of conservation concern (red listed)⁶. This provided 20 species, the distribution of which is shown in Map 37.
- 11.18 While Map 37 provides useful context, a selection based on red-listed species omits many species for which Cannock Chase holds notable populations or are important in a national or international context. There are also species which are potentially sensitive to disturbance. In order to generate a sensitivity map we therefore used:
- Nightjar, Woodlark and Dartford Warbler: key heathland ground-nesting/low nesting species, which are vulnerable to disturbance (Mallord, Dolman, Brown, & Sutherland, 2007; G. Murison, 2002; Giselle Murison et al., 2007),
 - Tree Pipit and Wood Warbler: red-listed species that nest low to the ground and are potentially vulnerable to recreation, both have declined markedly in recent years.
 - Goshawk, Hobby and Peregrine: these raptor species are known to be vulnerable to disturbance when nesting (Horne & Fielding, 2002; Martínez-Abraín, Oro, Jiménez, Stewart, & Pullin, 2010; Messenger & Roome, 2007; Morrison, Young, Romsos, & Golightly, 2011).
- 11.19 The distribution of these species is shown in Map 38.
- 11.20 The point locations provided for these sensitive species were buffered by an approximation of home ranges in order to convert the point data to a broader area representing the territory. Values used were 40m for Dartford Warbler, 50m for Woodlark and 100m for Nightjar (following previous similar studies, see Clarke, Sharp, & Liley, 2010). For Wood Warbler we used 25m, based on typical territory sizes of 1500-2000 m² (Pasinelli, Grendelmeier, Gerber, & Arlettaz, 2016; Skorupski, Jankowiak, Kiriaka, Rek, & Wysocki, 2018). For Tree Pipit we used 60m, based on typical territory sizes of 12,000m² (Burton, 2007). For the raptor species territories are much greater, ranging in the tens to hundreds of hectares, and therefore a simple 200 m buffer was used to indicate the key sensitive nesting area (around a cliff, tall trees etc.), rather than the whole territory.

⁶ <http://jncc.defra.gov.uk/page-3408> last updated Jan 2018

- 11.21 Using the grid cells the sum of bird territories per cell was used – as shown in Map 39

Overall sensitivity

- 11.22 Overall sensitivity maps were then generated, using the ranking of individual cells from each of the four topics to give an average ranking per cell (using median and mean values), and these are shown in Map 40 and Map 41.
- 11.23 For context the map created using mean ranks is shown on top of the SAC and SSSI boundaries in Map 42. The sensitivity map has also been overlaid with car parks and features of interest – see Map 43. The feature of interest layer was created from Ordnance Survey named places and OpenStreetMap point markers for information and tourism, leisure, amenity shops/cafes, historic features and other infrastructure/features (e.g. benches and viewpoints).
- 11.24 Resampling using a 750 m grid was conducted to help clarify the broad-brush areas of the priority within the AONB. The resulting Map 44 shows the ranking of cells for their average sensitivity. Individual cells are coloured based on classes of rank and individual ranks of each cell provided. This version of the map, Map 44, is overlaid with parking locations, sized by the average number of vehicles present in the 2018 parking location counts. Map 45 and 46 replicate Map 44, but is used to increase the visibility of background basemap and show how sensitivity relates to the SAC areas and parking locations.

Limitations

- 11.25 The approach allows us to combine various data sets to present a broad overview which highlights where some areas are more sensitive than others. The approach is broad-brush and is intended to provide an overview rather than an output that can be used to justify particular changes at specific locations. The maps are no substitute for a detailed search of ecological data to support a planning application for example.
- 11.26 A wide range of species are vulnerable to recreation impacts. Impacts can manifest in a range of ways, relating to fire, disturbance, direct damage to habitat or breeding sites, hibernaculum etc. Even disturbance is a generic term and different species will respond differently to the presence of people. For example, disturbance impacts Dartford Warbler breeding success, which is lower in areas with more people, but only in heather-dominated territories (Giselle Murison et al., 2007). By contrast, Woodlarks tend to avoid otherwise suitable habitat where there is more access (resulting in lower densities), but studies suggest no impact

on their breeding success (Mallord et al., 2007). As such Dartford Warblers and Woodlarks are 'sensitive' to recreation in different ways and potentially at different times of year. Such differences are difficult to pick up in the sensitivity map. Furthermore, we have based the maps on the current distribution of species, and it should be noted that these may already be influenced by disturbance, for example there could be areas of suitable habitat that are currently not used due to disturbance. Species distributions will of course also shift over time, in response to changes in habitat (for example Nightjar and Woodlark will exploit clear fell areas in plantations) or abundance. As a result, areas it is important not to view the sensitivity maps as fixed, but merely representing the current situation.

- 11.27 The species data we have included only relates to birds. Other sensitive species, for example reptiles, rare plants and some invertebrates (such as butterflies and crayfish) are not included. These were excluded because It was felt that there was insufficient data to allow comparison between areas, and for many of these other species the impacts of access are already captured in the habitat variable. For example, impacts of recreation for many invertebrates will relate to changes in habitat structure and the same is possibly true for reptiles.
- 11.28 Habitat data used is a combination of Phase 1 and NVC and can therefore produce different sensitivity scores for areas of exactly the same habitats. The habitat scores consider the community of the vegetation, not all composite potential animal species. Also, the scoring does not account for condition within these habitats, nor the potential condition or habitat areas could become with different management or restoration.
- 11.29 Archaeologists had concerns over initial attempts to rank the importance of features and we therefore simply used the density of features, and attributed higher values to Scheduled Ancient Monuments. However, clearly there are some caveats with this approach, for example the Essex Bridge is a Scheduled Ancient Monument but, given it is a stone bridge would be less sensitive to trampling damage than an earthwork feature.
- 11.30 Finally, when considering the 750 m grid re-sampling, it should be noted that the peripheral cells have less confidence as these can often be based on a fewer number of 50 m cells used.

Sensitivity mapping

We have generated recreation sensitivity maps that rank areas according to the presence of archeological and heritage features, topography, habitat and selected bird species. Locations that are mapped as sensitive are those areas with a higher density of heritage features (particularly Scheduled Ancient Monuments); undulating topography, those certain habitats such as bogs or flushes, and areas supporting the selected bird species. While there are some important caveats with the approach, from the maps we can draw the following implications (relevant to both strategies):

- Areas are not uniform in their sensitivity;
- Sensitive areas encompass the SAC and areas beyond the SAC boundary;
- Less sensitive areas include areas towards the periphery of the SAC such as the areas towards Regeley and the north-west part of the AONB;
- Chase Road is notable in that all access here relates to areas mapped as sensitive to recreation.

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Appendix I: Sensitivity scores

Table 28: Sensitivity scores for NVC habitat features.

NVC Habitats		Damage Spring	Damage Summer	Damage Autumn	Damage Winter	Fire Spring	Fire Summer	Fire Autumn	Fire Winter	Contamination All year
H09	Calluna vulgaris-Deschampsia flexuosa heath	2	2	3	3	3	3	4	4	1
H09/ U2	Calluna vulgaris-Deschampsia flexuosa heath/ Deschampsia flexuosa grassland	2	2	2	1	2	2	3	3	3
MG01	Arrhenatherum elatius grassland	2	3	2	1	3	4	3	2	3
MG06	Lolium perenne-Cynosurus cristatus grassland	2	3	2	1	3	4	3	2	3
MG07	Lolium perenne leys and related grasslands	0	0	0	0	0	0	0	0	1
MG07c	Lolium perenne leys and related grasslands, Lolium perenne-Alopecurus pratensis-Festuca pratensis grassland	0	0	0	0	0	0	0	0	1
MG09	Holcus lanatus-Deschampsia cespitosa grassland	2	1	1	2	1	2	1	1	2
MG10a	Holcus lanatus-Juncus effusus rush-pasture, typical sub-community	2	1	1	2	1	2	1	1	2
OV25	Urtica dioica-Cirsium arvense community	1	1	1	1	1	1	1	1	1
OV27	Epilobium angustifolium community	1	1	1	1	1	1	1	1	1
S28	Phalaris arundinacea tall-herb fen	3	3	3	3	3	3	2	2	3
U01	Festuca ovina-Agrostis capillaris-Rumex acetosella grassland	3	3	3	3	4	4	4	4	3
U01/ MG06	Festuca ovina-Agrostis capillaris-Rumex acetosella grassland/ Lolium perenne-Cynosurus cristatus grassland	3	3	3	3	4	4	4	4	3
U02	Deschampsia flexuosa grassland	2	2	2	1	3	4	3	2	3
U20	Pteridium aquilinum-Galium saxatile community	1	1	1	0	2	2	2	2	1
W10	Quercus robur-Pteridium aquilinum-Rubus fruticosus woodland	4	3	3	2	3	4	3	1	2
W16	Quercus spp.-Betula spp.-Deschampsia flexuosa woodland	3	2	2	1	3	4	3	1	2
W21	Crataegus monogyna-Hedera helix scrub	1	1	1	1	2	2	2	2	1
W23	Ulex europaeus-Rubus fruticosus scrub	1	1	1	1	2	2	2	2	1
W25	Pteridium aquilinum-Rubus fruticosus underscrub	1	1	1	0	2	2	2	2	1

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Table 29: Sensitivity scores for Phase 1 habitats.

Phase 1 Habitats		Damage Spring	Damage Summer	Damage Autumn	Damage Winter	Fire Spring	Fire Summer	Fire Autumn	Fire Winter	Contamination All year
Phase 1 linear features										
A2	Scrub	1	1	1	1	2	2	2	2	1
A3	Broadleaved Parkland/scattered trees	3	2	2	1	3	4	3	1	2
A31	Broadleaved Parkland/scattered trees	3	2	2	1	3	4	3	1	2
F21	Marginal and inundation - marginal vegetation	4	4	3	3	2	2	1	1	2
G1	Standing water	2	2	1	1	0	0	2	0	0
G2	Running water (small)	4	4	4	4	0	0	0	0	4
G2	Running water (large)	3	3	2	2	0	0	0	0	0
I11	Inland cliff	0	0	0	0	0	0	0	0	0
J21	Intact hedge	1	1	1	1	2	2	2	2	1
J211	Intact hedge - native species-rich	3	2	2	1	3	4	3	1	2
J212	Intact hedge - species-poor	1	1	1	1	2	2	2	2	1
J222	Defunct hedge - species-poor	1	1	1	1	2	2	2	2	1
J23	Hedge with trees	1	1	1	1	2	2	2	2	1
J232	Hedge with trees - species-poor	1	1	1	1	2	2	2	2	1
Phase 1 area habitats										
A11	Broadleaved woodland - semi-natural	3	2	2	1	3	4	3	1	2
A111	Broadleaved woodland - semi-natural	3	2	2	1	3	4	3	1	2
A112	Broadleaved woodland - plantation	2	2	2	1	3	4	3	1	1
A12	Coniferous woodland	1	1	1	1	3	4	3	2	1
A121	Coniferous woodland - semi-natural	3	2	2	1	3	4	3	2	2
A122	Coniferous woodland - plantation	1	1	1	1	3	4	3	2	1
A13	Mixed woodland	2	2	2	1	3	4	3	1	2

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Phase 1 Habitats		Damage Spring	Damage Summer	Damage Autumn	Damage Winter	Fire Spring	Fire Summer	Fire Autumn	Fire Winter	Contami nation All year
A131	Mixed woodland - semi-natural	2	2	2	1	3	4	3	1	2
A132	Mixed woodland - plantation	1	1	1	1	3	4	3	1	1
A21	Scrub - dense/continuous	1	1	1	1	2	2	2	2	1
A22	Scrub - scattered	1	1	1	1	2	2	2	2	1
A31	Broadleaved Parkland/scattered trees	3	2	2	1	3	4	3	1	2
A42	Coniferous woodland - recently felled	1	1	1	1	3	4	3	2	1
A43	Mixed woodland - recently felled	1	1	1	1	3	4	3	1	1
B11	Acid grassland - unimproved	2	2	2	1	3	4	3	2	3
B12	Acid grassland - semi-improved	1	1	1	0	3	4	3	2	3
B2	Neutral grassland	3	4	3	2	3	4	3	2	3
B21	Neutral grassland - unimproved	3	4	3	2	3	4	3	2	3
B22	Neutral grassland - semi-improved	2	3	2	1	3	4	3	2	3
B3	Calcareous grassland	3	3	3	3	3	4	3	2	4
B4	Improved grassland	0	0	0	0	0	0	0	0	1
B5	Marsh/marshy grassland	3	2	3	4	3	3	3	3	3
B6	Poor semi-improved grassland	2	3	2	2	3	3	3	2	3
C11	Bracken - continuous	2	2	2	1	3	3	3	3	1
C12	Bracken - scattered	2	2	2	1	3	3	3	3	1
C3	Other tall herb and fern	4	4	4	3	3	3	3	3	3
C31	Other tall herb and fern - ruderal	1	1	1	1	1	1	1	1	1
D1	Dry dwarf shrub heath	2	2	3	3	3	3	4	4	1
D11	Dry dwarf shrub heath - acid	2	2	3	3	3	3	4	4	1
D2	Wet dwarf shrub heath	2	2	3	3	4	4	5	5	1
D5	Dry heath/acid grassland	2	2	2	1	2	2	3	3	3
D6	Wet heath/acid grassland	2	2	2	2	2	2	3	3	1

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Phase 1 Habitats		Damage Spring	Damage Summer	Damage Autumn	Damage Winter	Fire Spring	Fire Summer	Fire Autumn	Fire Winter	Contamination All year
E1	Bog	5	5	5	5	3	4	3	3	3
E21	Flush and spring - acid/neutral flush	5	5	5	5	3	4	3	3	3
F1	Swamp	3	3	3	3	3	3	2	2	3
F21	Marginal and inundation - marginal vegetation	4	4	3	3	2	2	1	1	2
F22	Marginal and inundation - inundation vegetation	4	4	3	3	2	2	1	1	2
G1	Standing water	2	2	1	1	0	0	2	0	0
G11	Standing water - eutrophic	2	2	1	1	0	0	2	0	0
G2	Running water (small)	4	4	4	4	0	0	0	0	4
G2	Running water (large)	3	3	2	2	0	0	0	0	0
I111	Inland cliff - acid/neutral	0	0	0	0	0	0	0	0	0
I141	Other exposure - acid/neutral	0	0	0	0	0	0	0	0	0
I21	Quarry	0	0	0	0	0	0	0	0	0
I24	Refuse-tip	0	0	0	0	0	0	0	0	0
J11	Cultivated/disturbed land - arable	0	0	0	0	0	0	0	0	0
J12	Cultivated/disturbed land - amenity grassland	0	0	0	0	0	0	0	0	0
J36	Buildings	0	0	0	0	0	0	0	0	0
J4	Bare ground	0	0	0	0	0	0	0	0	0

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