



**FOOTPRINT
ECOLOGY**



Cotswold Beechwoods SAC Recreation Mitigation Strategy

Durwyn Liley and Chris Panter

FOOTPRINT ECOLOGY, FOREST OFFICE, BERE ROAD,
WAREHAM, DORSET BH20 7PA
WWW.FOOTPRINT-ECOLOGY.CO.UK
01929 552444



FOOTPRINT ECOLOGY

Footprint Contract Reference: 497

Date: 11th May 2022

Version: Final

Recommended Citation: Liley, D. & Panter, C. (2022). Cotswold Beechwoods SAC Recreation Mitigation Strategy. Report by Footprint Ecology.

Summary

This strategy sets out a strategic approach to mitigate recreation impacts, associated with new housing growth, on the Cotswold Beechwoods Special Area of Conservation (SAC). The SAC is part of a national network of sites that are of the highest importance for nature conservation and subject to strict legal protection.

The overall objective is to provide a framework under which applications for development likely to have a significant effect on the Cotswold Beechwoods SAC can be permitted, with measures in place to ensure that adverse effects on the integrity of the SAC can be ruled out. This enables development, while ensuring sufficient protection in place for the SAC. The strategy applies to larger developments, which may affect the integrity of these sites alone, and smaller developments where cumulative effects may be the critical factor.

The strategy applies to a zone of influence of 15.4km from the Cotswold Beechwoods, with the boundary of the zone adjusted slightly to reflect the local geography, accessibility and local authority boundaries. The zone therefore encompasses all of Cheltenham and Gloucester administrative boundary and part of Cotswold, Stroud and Tewkesbury.

Within the zone of influence, all new residential growth will be expected to provide mitigation. Mitigation will involve Strategic Access Management and Monitoring ('SAMM'), which relate to managing access and engaging with visitors at the SAC. These measures involve increased staffing, signage, interpretation etc.

Alongside SAMM, there is a need to deflect access away from the SAC and provide alternative countryside destinations for people to visit for recreation. Suitable Natural Alternative Greenspace ('SANG') or other infrastructure projects, such as improvements to existing greenspace sites are therefore necessary. These can be provided directly by developers (according to guidelines set out in this strategy) as part of a development or alternatively, where such bespoke SANG is not possible, through contributions.

The strategy is a long-term approach and will be subject to regular review and will provide a rolling programme of mitigation.

Contents

Summary	ii
Contents.....	iii
Acknowledgements	iv
1. Introduction	1
Overview	1
Legislation	1
2. Cotswold Beechwoods SAC	4
Qualifying features and conservation importance.....	4
Recreation use.....	7
<i>Visitor numbers</i>	<i>7</i>
<i>Parking and path networks.....</i>	<i>7</i>
2019 visitor surveys.....	10
Impacts of recreation	17
<i>Site specific information on recreation impacts</i>	<i>19</i>
3. Relevant local plans and housing growth.....	21
Defining a zone of influence	21
Relevant local plans and policy.....	24
<i>Gloucester, Cheltenham and Tewkesbury Joint Core Strategy (JCS).....</i>	<i>24</i>
<i>Cheltenham Plan.....</i>	<i>24</i>
<i>Gloucester City Plan.....</i>	<i>24</i>
<i>Tewkesbury Borough Plan.....</i>	<i>25</i>
<i>Cotswold District Local Plan.....</i>	<i>25</i>
<i>Stroud District Local Plan Review.....</i>	<i>25</i>
In-combination scale of growth.....	25
4. Mitigation	28
Mitigation approaches in other parts of the UK.....	28
Insights from visitor survey work	29
Mitigation approaches for the Cotswold Beechwoods.....	30
<i>SAMM (Strategic Access Management and Monitoring).....</i>	<i>30</i>
<i>SANG (Suitable Alternative Natural Greenspace)/Infrastructure Projects (away from the SAC).....</i>	<i>32</i>
5. Implementation	34
Securing developer contributions	34
<i>SAMM.....</i>	<i>34</i>
<i>SANG/Infrastructure Projects (away from the SAC)</i>	<i>35</i>
Types of development	35
Overlaps with other strategies	36
Governance.....	36
Staff hosting	39

In-perpetuity and timing of delivery.....	39
References	41
Appendix 1: Future housing growth.....	44
<i>Cheltenham.....</i>	<i>44</i>
<i>Future housing: Cotswold.....</i>	<i>44</i>
<i>Future housing: Gloucester</i>	<i>44</i>
<i>Future housing: Stroud.....</i>	<i>44</i>
<i>Future housing: Tewkesbury</i>	<i>44</i>
Appendix 2: SAMM measures and costs.....	46
Appendix 3: Guidelines for SANG/infrastructure projects	52
Bespoke SANG delivered by the developer and integrated to the development;	52
Contribution towards strategic SANG/infrastructure projects.....	54
Appendix 4: SANG/infrastructure project costs.....	57

Acknowledgements

This strategy has been commissioned by Stroud District Council on behalf of Cheltenham Borough Council, Cotswold District Council, Gloucester City Council, Stroud District Council and Tewksbury Borough Council. We are grateful to Conrad Moore from Stroud District Council for overseeing the commission and his help and support throughout. Our thanks to the following for advice, information, background and useful discussion: Matthew Barker (Tewksbury Borough Council), Meyrick Bretnall (Gloucester City Council), Alexander Bethell (Cheltenham Borough Council), Lisa Edinborough (National Trust), Kate Gamez (Natural England), Adam Gooch (Gloucester City Council), David Ingleby (Gloucester City Council), Gary Kennison (Gloucestershire County Council), Antony Muller (Natural England), Gareth Parry (Gloucestershire Wildlife Trust), Victoria Pettigrew (Stroud District Council), Matt Stanway (National Trust), Ian Stevenson (Gloucestershire Wildlife Trust), Matthew Tyas (Tewksbury Borough Council) and Rob Wolstenholme (Natural England).

1. Introduction

Overview

- 1.1 This strategy sets out a strategic approach to mitigate recreation impacts, associated with new housing growth, on the Cotswold Beechwoods Special Area of Conservation (SAC). The SAC is part of a network of European sites that are of particular importance for nature conservation and subject to strict legal protection.
- 1.2 The overall objective is to provide a framework under which applications for development likely to have a significant effect on the Cotswold Beechwoods SAC can be permitted so that any adverse effects on the integrity are avoided. This enables development, while ensuring sufficient protection in place for the SAC. The strategy applies to larger developments, which may affect the integrity of these sites alone, and smaller developments where cumulative effects may be the critical factor.

Legislation

- 1.3 The designation, protection and restoration of European wildlife sites is embedded in the Conservation of Habitats and Species Regulations 2017, as amended, which are commonly referred to as the 'Habitats Regulations'. Importantly, the most recent amendments (the Conservation of Habitats and Species (amendment) (EU Exit) Regulations 2019¹) take account of the UK's departure from the EU.
- 1.4 Regulation 105 *et seq* addresses the assessment of local plans and there is also Government Guidance on the interpretation and application of the Regulations². The legislation places strict statutory protection on European sites.

¹ The amending regulations generally seek to retain the requirements of the 2017 Regulations but with adjustments for the UK's exit from the European Union. See Regulation 4, which also confirms that the interpretation of these Regulations as they had effect, or any guidance as it applied, before exit day, shall continue to do so.

² Habitats regulations assessments: protecting a European site. Defra and Natural England. 24 February 2021. <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site> (accessed 31 August 2021)

- 1.5 The 'precautionary principle' is an accepted principle that is embedded within the wording of the legislation, and latterly within case decisions, both European and domestic. Essentially, a competent³ authority should only give effect to a plan or authorise/undertake a project after having ascertained that it will not adversely affect the integrity of the European site, alone or in combination. This means that in the absence of certainty, the plan or project should not normally proceed (subject to the further exceptional tests set out within the legislation).
- 1.6 A competent authority should should apply a precautionary approach where uncertainties remain. Competent authorities should have enough evidence to satisfy themselves that there are feasible measures to prevent adverse effects. These should be feasible in terms of cost, practical implementation, timeliness and attributing responsibility.
- 1.7 This strategy for the Cotswold Beechwoods SAC provides a robust and comprehensive consideration of the avoidance and mitigation measures that will adequately prevent adverse effects on the European site in terms of recreation pressure. This strategy is therefore a solution to the legislative duties placed on the relevant local planning authorities, and is an enabling strategy, unblocking potential Habitats Regulations Assessment (HRA) issues at the individual development project level where recreation pressure is difficult to mitigate for on a piecemeal basis because it relies on a suite of integrated activities.
- 1.8 It is within this context that a strategic approach should be developed. A strategic approach is built on the principle that by putting together a suite of interrelated measures, that work collectively to target key mitigation areas such as visitor education, dedicated staff, visitor infrastructure improvements or providing alternative locations for some aspects of recreation, a robust multi-layered strategy can give certainty in effectiveness and resilience. The multiple measures approach across these different themes also gives certainty that if a small number of measures do not work in the way in which they were intended, they will not critically alter the

³ A competent authority is defined in regulation 7 of the Habitats Regulations and in essence is any public body or officer exercising public duties, of any kind, and without any exceptions, which may undertake, adopt or give any form of consent, permission, licence or other authorisation for any plan or project that would be likely to have a significant effect on a European site.

Cotswold Beechwoods SAC Recreation Mitigation
Strategy

overall objective of preventing adverse effects, if identified and rectified early through monitoring.

2. Cotswold Beechwoods SAC

Qualifying features and conservation importance

- 2.1 The Cotswold Beechwoods SAC straddles the boundaries of Cotswold, Stroud and Tewksbury Districts and totals some 590ha⁴.
- 2.2 The SAC consists of ancient beech woodland, some secondary woodland and a small area of unimproved grassland. The qualifying features⁵ of the Cotswold Beechwoods SAC relate to both the woodland and grassland habitats:
- Asperulo-Fagetum beech forests; and
 - Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia).
- 2.3 The Cotswold Beechwoods represent one of the most westerly extensive blocks of *Asperulo-Fagetum* beech forests and are floristically rich compared to other similar sites. The Beechwoods are mostly high forest, dominated by Beech *Fagus sylvatica*, with Ash *Fraxinus excelsior*, Pedunculate Oak *Quercus robur*, patches of Sycamore *Acer pseudoplatanus* and some areas of remnant beech coppice. Understorey species include Holly *Ilex aquifolium* and Yew *Taxus baccata* with a varied and interesting ground flora. Notable plants include Red Helleborine *Cephalanthera rubra*, Stinking Hellebore *Helleborus foetidus*, Narrow-lipped Helleborine *Epipactis leptochila*, Fingered Sedge *Carex digitate* and Bird's-nest Orchid *Neottia nidus-avis*. Other taxa include a wide diversity and variety, with over 780 species of fungi being recorded at Buckholt Wood alone.
- 2.4 Wetter parts of the site are also of interest, with abundant mosses and liverworts which are important conditions for several nationally rare terrestrial snails, including; *Ena montana*, *Phenocolimax major*, *Acicula fusca* and *Macrogastera rolfii* - all species of ancient woodlands. Furthermore, open areas and woodland margins are important areas for butterflies such as the Silver-washed Fritillary *Argynnis paphia*, White Admiral *Ladoga Camilla* and White-letter Hairstreak *Strymonidia w-album*.

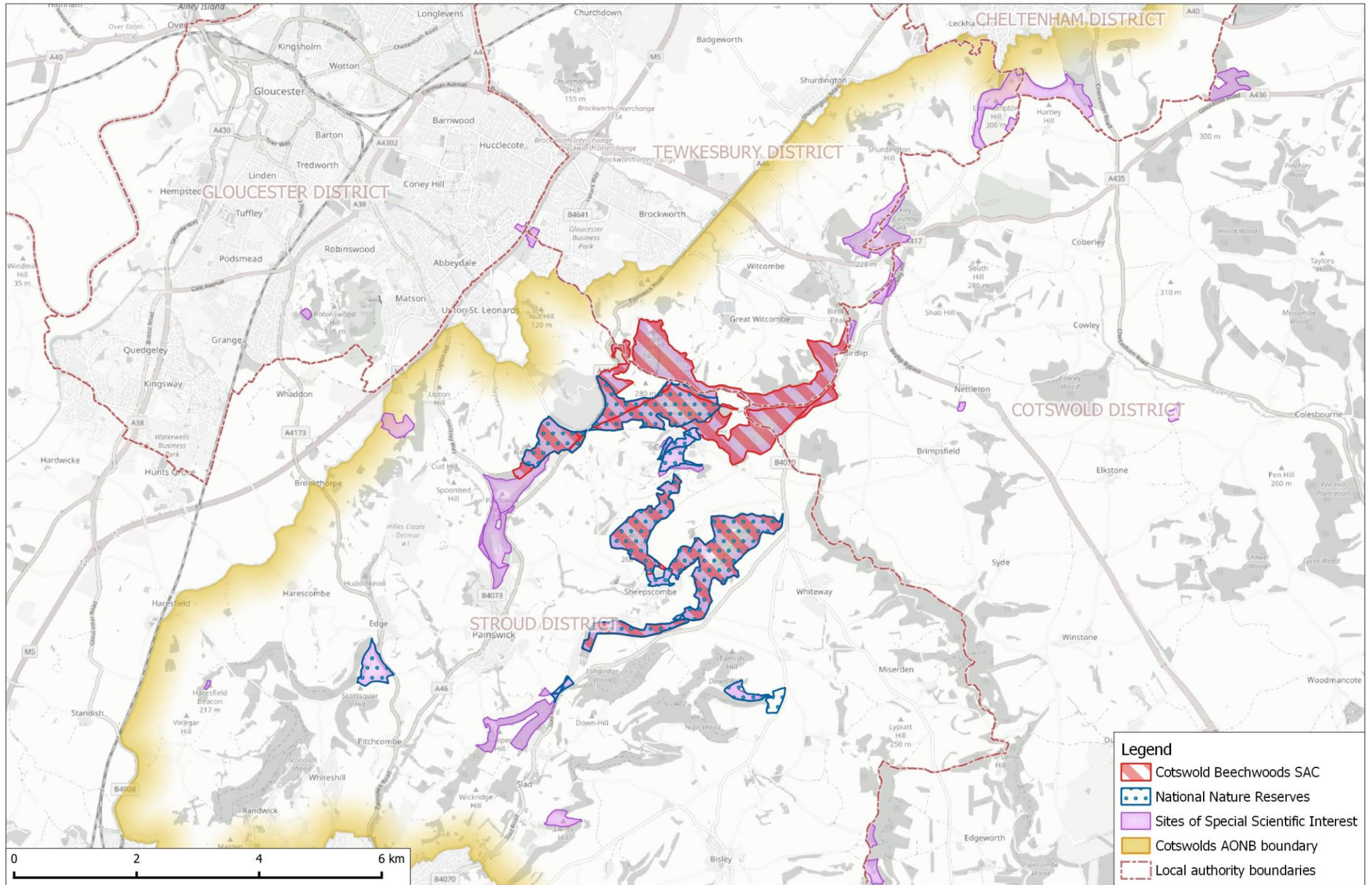
⁴ Figure from the supplementary conservation objectives.

⁵ Full details are in the [SAC citation](#) on the Natural England website

Cotswold Beechwoods SAC Recreation Mitigation Strategy

- 2.5 The unimproved limestone grassland of the SAC consists of areas of glades and rides within the woodland, the largest area being the cheese-rolling slope at Coopers Hill. The grassland habitat contains Upright Brome *Bromus erectus*, Tor-grass *Brachypodium pinnatum* and Sheep's-Fescue *Festuca ovina*, with Quaking Grass *Briza media* and a wide range of other flowering herbaceous plants.
- 2.6 The component Site of Special Scientific Interest (SSSI) is the Cotswold Commons and Beechwoods and the site is also a National Nature Reserve (NNR), the Cotswold Commons and Beechwoods NNR. Both the NNR and SSSI extend beyond the SAC. The Cotswold Beechwoods are also recognised for their landscape value, lying within the heart of the Cotswold Area of Outstanding Natural Beauty (AONB).
- 2.7 The SAC is shown in Map 1, which also shows the SSSI, NNR and AONB boundaries for context.

Map 1: Location of the Cotswold Beechwoods SAC, within the context of the AONB, NNRs, SSSIs and the local authority boundaries.



- Legend**
- Cotswold Beechwoods SAC
 - National Nature Reserves
 - Sites of Special Scientific Interest
 - Cotswolds AONB boundary
 - Local authority boundaries

Recreation use

Visitor numbers

- 2.8 The Cotswolds AONB receives an estimated 23 million leisure visits a year across the AONB⁶. For the Cotswold Beechwoods SAC an estimate from ORVal (Outdoor Recreation Valuation Tool) predicts 383,678 visits per year to the different areas that are included in the tool; these make up roughly two thirds of the SAC⁷.
- 2.9 Central to visitor access is the Cotswold Way, which runs for a total of 164 kilometres, passing through much of the SAC. It is a clear focus for access and the Cotswold Way Association estimate the path receives over 210,000 visits a year⁸. By contrast, ORVal puts an estimate for the Cotswold Way at 3.8 million visits a year⁹. The length of the Way through the SAC is 6.7 km.

Parking and path networks

- 2.10 The SAC is bisected by roads, has holes of undesignated land within and includes long thin strips of land. As such there is a considerable perimeter and there are many access points and paths across the SAC.
- 2.11 The path network derived from OpenStreetMap is shown in Map 3. It can be seen there is a high density of paths, with only a few areas, such as Cranham Wood and Buckle Wood without many paths. Map 3 also highlights the long distance paths; primarily the Cotswold Way, but also to a lesser extent the Gustav Holst Way.
- 2.12 Parking locations which give immediate or very easy access onto the SAC are also shown on Map 3. A total of 27 parking locations are shown, including locations such as pubs and large car parks on the Cotswold Way (e.g. Barrow Wake). These locations have an estimated combined capacity of around 325 parking spaces. It should be noted that this does not include the National

⁶ https://www.swdevelopmentplan.org/wp-content/uploads/2013/05/Cotswolds-AONB-Mgt-Plan-2013_18.pdf

⁷ ORVal developed by the Land, Environment, Economics and Policy Institute (LEEP) at The University of Exeter with funding from Defra <https://www.leep.exeter.ac.uk/orval/> Sites; ID:491 (c. SW half of the SAC): 264,526 visits per year, ID:2255 (Upton Wood) : 62,531, ID:2254 (Cooper's Hill): 56,621.

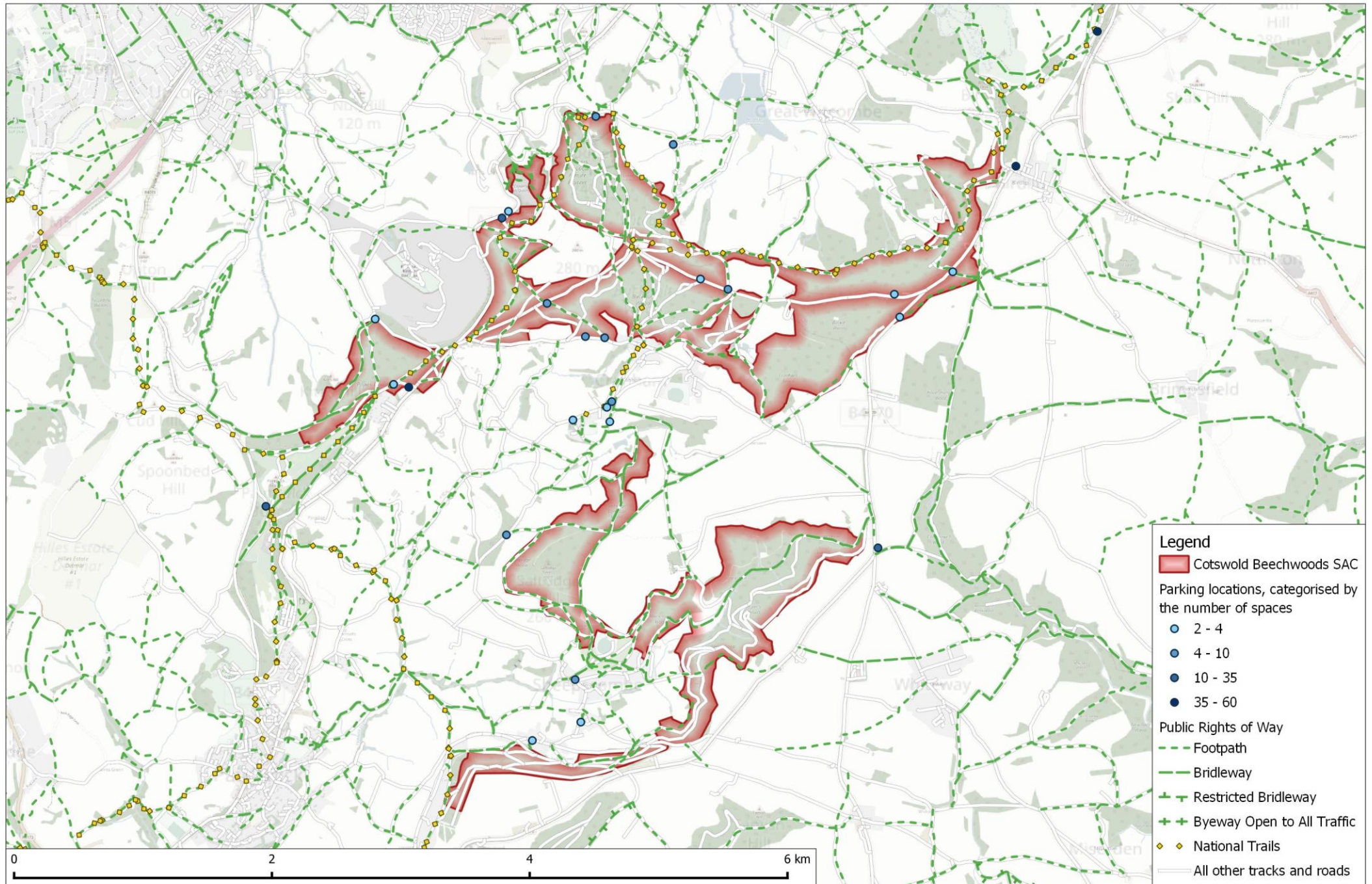
⁸ <http://cotswoldwayassociation.org.uk/our-other-trails/>

⁹ <https://www.leep.exeter.ac.uk/orval/> ID:12

Cotswold Beechwoods SAC Recreation Mitigation Strategy

Trust Old Ebworth Centre which is more a base for the rangers and an education hub.

Map 2: Location of current parking provision and the distribution of paths within the SAC.



2019 visitor surveys

- 2.13 Visitor surveys were undertaken by Footprint Ecology with members of the public who were visiting the Cotswold Beechwoods SAC in summer 2019 (Panter & Caals, 2019). The visitor survey was commissioned by the local planning authorities in the vicinity of the Cotswold Beechwoods: Tewkesbury, Cotswold, Stroud, Cheltenham and Gloucester City Council (the highway authority), as evidence to inform the HRAs and mitigation requirements of the emerging respective Local Plan documents.
- 2.14 The surveys included counts of people passing and interviews with visitors were conducted in June/July 2019 (outside of school holidays) at 12 survey point locations, for a total of 192 hours covering both weekdays and weekends. The survey points ranged from key well-known, visitor destinations along the Cotswold Way with lots of parking (e.g. Barrow Wake and Coopers Hill), to informal laybys (e.g. B4070 layby) and foot-only access points from nearby villages (e.g. Sheepscombe).
- 2.15 Key findings included:
- Counts recorded 770 people (including 201 minors and 43 cyclists) and 213 dogs – with an average group size was 2.1 people per group, of which 0.5 were minors, 0.1 on a bicycle and with 0.6 dogs per group;
 - Roughly 4.3 times people were seen on weekends, than on weekdays;
 - A total of 139 interviews were conducted, with 13% on holiday, 2% staying with friends or family locally and 85% of interviewees on a short visit directly from home;
 - The main activities were walking (without a dog) (45% of interviewees) and dog walking (40%);
 - Most interviewees (67%) had arrived at the survey location by car or on foot (28%);
 - Interviewee postcodes (those who had travelled directly from home only) showed that interviewees were from: Stroud District (28%), Gloucester District (19%), Tewkesbury District (15%), Cotswold District (11%) and Cheltenham (9%).
 - The median distance between the home postcode and survey location for all interviewees was 7.2 km while for those visiting directly from home the median was 6.0 km and 75% lived within 15.4 km.
- 2.16 Visitor data are summarised in Maps 3-6. Figure 1 summarises the survey results, identifying key visitor groups based on the interview data collected. Seven groups are shown and the size of each rectangle is equivalent to the proportion of interviewees in the group. The blue group is specifically those

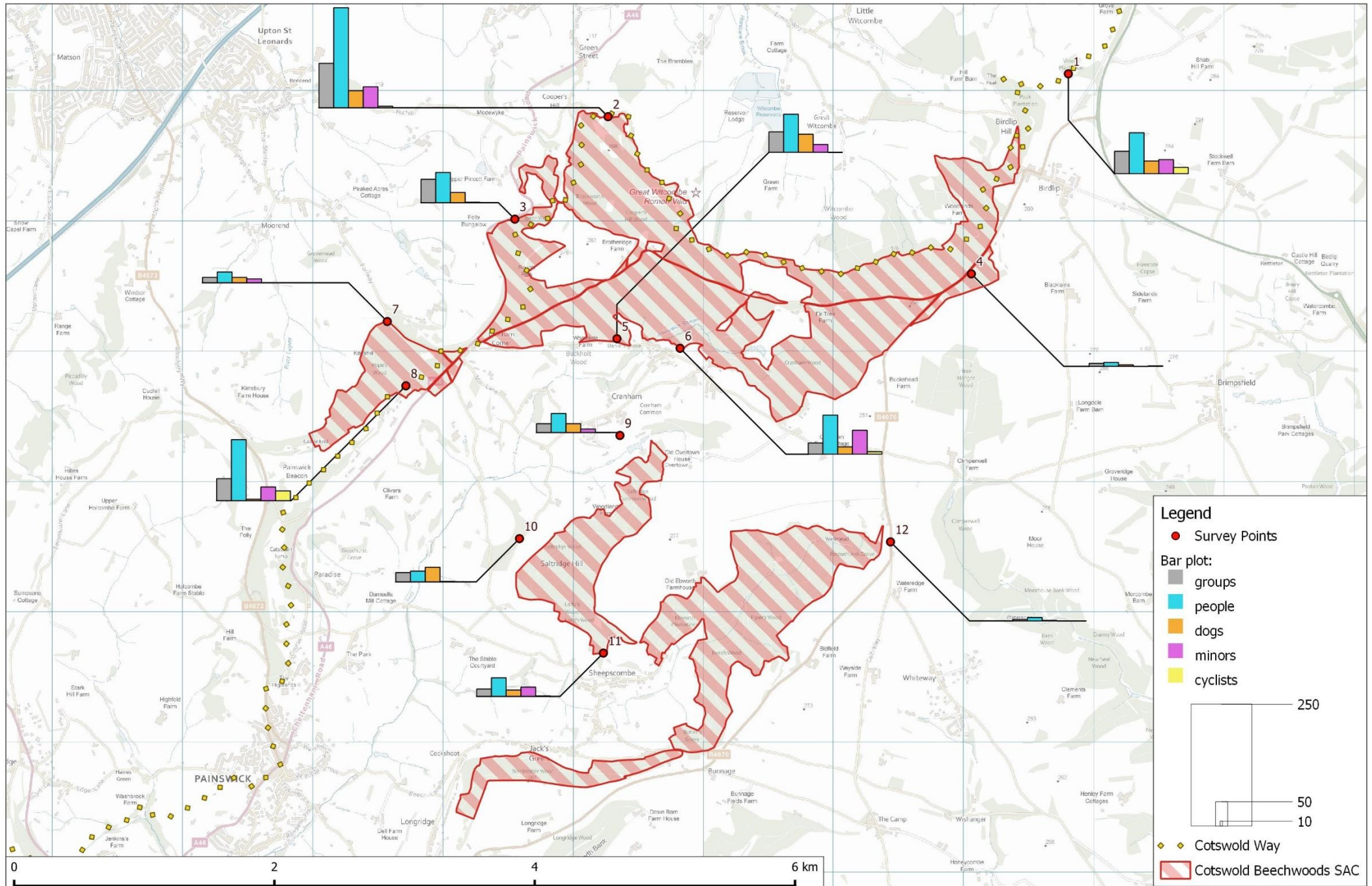
who considered themselves on holiday or staying with friends and not on a day trip (15% of interviewees). These groups come from a very wide area and were mostly walking. The green groups are long distance/regional visitors but who were all on a day trip (49%). Within these three groups were highlighted; a specific group for long distance walkers/runners, long distance day trippers (who were mostly on a first visit) and regional visitors who were infrequent. The two remaining brown groups are very local visitors (34%), with a specific group for those who were on site every day or every other day.

- 2.17 It should be noted that the weather conditions were at times variable. The number of people counted passing (and the number of interviews conducted) was relatively low compared to other European sites surveyed by Footprint Ecology. This is a finding in it' own right. The data collected are similar to those undertaken at other European sites and used to underpin mitigation strategies (e.g. Fearnley et al., 2010; Liley et al., 2006, 2018; Panter & Liley, 2019), however of particular note in the Cotswolds is that relatively few Mountain Bikers were encountered or interviewed during the survey, despite this being known to be a popular activity in the area. The visitor survey report includes discussion on the implications of these omissions and merits for further, targeted survey work.

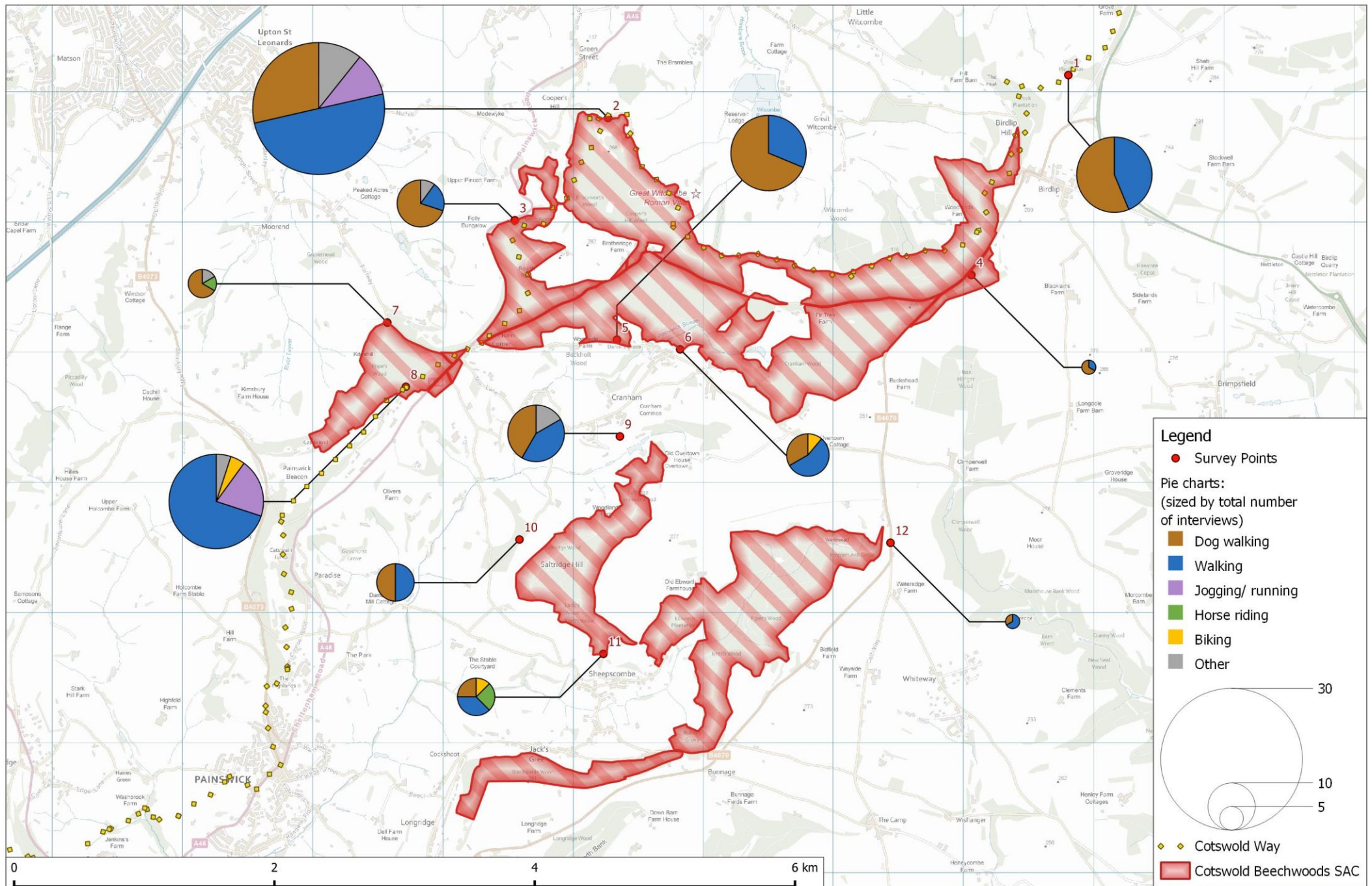


Figure 1: Treemap of visitor profile groups based on the visitor surveys. Group title is given at the bottom and size of the group is relative to the percentage of interviewees (shown in brackets) – it is important to note this is based on the interview data and may misrepresent the cyclists, count data suggested 6% of visitors were cyclists while only 2% of those interviewed were cycling.

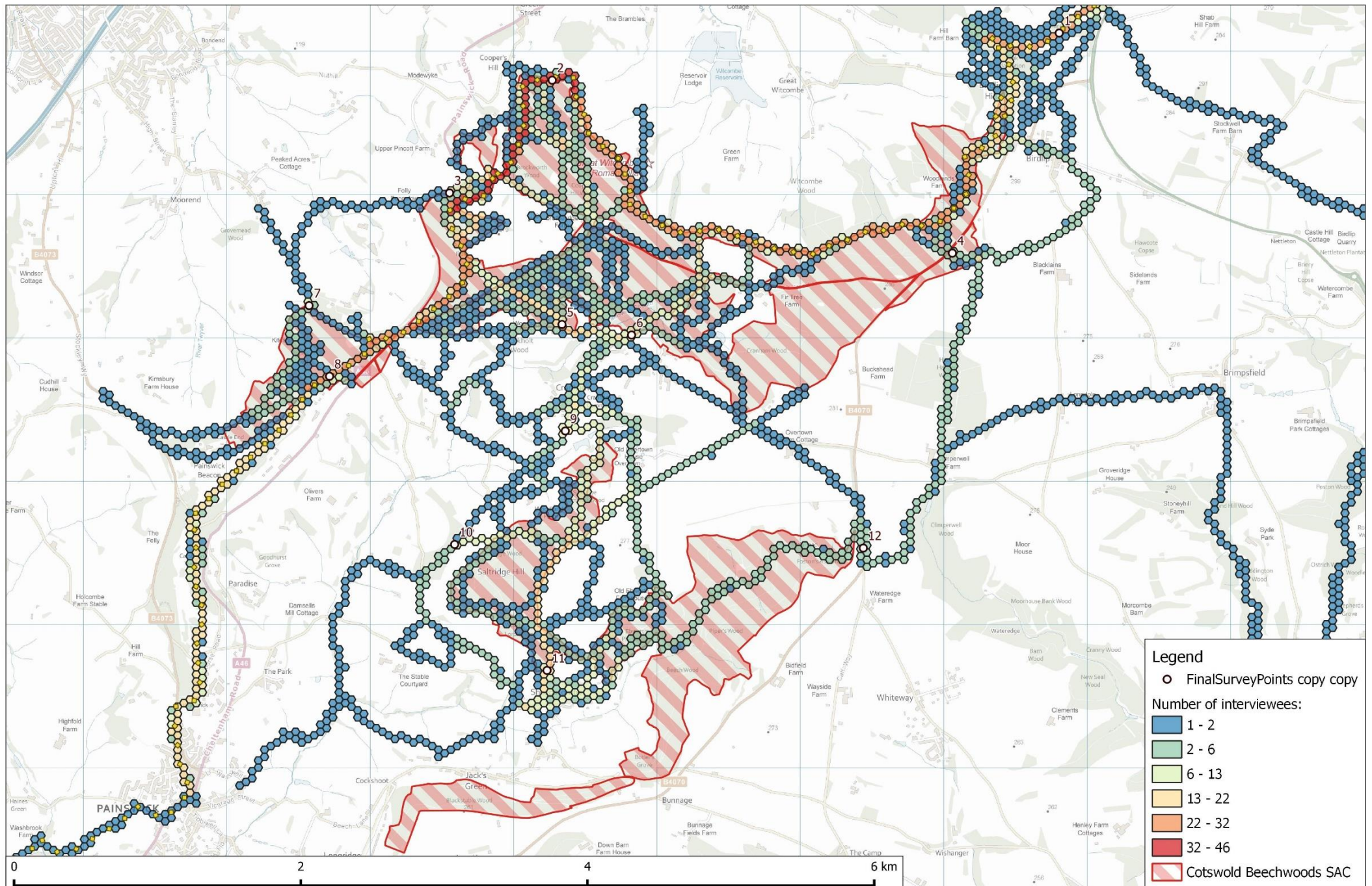
Map 3: Bar plots to show the numbers of groups, people, dogs, minors and cyclists observed at each survey point.



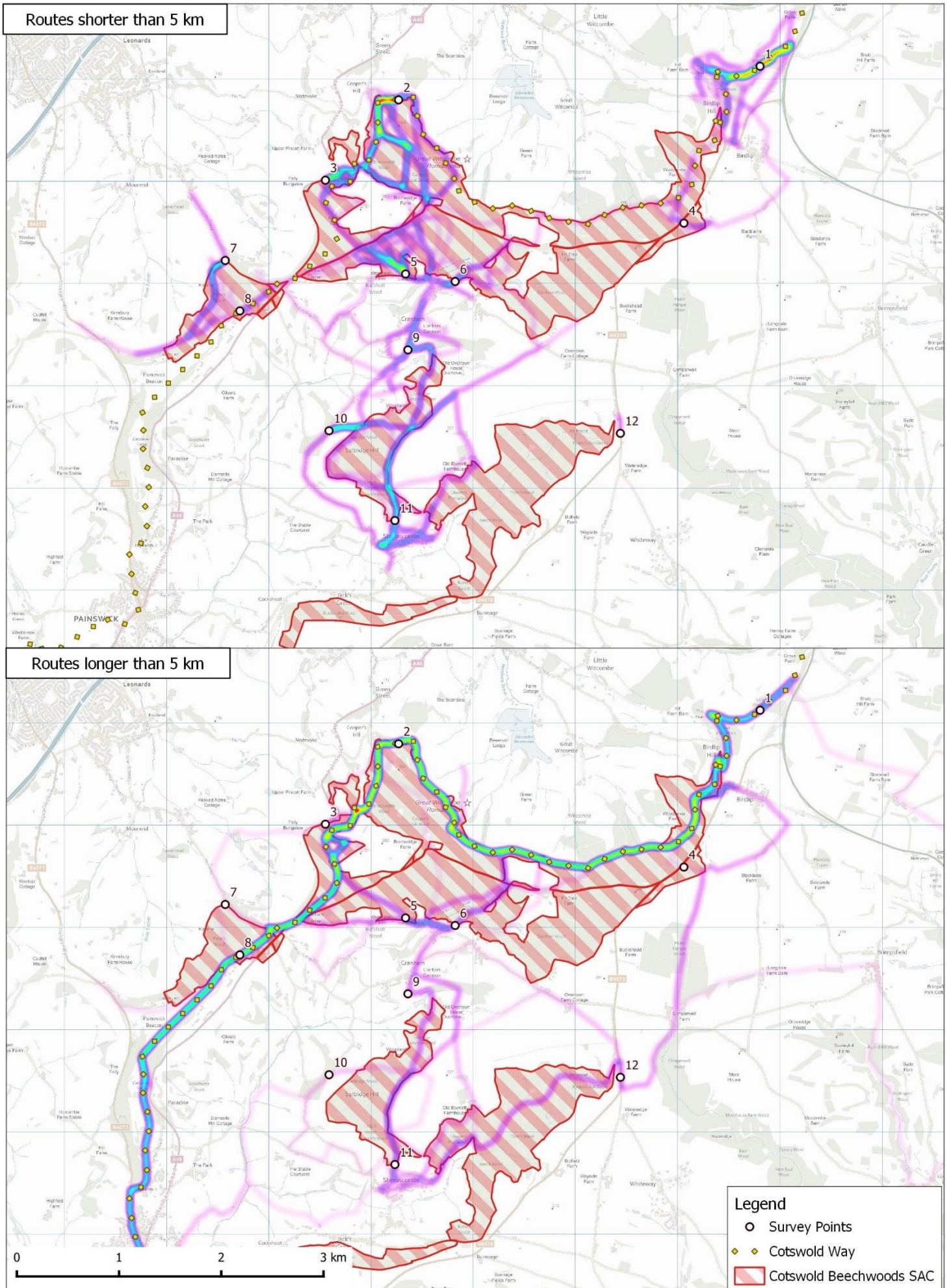
Map 4: Pie charts to show interviewee activities from surveys. Overall size indicates the relative total number of people.



Map 5: Route density from visitor surveys shown using a 50m hexagonal grid.



Map 6: Routes taken by interviewees at Rodborough Common shown as a rainbow heatmap.



Impacts of recreation

- 2.18 Impacts of recreation on woodland habitats are varied and are summarised in a range of reviews (e.g. Corney et al., 2008; Lake et al., 2020; Lowen et al., 2008; Marzano & Dandy, 2012; Ryan, 2012). Beech woodlands tend lack vegetation at ground level which can mean impacts (such as flattened ground flora) are less obvious and people are perhaps more likely to roam away from paths. Furthermore, some of the rare species associated with the habitat, such as orchids, are patchy and not necessarily predictable in their occurrence.
- 2.19 Impacts from recreation take a wide range of forms, including:
- Damage: encompassing trampling and vegetation wear, soil compaction and erosion, trampling can also cause direct mortality for some fauna;
 - Contamination: including nutrient enrichment (e.g. dog fouling), litter, invasive species;
 - Fire: increased incidence and risk of fire;
 - Other: all other impacts, including harvesting and activities associated with site management, for example the difficulties in achieving necessary grazing.
- 2.20 By **damage** we mean the impacts of footfall (or wheels) on vegetation and soils. Issues relate to vegetation wear, soil compaction and erosion, i.e. largely unintentional consequences from the passage of people, pets and vehicles.
- 2.21 Mechanical damage to plant tissue causes a loss of vegetation cover, changes in the plant composition of the vegetation and loss of species, a reduction in the genetic diversity of clonal species (woodland species such as Bluebell and Wood Anemone are clonal) and a reduction in plant height. Trampling can cause damage to root systems and increase water run-off, soil erosion and compaction with consequences for decomposition and nutrient cycling. Compaction can also cause a reduction in organic matter, affecting fertility and the water infiltration capacity of the soil. Compaction can also impact on mycorrhizal fungi, affecting plant uptake of nutrients from the soil.
- 2.22 Other effects of human trampling include the widening of paths and path erosion. Horses, vehicles and bikes are likely to be more damaging than people on foot (Weaver & Dale, 1978) and damage is more severe on slopes compared to flat ground (Weaver & Dale, 1978). Comparison of motorbikes,

horses and walkers showed walkers and horses were most damaging going downhill whereas bikes more damaging going uphill (Weaver & Dale, 1978);

- 2.23 In addition, damage can be deliberate, for example vandalism.
- 2.24 **Contamination** covers pollution and nutrient enrichment and also encompasses the spread of non-native species. Dog fouling is the main vector for nutrient enrichment as dog excrement and urine is nutrient-rich. The total volume deposited on sites may be surprisingly large. At Burnham Beeches NNR over one year, Barnard (2003) estimated total amounts of 30,000 litres of urine and 60 tonnes of faeces from dogs.
- 2.25 Recreation is one of the major pathways for the spread of non-native species. A systematic review and meta-analysis by Anderson *et al.* (2015) found that the abundance and richness of non-native species was significantly higher at sites with recreation and showed a consistent pattern across terrestrial and aquatic environments and with a range of different activity types (e.g. horses, walkers). Allen, Brown & Stohlgren (2009) also found a positive relationship between the number of non-native species present on sites and the number of visitors.
- 2.26 Contamination also extends to litter and fly-tipping (the latter being linked to recreation as isolated car-parks and lay-bys are often utilised).
- 2.27 **Fires** can be caused accidentally from discarded cigarettes, by sparks from a campfire, BBQs or from burning a dumped or stolen car, from fireworks, as a result of a controlled fire getting out of control, from discarded bottles in strong sunlight, from children playing with matches or similar, and from deliberate arson. While deciduous woodland and grassland habitats in the UK are relatively robust in terms of wild fire risk, there is scope for localised damage. Furthermore, climate change is likely to increase the risks of wildfire and the types of habitat affected (Jolly *et al.*, 2015). It is likely that wildfire incidence will occur in situations and vegetation communities where it has previously been rare or very limited (anon, 2017) and increasingly site managers will have to take active measures to minimise risks on sites.
- 2.28 Public opposition can halt or delay management programmes associated with conservation, such as the control of invasive species (Bremner & Park 2007). It can be a particular problem where livestock grazing is needed and in some cases livestock grazing is untenable on sites popular with dog walkers due to worrying and death of sheep by dogs (e.g. Taylor *et al.* 2005). Access can also influence the distribution of deer within semi-natural

habitats, potentially meaning deer browsing might be concentrated in some areas.

- 2.29 Another potential issue relates to demand for access and pressure for particular interventions, infrastructure or facilities. On sites with current recreation use visitors may well wish for better path surfacing, toilets, cafes, dog bins etc. Where access is not encouraged or there is no access there may be demand from local people and visitors for access to be provided. These issues can bring added pressure for site managers or a need to compromise between nature conservation and recreation.
- 2.30 There is increasing interest in wild foraging. Non-commercial foraging is often seen as a valuable way in which people engage with the natural environment however, commercial foraging can be at a completely different scale and there is concern that it may in some cases be impacting on features of nature conservation importance, although this is debated. Commercial collecting is in some places prohibited, such as in the New Forest.

Site specific information on recreation impacts

- 2.31 There has been growing awareness of the threats to the Beechwoods from increased recreation use. The combination of activities can also create tensions between different users and Stroud District Council have received complaints relating to off-road vehicles and other recreation issues. It was as a result of these growing concerns that Stroud District Council had commissioned HRA-related work and the visitor survey.
- 2.32 The site improvement plan¹⁰ for the Cotswold Beechwoods SAC identifies public access/disturbance as a threat to the site. The plan states:

“Public use of the Beechwoods has grown considerably over recent years and damage is becoming more widespread. A particular increase has been the use of mountain bikes and horseriding which use the woods far beyond the limited network of bridleways. This has created numerous additional trackways and so increasing the erosion of the ground flora and potentially opportunities for water erosion. Although the routes away from bridleways are not usually permitted, much of the SAC woodland is NNR or has public access by foot. Hence efforts have been made to provide agreed permissive routes with local

¹⁰ Available on the [Natural England website](#)

bike groups with the aim of minimising damage whilst still allowing some use. This is still experimental, and much will depend on the scale of use and whether the users stick to the permissive routes. This approach could also be tried with horseriders. Additionally, dog walking has increased within the SAC especially at Coopers Hill where car parking is available. This has become a particular issue where professional dog walkers release large numbers of dogs (up to 12) to run uncontrolled through the woods. This causes disturbance to wildlife as well as local nutrification through dog faeces."

- 2.33 The plan identifies as an action the need for a strategy to address recreation impacts and identifies the National Trust and local authorities alongside Natural England as delivery partners.
- 2.34 The supplementary conservation objectives for the SAC set targets relating to the soil nutrient status and also specifically to the soil structure around the roots of ancient trees. Trampling from human feet linked to recreation use is identified as an issue. The objectives state that recreational use is increasing.

3. Relevant local plans and housing growth

Defining a zone of influence

3.1 Postcode data from the visitor survey provide a means to identify a zone of influence, within which housing growth may result in an increase in recreation use. Postcode data (distance from home postcode to interview location) are summarised in Table 1, which includes breakdowns by visit type, and weekday /weekends.

Table 1: Summary of postcode data (distance (km) from home postcode to interview location) from visitor survey (Panter & Caals, 2019). Q3 in the third quartile (i.e. 75th percentile)

Visit type	Number of interviews	Mean ± Standard Error	Median	Range	Q3
All interviewees	126	27.5 ± 5.2	7.2	0.05 - 465.1	20.5
All interviewees by visit type					
Visiting from home	113	14.9 ± 2.5	6.0	0.05 - 223.5	15.4
Staying with friends/family	2	79.4 ± 67.8	79.4	11.61 - 147.2	-
On holiday	11	147.9 ± 38.3	153	10.20 - 465.1	185.9
Interviewees from home by weekday and weekend					
Weekday	33	18.9 ± 7.2	4.5	0.2 - 223.5	17.8
Weekend	80	13.2 ± 1.9	7.0	0 - 73.1	12.9

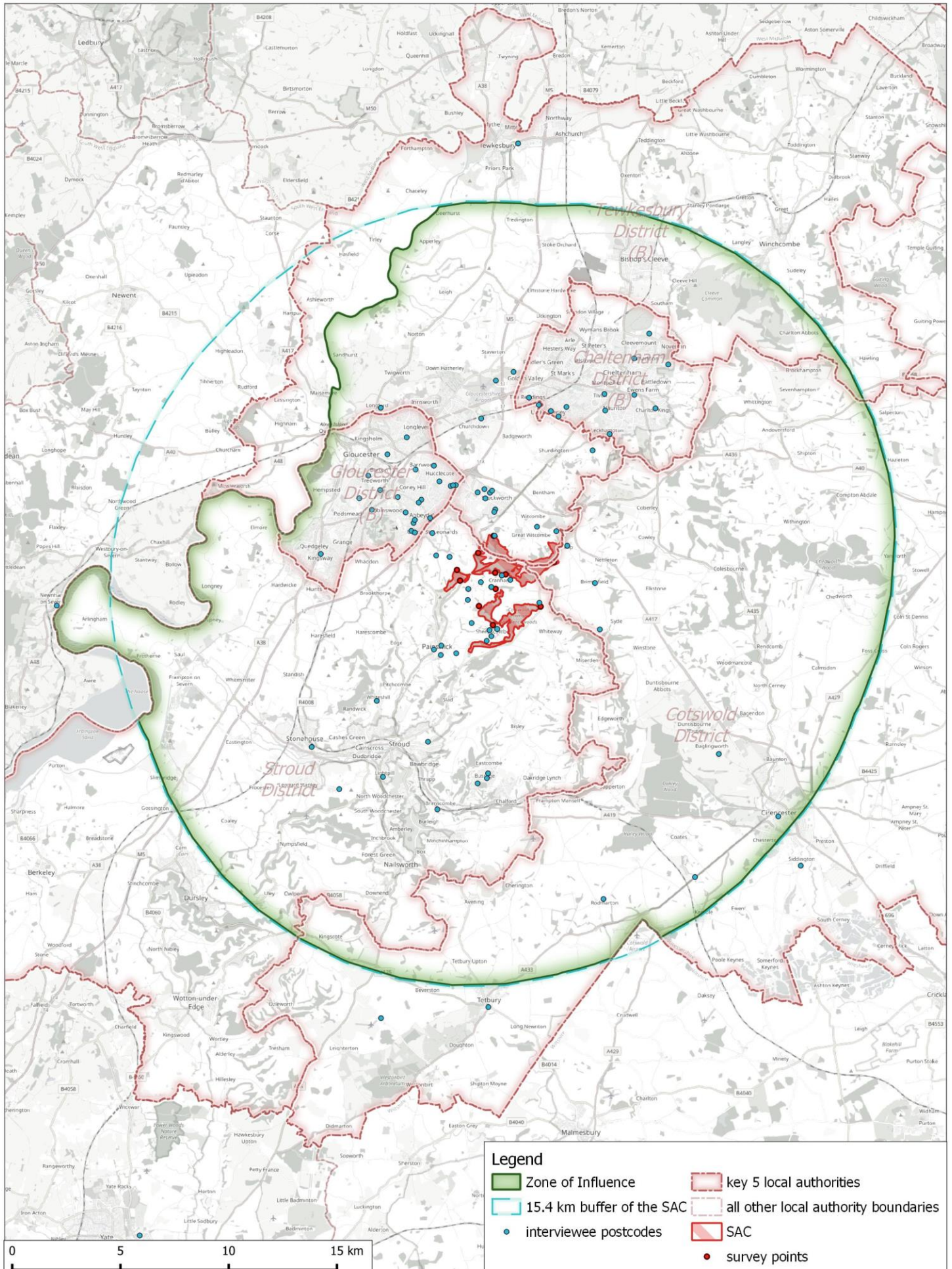
3.2 The 75th percentile provides a good basis for a zone of influence as it represents the area from which the majority of visits originate. The data show that the majority of visitors are relatively local, however there are always likely to be a few visitors that travel very large distances, for example the interview data included someone on a visit from home that lived 223km away from the survey point. As such, by using the 75th percentile the area from which most visitors live can be identified (see Liley, et al., 2021 for discussion, examples and best practice). Based on Table 1, 15.4km represents the 75th percentile distance for interviewees who had travelled directly from home. This is shown as a buffer around the entire SAC in Map 7, below.

3.3 The five LPAs of interest; Cheltenham, Cotswold, Gloucester, Stroud and Tewkesbury all had 10% or greater of all interviewees, and as a combined area accounted for a 76% of interviewees. We therefore excluded the other LPAs (Forest of Dean and Wiltshire), and also made a minor amendment to follow the River Severn as there are limited crossing points over the river and

Cotswold Beechwoods SAC Recreation Mitigation Strategy

it acts as a barrier to access. For simplicity the zone also dovetails to the Stroud District boundary and includes the peninsula of land which includes the village of Arlingham, just beyond 15.4km. These amendments produce the Zone of Influence shown in Map 7.

Map 7: Interviewee postcodes, 15.4km buffer of the SAC (the 75th percentile distance of interviewees), and the zone of influence.



Contains Ordnance Survey data © Crown copyright and Database Right 2018. Contains map data © OpenStreetMap contributors. Terms: www.openstreetmap.org/copyright Designated site boundaries download from the Natural England website © Natural England.

Relevant local plans and policy

Gloucester, Cheltenham and Tewkesbury Joint Core Strategy (JCS)

- 3.4 Cheltenham, Gloucester and Tewkesbury share a strategic planning document, the Gloucester, Cheltenham and Tewkesbury Joint Core Strategy¹¹ which was adopted by the three authorities on the 11th December 2017. The JCS identifies objectively assessed housing need and sets out requirements for strategic sites, covering the period to 2031. It also contains a suite of strategic development management policies. Policy SD9 relates to Biodiversity and Geodiversity. This states that any development that has the potential to have a likely significant effect on an international site will be subject to a HRA.

Cheltenham Plan

- 3.5 The Cheltenham Plan¹² was adopted in 2020 and runs to 2031. Policy BG1 relates to the Cotswold Beechwoods SAC and recreation pressure. This states that all development within the borough that leads to a net increase in dwellings will be required to mitigate any adverse effects. The need for this strategy is identified and the policy required development proposals to contribute towards the mitigation specified or provide information for a bespoke HRA.

Gloucester City Plan

- 3.6 The Gloucester City Plan will provide the development framework for the city through to 2031. The Plan has reached an advanced stage of preparation, currently being examined by the Secretary of State (via the Planning Inspectorate)¹³. Public hearing sessions were held in May and June 2021 and a Main Modifications consultation will take place in February/March 2022 with the expectation that the Plan be adopted in the summer of 2022. The Plan includes Policy E6: Development affecting Cotswold Beechwoods SAC. This states that all development that results in a net increase in dwellings will be subject to Habitats Regulations Assessment for likely significant effects. Any development that has the potential to lead to an increase in recreational pressure on the SAC will be required to identify any potential adverse effects

¹¹ See dedicated [JCS website](#) (or relevant local authority sites) for download

¹² Download link from [relevant page of Cheltenham Borough Council website](#)

¹³ See relevant page on [Gloucester City Council website](#) for details and links

and provide appropriate mitigation. This will be in accordance with the SAC mitigation and implementation strategy or through a Habitats Regulations Assessment.

Tewkesbury Borough Plan

- 3.7 The Tewkesbury Borough Plan¹⁴ covers the period 2011-2031. The pre-submission version (2019) has policy NAT5 which relates to the Cotswold Beechwoods. All development that leads to a net increase in dwellings will be required to mitigate any adverse effects of increased recreational pressure. Any proposals that would lead to an adverse effect must contribute towards mitigation specified in the SAC mitigation and implementation strategy or through a bespoke Habitats Regulations Assessment.

Cotswold District Local Plan

- 3.8 The Cotswold District Local Plan 2011-2031¹⁵ was adopted in 2018. Policy EN4 lists the Cotswold Beechwoods SAC as one of the internationally designated sites in or near Cotswold District. The policy states the development will be permitted where it does not have significant detrimental impact. Further protection for European sites is provided in Policy EN8 (and supporting text) and Policy EN9.

Stroud District Local Plan Review

- 3.9 The Stroud District Local Plan was adopted in 2015. Work is underway on the Local Plan review and a draft Local Plan was out for consultation in 2019¹⁶. This includes Delivery Policy ES6 which provides for biodiversity and includes wording to ensure adequate mitigation is necessary where there are risks to European sites.

In-combination scale of growth

- 3.10 Data on potential future housing growth to 2031 were provided by the 5 relevant authorities (Cheltenham, Cotswold, Gloucester, Stroud and Tewkesbury), as a series of GIS files¹⁷ indicating potential large sites/allocations accompanied with estimates of growth from small

¹⁴ download [link from the examination library](#)

¹⁵ Download from relevant page on [the Cotswold District Council website](#)

¹⁶ Download from relevant page on [the Stroud District Council website](#)

¹⁷ i.e. spatial data that can be loaded into Geographic Information System 'GIS' software

sites/windfall¹⁸ over different areas. The data are summarised in Appendix 1 and were combined in GIS. Windfall/small sites were calculated as a set percentage uplift in the number of residential dwellings per postcode. The data for all housing across all 5 local authorities, in relation to distance from the SAC, are shown in Figure 2. These estimates of housing growth are approximate and a snapshot in time, but highlight the scale of growth requiring mitigation.

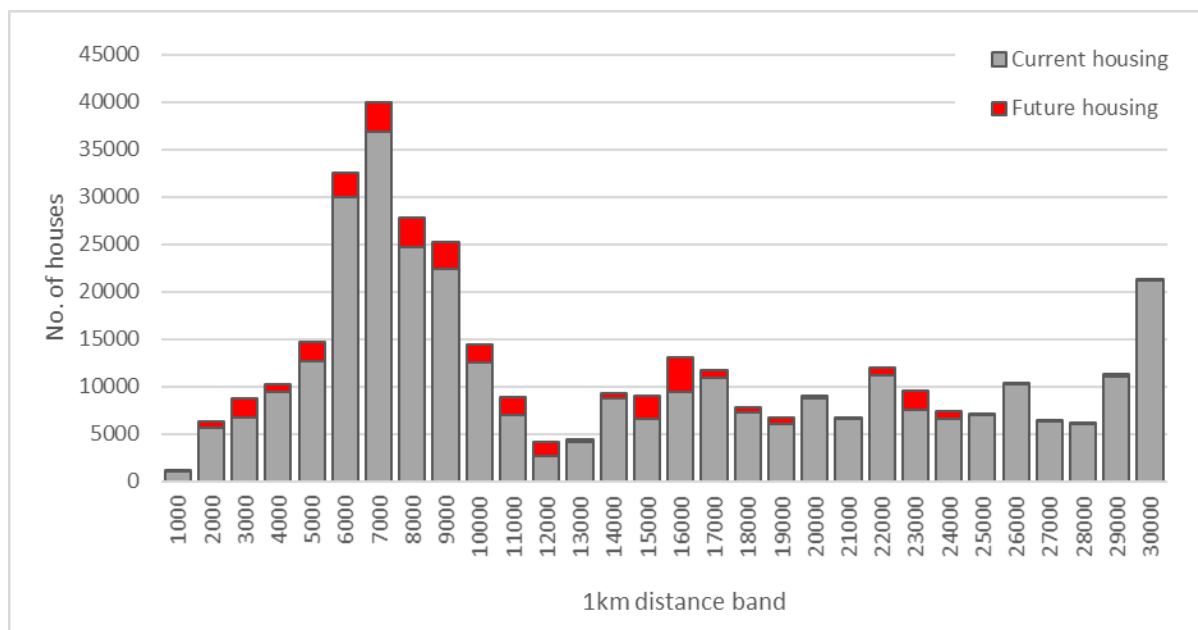


Figure 2: Summary of current and future housing with 1km distance bands of the SAC (based on the 5 LPAs of interest).

3.11 Within the zone of influence there are currently a total of 193,349 dwellings (as of February 2020¹⁹), with 191,848 of these within the 5 local authorities (see Table 2). This estimate of potential housing growth would mean an increase of around 14% in housing within the zone.

¹⁸ windfall sites being those sites that are not allocated in a local plan and are generally small in size

¹⁹ Figures extracted from postcode data in GIS that gives the number of delivery points

Cotswold Beechwoods SAC Recreation Mitigation Strategy

Table 2: Current and future housing within the zone of influence (15.4km). Future housing is for the period to 2031.

District	Current	Future housing: windfall	Future housing: allocations/potential large sites	Future housing total
Cotswold	13,306	491	1,909	2,400
Stroud	39,995	485	11,243	11,728
Tewkesbury	25,421	324	6,632	6,956
Gloucester	57,237	512	920	1,432
Cheltenham	55,889	748	2,933	3,681
Total	191,848	2,560	23,637	26,197

4. Mitigation

4.1 A suite of mitigation measures should function together to have confidence that adverse effects arising from recreation have been prevented. In most instances when developing a strategy for development, each measure taken alone is unlikely to give that certainty. A combination of measures, developed and targeted after analysis of available information, gives greater certainty. This is because the combination of measures working together reduces risk and builds in contingency for amending the strategy if some measures do not perform as well once implemented. Other measures can continue to function in the short term whilst some are revised. An integrated suite of measures delivered together also improves efficiency, which in turn adds to effectiveness with improved value for money.

Mitigation approaches in other parts of the UK

- 4.2 Strategic mitigation schemes in other parts of the UK²⁰ provide a useful precedent and provide examples of different mitigation approaches that have, in some cases been long established.
- 4.3 On-site measures such as increased wardening/rangers (often termed SAMM – strategic access management and monitoring) and SANGs are common themes in strategic mitigation for European sites, and all schemes include monitoring to target and hone interventions. Other measures within these schemes have included dog projects (that engage with local dog walkers and promote responsible dog walking), interpretation, changes to infrastructure, codes of conduct and various engagement approaches.
- 4.4 Burnham Beeches and Epping Forest are perhaps of particular relevance given that they are woodland SAC sites, with broadly similar issues from recreation²¹. Schemes are also in place or emerging for the New Forest and the Chilterns Beechwoods. Measures in place at Burnham Beeches include SANGs and also SAMMs²² (electronic interpretation, carefully planned events and promotion to raise awareness, SAC ranger post, visitor surveys) and there is a presumption against any new development within 500m of the

²⁰ such as the Thames Basin Heaths, the Dorset Heaths, the Solent, Epping Forest, Burnham Beeches, South-east Devon, North Kent and Cannock Chase

²¹ albeit note that these sites lack steep slopes and the long distance route. Also mountain biking is not so popular at these other locations.

²² E.g. see [Chilterns and South Bucks SAC mitigation strategy](#)

SAC. At Epping Forest, Epping Forest District Council²³ have developed mitigation approaches that involve a combination of SAMM and SANG.

- 4.5 Many of these interventions are widespread and commonly used and there are a range of studies that support their effectiveness (e.g. Allinson, 2018; Burger & Leonard, 2000; Medeiros et al., 2007; Williams et al., 2017), however there is little experimental work or similar to explicitly test or directly compare different approaches.
- 4.6 Many of the measures bring wider benefits besides simply providing mitigation. Enhancing access, providing better connections between local people and their environment, providing education resources and providing new green infrastructure all have wide benefits for society and potential economic benefits.

Insights from visitor survey work

- 4.7 The access on the site appears to currently be at a moderate level, but with clear hotspots of access (Cooper's Hill being the busiest). These hotspots are different for the different user groups and therefore management will be tailored across the site – walkers accounted for 70% of interviewees at the survey point behind the Royal William and 40% of them were on holiday (see tally counts in Map 4 and interview data in Map 5).
- 4.8 Around 29% of interviewees were first-time visitors. These will be unfamiliar with the site layout and potentially most likely to refer to interpretation, on-line sources and other information in order to decide where to go and how to plan their visit. First-time visitors and holiday-makers tended to be focussed around locations with facilities (e.g. pubs), key access points (large car parks) and points of interest (e.g. Cooper's Hill). Road signage and to a lesser extent information used to plan the visitor will be key for first time visitors who comprised 29% of interviewees.
- 4.9 Access management should be focused towards the busier weekends – interestingly 21% of interviewees on weekdays were on holidays (compared to only 9% on holiday on weekdays).
- 4.10 A reasonable proportion access of visitors arrived on foot (28%) and therefore might be missed if engagement was focussed around parking

²³ [See position statement](#) on Epping Forest District Council website

locations. Providing sustainable transport routes may have some success, although 83% would not have changed their mode, if other modes been available. Cyclists were rarely able to be approached for interview, emphasizing that face-to-face engagement may be hard with this group.

- 4.11 The Cotswold Way receives a high density of visitor footfall. However, parts of the site appear to be much lower (e.g. SSSI Unit 10). It is likely these are different user groups, and the more challenging engagement is likely to be with those visitors in the quieter/more remote areas where they may be harder to intercept.
- 4.12 An alternative country park location would be popular - 53% of interviewees suggesting they would use such a site. For dog walkers, this was 63%. A new alternative site with views or undulating topography would be popular (based on the alternative sites currently used). Visitors often select the Beechwoods because it is close to home, but the scenery is a very close second and is therefore important to provide alternatives which meet this criteria – given the wide draw, it should be possible to provide intermediate sites which are closer.

Mitigation approaches for the Cotswold Beechwoods

- 4.13 Mitigation will consist of SAMM and SANG/infrastructure projects away from the Cotswold Beechwoods. These two approaches would be complement each other.

SAMM (Strategic Access Management and Monitoring)

- 4.14 SAMM measures at the Beechwoods are required to address recreation impacts and make the SAC more resilient to increased recreation. SAMM would comprise:
- Dedicated staff;
 - Signs and interpretation;
 - Education & awareness raising;
 - Measures to address contamination;
 - Parking and travel related measures;
 - Monitoring.
- 4.15 Details of all SAMM measures are set out in Appendix 2, with costs for each.
- 4.16 Dedicated staff to deliver a strategic mitigation scheme are essential. Their recruitment should be prioritised over the delivery of other measures,

because they are fundamental to the effective delivery of those measures. A delivery officer is the initial requirement to project manage the delivery of the strategy and it should be the first aspect of the strategy to be implemented as funds are collected. These would provide face-face engagement and an on-site presence and would undertake wider engagement with the community.

- 4.17 A mobile ranger team is a feature of other mitigation schemes such as the Solent, the South-Devon sites, the Thames Basin Heaths and the Dorset Heaths. In these examples the rangers form a mobile team that spend the majority of their time outside, talking to visitors, influencing how visitors behave and showing people wildlife. The advantage of such an approach is that the staff can focus their time at particular sites/locations as required. This means that as particular projects are set up, as development comes forward, or if access issues become a concern at a particular location, the staff can be present and target their time accordingly. Monitoring data can help inform the ranger effort and ensure their work is directly linked to where development comes forward and where there are issues. This then leaves the delivery officer to focus on overseeing the mitigation strategy and management of specific mitigation projects. Furthermore, with on-site ranger presence, there is the scope to expand/shrink this element to provide flexibility and the ability to respond to changes in the levels of growth coming forward.
- 4.18 The ranger post provides an on-site presence and this will need to be accompanied by complementary measures and resources to raise awareness and communicate to visitors. This will include signage, interpretation and digital communication.
- 4.19 Dog fouling and litter/fly-tipping cause contamination and are particular issues. While the heightened ranger presence will help address these, further measures will include additional dog bins and resources to cover removal of fly-tipping and waste.
- 4.20 Measures relating to parking and travel will be informed by a targeted piece of work (by the Delivery Officer) to assess opportunities to influence visitor flows and numbers through the management of parking and the way people travel to the site. Measures could involve changing the number and distribution of parking spaces, provision of bike racks and other infrastructure, links to bus routes etc.

4.21 Monitoring will be important to pick-up emerging trends, such as changes in access and ensure mitigation measures are targeted to ensure value for money and effectiveness. For example, a common theme in many countryside areas is the changing pattern of cycling use as e-bikes become more affordable and popular. These make cycling a more realistic travel option for many and also influence where people go and how far they cycle. The pandemic has also influenced how people use the countryside, for example through more people working from home and visiting areas near to their homes, potentially seeking quieter areas of countryside. Monitoring is important to pick up such changes and ensure mitigation is targeted appropriately.

SANG (Suitable Alternative Natural Greenspace)/Infrastructure Projects (away from the SAC)

4.22 SANG is the term given to greenspaces that are created or enhanced with the specific purpose of absorbing recreation pressure that would otherwise occur at European wildlife sites. SANGs are created, or existing greenspaces enhanced to create a SANG, in order to absorb the level of additional recreation pressure associated with new development. Such sites are likely to be effective in providing areas for dog walking. SANGs are however not the only way that green infrastructure can provide mitigation. There may be other opportunities, for example through providing dedicated cycle routes or linking up existing cycle and longer walking routes to encourage use away from the SAC. In some other parts of the country, mitigation measures have included provision of dedicated cycling facilities (BMX tracks near heathlands) or very specific measures such as enhancements to parking to increase capacity at countryside sites away from a European site.

4.23 These SANG/infrastructure projects dovetail with SAMM in that they provide additional space for recreation and realistic alternatives to the Cotswold Beechwoods. With SAMM in place, visitors will become more aware of their impacts and access better managed and some use will be deflected away from the Beechwoods entirely. Over time the emphasis for recreation use will shift to the sites enhanced for recreation – such as SANG – rather than the nature reserves.

4.24 All new residential development within the zone of influence will contribute towards SAMM and in addition either provide bespoke SANG (e.g. as part of a large development) or contribute towards SANG/infrastructure projects. This flexibility is important as for example large greenfield allocations may

Cotswold Beechwoods SAC Recreation Mitigation Strategy

be able to provide suitable greenspace while small windfall development is unlikely to be able to deliver any meaningful SANG or green infrastructure. SANG guidelines are set out in Appendix 3.

5. Implementation

Securing developer contributions

5.1 This strategy is intended to set out an approach to enable development through the implementation of measures to rule out adverse effects on integrity for the relevant European sites. Measures are set out and established strategically to ensure they can be delivered and are effective. The option remains for individual developers to provide suitable mitigation through a different approach. Any such cases will need to provide detailed evidence (through a shadow HRA, agreed with Natural England) to support any different measures proposed and rule out adverse effects on the integrity of the Cotswold Beechwoods SAC.

SAMM

5.2 Mitigation involves both SAMM and SANG. SAMM costs are estimated at a total of £5,031,620 (as summarised in Appendix 2). With an estimated 26,197 new houses coming forward (see Table 2), the per dwelling cost is £193. This is prior to the application of any administration fee. This standard fee is calculated by spreading the cost of the necessary mitigation across the amount of planned development. The charge will be adjusted annually to reflect inflation.

5.3 Developer contributions for SAMM will primarily be collected through planning obligations through Section 106 agreements ('S106') or unilateral undertaking. There is scope for each authority to set the administration fee or vary the cost according to dwelling size (e.g. number of bedrooms) as relevant.

5.4 The value of £193 per dwelling is in line with other SAMM tariffs for European sites or lower. For example, SAMM costs for Penhale Dunes SAC in Cornwall are £180 per dwelling²⁴; in Dorset they are £406 per house²⁵; in the

²⁴ <https://www.cornwall.gov.uk/media/wmvnoxzz/european-sites-mitigation-spd-july-2021-marine-and-terrestrial-sites.pdf>

²⁵ <https://www.dorsetcouncil.gov.uk/documents/35024/309543/Dorset+Heathlands+2020-2025+SPD+Adopted.pdf/bda03d74-cbc9-57c9-b3be-6253ba2825fb>

New Forest they range from £320 to over £800 depending on the size of the dwelling²⁶

SANG/Infrastructure Projects (away from the SAC)

- 5.5 SANGs/infrastructure projects will be secured through CIL or planning obligation. Some projects will be expected to be delivered directly by developers through on-site provision. The types of potential projects and guidelines are set out in Appendix 3.
- 5.6 Where a contribution is collected, this will be at a standard rate of £480 per dwelling (prior to any administration fee). Details of how this figure is calculated are set out in Appendix 4.

Types of development

- 5.7 This strategy applies to any future development granted planning permission that results in a net increase in residential units (i.e. C3 Use Class), located within 15.4km of the Cotswold Beechwoods SAC. The strategy still applies to development covered by multi-stage consents even if the project had already been authorised by the first or principal consent.
- 5.8 While the strategy is focussed towards C3 Use Class, there are other uses and forms of development that may have impacts on the SAC. Examples of other uses are listed below:
- Houses in Multiple Occupation (sui generis);
 - Residential institutions within the C2 Use Class where the residents are not severely restricted by illness or mobility;
 - Student accommodation;
 - Sites for gypsy, travellers and travelling showpeople;
 - Tourist accommodation, including self-catering, caravan and touring holiday accommodation.
- 5.9 For the above types of development, this strategy provides a means of ensuring effective mitigation can be delivered, but they will need to be assessed on a case-by-case basis. While in general each unit for the above

²⁶ https://newforest.gov.uk/media/2237/Adopted-Mitigation-Strategy/pdf/Mitigation_for_Recreational_Impacts_SPD_May_2021_ADOPTED.pdf?m=637568561878200000

could be considered a single dwelling, there may be a need to adjust the rate of contribution for different types. For example, the rate could be adapted according to occupancy rates for tourist accommodation. Project level HRA for tourist applications will need to consider the location and type of use with respect to the Beechwoods, as for example a city centre hotel in Gloucester would have a very different impact compared to a campsite adjacent to the SAC.

Overlaps with other strategies

5.10 There are strategic mitigation schemes in place or being developed for other European sites and in some areas the zones of influence will overlap. Of particular relevance are:

- Rodborough Common SAC: updated strategy (2022) includes a 3.9km zone of influence;
- North Meadow and Clattinger Farm SAC: interim strategy has a zone of 8km;
- Severn Estuary SPA/SAC/Ramsar: original strategy includes a 7.7km zone of influence, visitor survey work and update to strategy on-going in 2022.

5.11 Where zones overlap it will be necessary to ensure mitigation for all relevant European sites and SAMM contributions will therefore be necessary for each European sites. Depending on the SANG requirements in each strategy, multiple SANG payments may not be necessary.

Governance

5.12 The strategy relates to mitigation delivery across multiple land ownerships using monies collected from different local authorities. Governance needs to ensure appropriate use of resources and ensure a clear structure to authorise finances (allowing flexibility and adaptability to circumstances). There will be the need to make decisions relating to priorities for funding in the initial years, ensuring mitigation delivery matches housing growth.

5.13 An initial governance structure is summarised Figure 3 and would provide the means to ensure transparency and fairness. The structure could evolve with time, but as suggested would involve one authority acting as the accountable body, and a group comprising a member from each authority providing oversight. The working group could include site managers and Council staff and would meet to ensure smooth functioning, coordination of

mitigation delivery and practical implementation, providing support for the delivery officer.

- 5.14 Flexibility is accommodated within the structure through the potential for relevant stakeholders and organisations to apply for funding for specific projects, allowing the potential for different mitigation measures to come forward. Any such applications should be made through the delivery officer and the working group. A proforma will be made available for applications which would then be approved by the oversight group.
- 5.15 Figure 3 only includes SAMM payments, however the oversight group would also be responsible for overseeing the SANG/Infrastructure Projects, in terms of the overall approach and authorising the use of any strategic money collected.

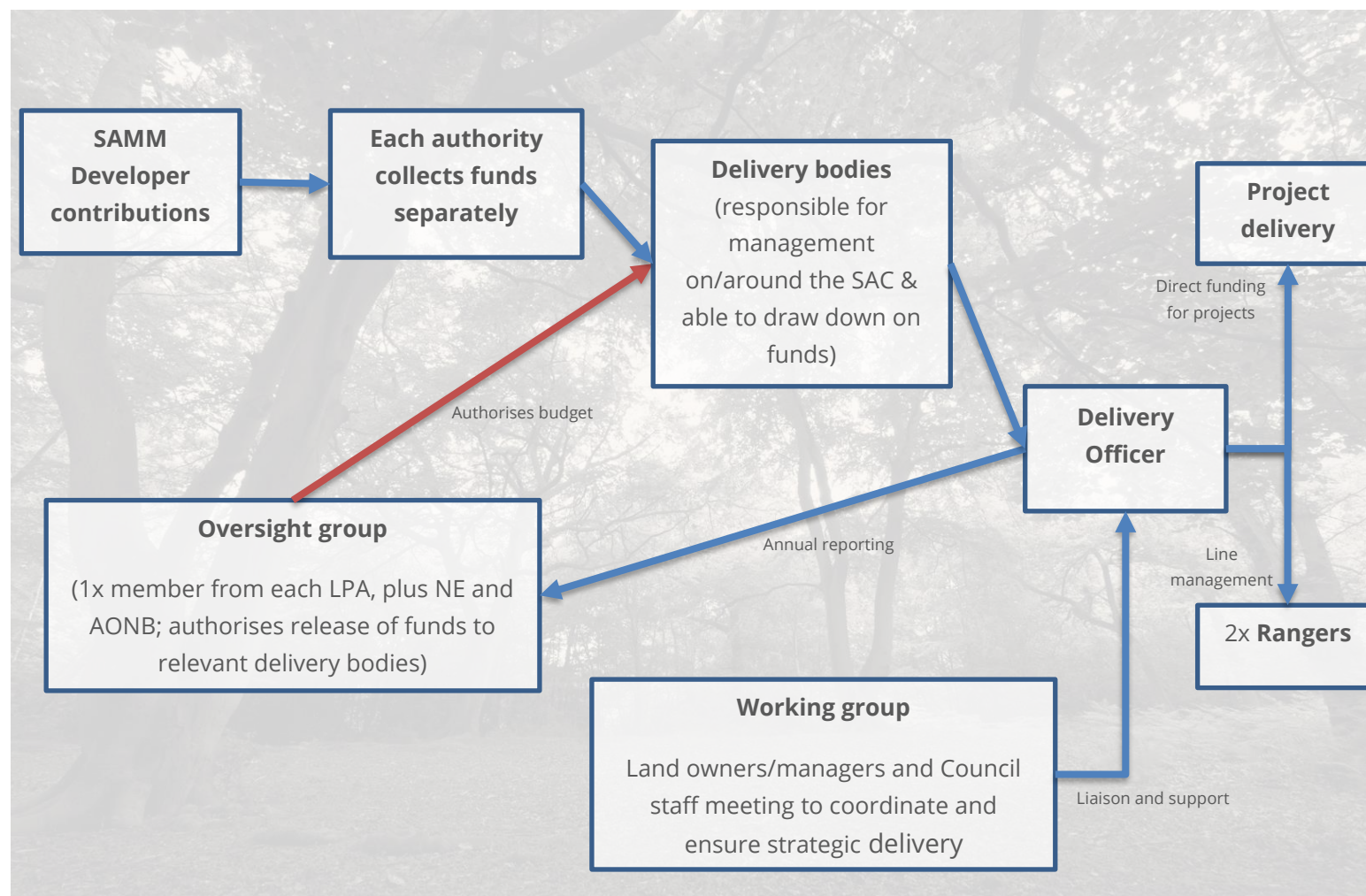


Figure 3: Initial governance structure

Staff hosting

- 5.16 Three staff are proposed in the early years of the strategy, with a delivery officer and 2 rangers. The ranger staff (and potentially the delivery officer) should be based in or close to the SAC and would ideally be based with the NNR team, however different options for hosting are possible.

In-perpetuity and timing of delivery

- 5.17 Mitigation needs to be effective in the long-term, lasting as long as necessary to address any impacts. It is however difficult to predict how access patterns will change in the long-term, and issues and priorities for mitigation may change.
- 5.18 Costs have been derived assuming that mitigation will be delivered in-perpetuity²⁷. Implementation of measures will be phased with housing growth, ensuring sufficient mitigation is in place before new housing is occupied. This means not all measures will be instigated at once. Some measures will be one-off or short-term in nature. For example, the delivery officer post is necessary in the short-term to oversee the initial infrastructure delivery and other elements of the strategy (and would be one of the first mitigation elements to be funded) but the post is not required in the long-term. One ranger post has funding for 75 years, ensuring a post can run from the early years through while others (such as the post with an education focus) will have a focus in the early years of the strategy only. The early years focus will enable behavioural change and change patterns of awareness that, once established can be continued with the reduced staffing.
- 5.19 Staffing levels and in-perpetuity costs should be regularly reviewed and updated as part of future iterations of the strategy. The strategy should be subject to a detailed review on a 5 year basis, and each review should draw on monitoring results to consider the mitigation delivery achieved to date, housing growth to date and future housing projections, any need for different mitigation measures to be included, the relative balance of SAMM and SANG, the need to revise or update costs and any other changes to the strategy.

²⁷ In line with other mitigation strategies this assumed to be 80 years.

- 5.20 Authorising budgets will be a critical role for the oversight group, as there will need to be decisions relating to setting aside money to fund long-term mitigation as opposed to implementing mitigation in the short term and priorities for delivery. The oversight group and ability for delivery bodies to bid for money will ensure funds are directed as required to ensure mitigation is effective and a 10% contingency is included, to allow for unforeseen changes to costings and provide flexibility in the funds available and how money is prioritised.

References

- Allinson, E. (2018). *The role of suitable alternative natural greenspace in protecting high value wildlife sites* [PhD, Southampton]. <https://eprints.soton.ac.uk/427307/>
- Anderson, L. G., Rocliffe, S., Haddaway, N. R., & Dunn, A. M. (2015). The Role of Tourism and Recreation in the Spread of Non-Native Species: A Systematic Review and Meta-Analysis. *PLOS ONE*, *10*(10), e0140833.
<https://doi.org/10.1371/journal.pone.0140833>
- anon. (2017). Spreading like wildfire. *Nature Climate Change*, *7*(11), 755.
<https://doi.org/10.1038/nclimate3432>
- Barnard, A. (2003). Getting the Facts—Dog Walking and Visitor Number Surveys at Burnham Beeches and their Implications for the Management Process. *Countryside Recreation*, *11*(2), 16–19.
- Burger, J., & Leonard, J. (2000). Conflict resolution in coastal waters: The case of personal watercraft. *Marine Policy*, *24*(1), 61–67. [https://doi.org/10.1016/S0308-597X\(99\)00013-5](https://doi.org/10.1016/S0308-597X(99)00013-5)
- Corney, P. M., Smithers, R. J., Kirby, J. S., Peterken, G. F., Le Duc, M. G., & Marrs, R. H. (2008). *The impact of development on nearby ancient woodland*. Woodland Trust.
- Fearnley, H., Clarke, R. T., & Liley, D. (2010). *The Solent Disturbance and Mitigation Project. Phase II. On-site visitor survey results from the Solent Region*. Footprint Ecology/Solent Forum.
- Jolly, W. M., Cochrane, M. A., Freeborn, P. H., Holden, Z. A., Brown, T. J., Williamson, G. J., & Bowman, D. M. J. S. (2015). Climate-induced variations in global wildfire danger

from 1979 to 2013. *Nature Communications*, 6, 7537.

<https://doi.org/10.1038/ncomms8537>

Lake, S., Liley, D., & Saunders, P. (2020). *Recreation use of the New Forest SAC SPA Ramsar: Impacts of recreation and potential mitigation approaches* (No. 499). Footprint Ecology / Test Valley BC.

Liley, D., Jackson, D., & Underhill-Day, J. (2006). *Visitor Access Patterns on the Thames Basin Heaths* (No. 682). English Nature Research Reports, N682.

<file:///S:/reports%20%26%20pdfs/Papers%20linked%20to%20Endnote/ENRR682%20TBHVisitorReport.pdf>

<file:///S:/reports%20%26%20pdfs/Papers%20linked%20to%20Endnote/Footprint%20Reports/Thames%20Basin%20Heaths%20Visitor%20Access%20Patterns,%20April%202006,%20FINAL.pdf>

Liley, D., Panter, C., & Chapman, C. (2021). Zones of influence for strategic housing growth and recreation impacts: Review and best practice. *Habitats Regulations Assessment Journal*, 16, 20–22.

Liley, D., Panter, C., Weitowitz, D., & Saunders, G. (2018). *Epping Forest Visitor Survey 2017* (Unpub. No. 438). Footprint Ecology / City of London.

Lowen, J., Liley, D., Underhill-Day, J., & Whitehouse, A. T. (2008). *Access and Nature Conservation Reconciliation: Supplementary guidance for England*. internal-pdf://NECR013 Access and N C Reconciliation - Supp Guidance-2802587904/NECR013 Access and N C Reconciliation - Supp Guidance.pdf

Marzano, M., & Dandy, N. (2012). *Recreational use of forests and disturbance of wildlife. A literature review*. Forestry Commission.

[https://www.forestry.gov.uk/pdf/FCRP020.pdf/\\$FILE/FCRP020.pdf](https://www.forestry.gov.uk/pdf/FCRP020.pdf/$FILE/FCRP020.pdf)

Medeiros, R., Ramosa, J. A., Paivaa, V. H., Almeida, A., Pedroa, P., & Antunes, S. (2007). Signage reduces the impact of human disturbance on little tern nesting success in Portugal. *Biological Conservation*, 135(1), 99–106.

Panter, C., & Caals, Z. (2019). *Cotswold Beechwoods Visitor Survey 2019* (Unpublished Report No. 497). Footprint Ecology / Stroud DC.

Panter, C., & Liley, D. (2019). *Cannock Chase Visitor Survey 2018* (Unpub. No. 494). Footprint Ecology / Cannock Chase SAC Partnership.

Ryan, L. (2012). *Impacts of nearby development on ancient woodland – addendum*. The Woodland Trust.

<https://www.woodlandtrust.org.uk/mediafile/100168353/Impacts-of-nearby-development-on-the-ecology-of-ancient-woodland-addendum.pdf>

Weaver, T., & Dale, D. (1978). Trampling Effects of Hikers, Motorcycles and Horses in Meadows and Forests. *The Journal of Applied Ecology*, 15(2), 451–457.

Williams, D. R., Child, M. F., Dicks, L. V., Okendon, N., Pople, R. G., Showler, D. A., Walsh, J. C., zu Ermgassen, E., & Sutherland, W. J. (2017). Bird Conservation. In W. J. Sutherland, L. V. Dicks, N. Okendon, & R. K. Smith (Eds.), *What Works in Conservation 2017*. Open Book Publishers.

<http://www.conservationevidence.com/actions/309>

Appendix 1: Future housing growth

This appendix summarises the data used to estimate the future levels of growth. Housing for the period the 2020-2031 were collated, with separate figures and GIS provided for each LPA.

Cheltenham

Cheltenham housing data included Strategic Allocations north-west of Cheltenham and west of Cheltenham (combined total of 3700 dwellings). A further 9 smaller allocations provided an additional 583 dwellings, and sites of mixed use provided (two of which had housing figures) a further 530 dwellings. Windfall for Cheltenham was estimated to be 68 dwellings per annum so we used the figure of 748 homes over the 11 year period (for the period 2011-2031).

Future housing: Cotswold

The Cotswold data included provided 366 sites and a total of 3,750 dwellings – noteworthy among these was the largest, the Chesterton Strategic Site, of 1,800 dwellings. A second file of housing allocations detailed 24 sites, totalling 519 dwellings. A final mixed-use site layer included two sites, with a further 58 dwellings. Windfall was based on an average figure of 137 per annum – equating to 1,507 dwellings for the next 11 years.

Future housing: Gloucester

Data provided by Gloucester City Council included a total of 920 dwellings for allocations and an estimate of 512 windfall.

Future housing: Stroud

Data included draft plan allocations, of which there were 49 sites (43 with residential development), totalling 6,735 dwellings. A further draft plan allocations layer recognised two sites of 3,700 dwellings, and 2015 allocations accounted for a further 9 sites (2 without housing figures), and further 3,713 dwellings. Smaller sites from the current trajectory commitments layer provided 47 sites (4 without housing figures), totalling 1,568 dwellings.

Windfall was given as small site commitments by parish, with 46 parishes having housing figures, totalling 599 dwellings.

Future housing: Tewkesbury

Cotswold Beechwoods SAC Recreation Mitigation Strategy

Tewkesbury provided data for strategic allocations and pre-submission housing allocations. These provided 27 sites, with a total of 13,655 dwellings.

Appendix 2: SAMM measures and costs

This Appendix sets out the proposed SAMM measures and estimated costs for each.

Shading reflects phasing for different measures, with blue shading indicating those that are initial priorities and should be implemented first.

Cost categories assign measures to one of 4 categories to allow costs to be scaled: 1 New measures that require annual funding on an on-going basis and are discrete, e.g. additional rangers. These kind of measures have no capital requirements and can be scaled up over time easily; 2 Existing measures that need to be scaled up to deal with additional recreation pressure. There are done on a regular basis and therefore have no capital pulse. These measures differ from 1) in that they are already undertaken, but need to be ramped up to provide mitigation; 3 New infrastructure or other measures that will have an initial capital cost and then subsequent maintenance costs as it is new and additional to that already in place, for example new signage, interpretation boards etc; 4 Measures where an initial capital payment is required, but no annual maintenance costs are necessary. For example, one-off funding to modify an existing car-park (the mainenance of which is already undertaken and budgeted for).

	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification	Cost Category
Staff	Delivery Officer		£41,450	10	£414,500	Estimated at £27,000 annual salary, plus 35% (to cover NI, superannuation, etc.) and £5000 per annum support costs .	Delivery Officer, working alongside Ranger but with more of a delivery focus, freeing Ranger post for more face-face time/on site engagement.	1

Cotswold Beechwoods SAC Recreation Mitigation Strategy

	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification	Cost Category
	1 Ranger		£39,400	75	£2,955,000	Costs per ranger would be: £24,000 annual salary, plus 35% (to cover NI, superannuation, etc.) and in addition vehicle costs and other support costs (£7000 per annum).	Ranger post, focus on face-to-face contact and on-site presence.	1
	1 Ranger with community engagement focus		£19,700	20	£394,000	Costs per ranger would be: £24,000 annual salary, plus 35% (to cover NI, superannuation, etc.) and in addition vehicle costs and other support costs (£7000 per annum).	Ranger post, focus on wider community engagement (including volunteer ambassadors and contact with user groups such as Mountain Bikers)	1
	Support for volunteers		£8,000	20	£160,000	Funding to support volunteer ambassador scheme, cost to cover training, equipment etc.	Part of community engagement and will extend reach of staffing	1
Signs & Interpretation	Audit of current provision	£1,500			£1,500	Undertaken by delivery officer, small budget to cover costs of report production.	Initial work to review current provision, identify gaps and key locations for new provision. Audit needs to check messages and branding on current signs.	4
	Graphic design for new interpretation and signs	£8,000			£8,000	£8,000 for design of new interpretation and messaging relating to highlighting nature conservation importance, risks of fire etc.	Following initial audit	4
	New interpretation boards	£16,000	£1,600	20	£48,000	£2,000 per board for production of timber frame and graphic panel, delivery and installation. Estimate of 8 boards. Annual cost based on replacement every 10 years	New interpretation will provide on-site information for all visitors.	3

Cotswold Beechwoods SAC Recreation Mitigation Strategy

	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification	Cost Category
	New Signs, waymarking etc.	£28,000	£2,800	20	£84,000	Cost based on 25 posts at £300 per post to cover production, delivery and installation. Treated softwood marker posts, 1.6m high with slanting top and coloured band or marking incorporated. Additional £500 for waymarking discs or signs made of glass reinforced plastic for longevity. Annual cost based on replacement every 10 years.	Way-marking will help focus use in particular areas.	3
Education & awareness raising	Awareness raising strategy	£12,000			£12,000	Estimate of consultancy costs to cover production of shared comms strategy, to include messaging and how to reach horse riders, mountain bikers and dog walkers, messaging re fly-tipping, branding, communication approaches (e.g. use of social media) and hosting of online content etc. Linked to design of interpretation (for which separate budget).	Aim of education and awareness work is to raise profile of conservation and the conservation importance of sites and ultimately lead to more engagement from public and responsible access, targeted towards horse riders, mountain bikers and dog walkers. Need to influence behaviour so approach needs to be carefully thought out.	4
	Social media and web-based content	£2,000	£200	20	£6,000	Costs to cover design and annual fee for updates, hosting etc.	Web-based material and social media content informed by strategy.	3
Addressing contaminat	Dealing with fly-tipping and litter		£1,500	20	£30,000	Costs to cover removal of litter and fly-tipping and measures to help prevent (e.g. management around car parks). Estimate of costs additional to measures already undertaken.	Growing issues with fly-tipping	2

Cotswold Beechwoods SAC Recreation Mitigation Strategy

	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification	Cost Category
	Dog bins	£2,400	£3,440	20	£71,200	£600 per bin initial cost, for timber fronted dual waste bin; £400 per bin per year to empty. 8 bins, locations to be determined (see parking review). Replacement every 10 years	Additional bins to minimise impacts of fouling and also encourage responsible dog walking	3
Parking & Travel	Review of parking and travel infrastructure	£2,000			£2,000	One-off cost for consultancy support/advice. Bulk of work undertaken by delivery office. Will require all car-parks on SPA visited, plus other greenspace nearby. All parking mapped and assessed and strategic review to consider potential changes. Review should consider parking charges, reducing parking capacity at selected locations, increasing capacity at selected locations, closing selected parking locations, dog bins and other infrastructure. Also sustainable transport issues including bus routes, car charging points, bike racks. Measures need to be phased to fit with wider GI/SANGs.	Will inform potential for long term strategic approach to management of parking and travel options.	4
	Parking improvements/modifications	£100,000			£100,000	Potential for costs to be used in conjunction with revenue collected for parking charges; £100,000 would be the equivalent of 1 new car-park with around 25 spaces. Costs anticipated to be spread more widely for more minor changes across more car-parks.	Changes to car-parks to draw visitors to particular locations and redistribute access. Based on findings in the review.	4

Cotswold Beechwoods SAC Recreation Mitigation Strategy

	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification	Cost Category
Monitoring	Monitoring strategy	£8,000			£8,000	Strategy to set out visitor survey and monitoring approaches, ecological monitoring and other recording, establishing clear protocols and cost effective approaches for ranger team and others	Monitoring important to inform and underpin mitigation. Important that functions as early warning to pick up issues and feedback to inform implementation.	4
	Visitor interviews	£20,000			£20,000	Estimated cost for face-face interviews with visitors at stratified sample of locations across relevant European sites. Single survey, timed at around 5 years into strategy to help inform plan reviews and review of strategy.	Face-face interviews would give home postcodes, routes walked, awareness and motivations for visiting. Will inform mitigation work and potential sites for SANGs/Infrastructure Projects outside the Beechwoods.	4
	Visitor numbers and activities		£8,000	20	£160,000	Monitoring involving repeated transects/car-park counts and other counts. Could be done by consultant, or rangers, or volunteers or automated counters. Detail informed by monitoring strategy. Needs to accurately find a way to record the numbers of bikes in different parts of the SAC.	Regular monitoring to identify the spatial use of different areas and monitor change	3
	Recording implementation of mitigation				£0	No cost as undertaken as part of core work by delivery officer		
	Levels of new development				£0	No cost as undertaken as part of core work by delivery officer/LPAs		
	Ecological		£5,000	20	£100,000	Annual sum available for targeted monitoring/match funding as required. Potential for ranger time as additional support.	Could be targeted to recording trampling damage, mapping fires etc.	3

Cotswold Beechwoods SAC Recreation Mitigation Strategy

	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification	Cost Category
	Total				£4,574,200			
	10% Contingency				£457,420			
	Total inc. contingency				£5,031,620			

Appendix 3: Guidelines for SANG/infrastructure projects

Alongside SAMM, all new housing will need to provide SANG/infrastructure projects. These could be any one of the following:

1. Bespoke SANG delivered by the developer and integrated to the development;
2. Contribution towards strategic SANG/infrastructure projects.

All large development (sites around 50 dwellings) will be expected to provide bespoke SANG. However, it is recognised that it will not always be possible, and in some cases, for example some brownfield sites, a contribution towards strategic SANG/infrastructure projects will be more appropriate. Details and guidelines for the two are set out below:

Bespoke SANG delivered by the developer and integrated to the development;

In order to have confidence that greenspace is of a suitable size and quality the following attributes will need to be met:

- SANG should be provided at a rate of 8ha per 1000 new residents; this per ha standard is equivalent to 0.0192ha per dwelling (assuming an occupancy rate of 2.4 people per dwelling).
- Sites with sports grounds, playing fields or children's play areas are unlikely to meet the criteria for SANG or if such features are present they should not be counted towards the per ha standard.
- Where sites have existing visitor use, this existing use will need to be taken into account when applying the per ha standard. This will require visitor survey data to be available. Sites are likely to have additional capacity where average visitor use is less than 1 person per ha per hour²⁸. Where existing sites are already well used, there will be a need to demonstrate that the measures will be effective, and this may require some delivery upfront.
- The focus for the SANGs should be large sites of at least 40ha (which will accommodate suitably long routes), however smaller sites (15ha and above) may work, depending on the location and quality. For smaller

²⁸ This provides a guide or approximate benchmark, typically busier than the relevant European sites but less than an urban park. Sites will need to be considered on a case-case basis.

sites, connectivity to the Public Rights of Way network will be essential to allow longer routes.

- SANGs should provide parking that is free or significantly cheaper than parking at the European sites (noting that parking at all the East Devon Pebblebed Heath car-parks is free). A guide to parking provision should be in the region of 1.5 spaces per ha of SANG²⁹.
- They should be quiet countryside locations, away from traffic noise, industrial sites etc. They should have a sense of space, openness and viable alternatives to the Cotswold Beechwoods.
- They should contain a variety of habitats and be scenic, ideally with views.
- They should provide attractive, informal areas for dog walking: a range of walk lengths on relatively dry terrain, including some of at least 3km where dogs can be safely off the lead during the whole walk.
- They should provide routes that attract walkers, potentially including families. Walks are likely to need to be circuits with some interest (such as viewpoints, heritage features etc.).
- The site(s) should provide access all year round, without areas becoming waterlogged or inaccessible for significant periods of the year due to wet or muddy terrain.
- They could provide routes that work for cycling, potentially accommodating family cycling groups and mountain bikes as a low-key destination.
- Access points to the SANG(s) should be primarily within a 5km radius or 10 minute drive and easily accessible by road from the development. Ideally they would provide direct foot access and good access routes for cyclists. Direct access on foot would mean some SANG provision within around 500m radius of proposed housing locations.
- New SANGs should be recognisable as a 'destination' such that sporadic visitors are drawn from a wide area (i.e. not just residents in the new development). As such they will need to be positively promoted and welcoming.
- On-site infrastructure should be relatively low key, and could include the following as appropriate:
 - Small scale visitor centre/shelter (not necessarily staffed);
 - Interpretation (providing information about the area)

²⁹ This figure will depend on how close the SANG is to housing and the proportion of visitors that might arrive on foot or by bicycle. A busy SANG site might be expected to have up to 1 person visiting per ha per hour. Visitor data from the East Devon Pebblebed Heaths suggests on average a group would spend a little over an hour per visit and groups of 1.5 per car, suggesting a level of parking provision of around 0.6 spaces per ha to accommodate 1 person per ha per hour. Given that visitor numbers will not be constant every hour (i.e. there will be peak times of visiting) and easy parking is likely to be an important draw (meaning a need to ensure confidence to park), we suggest 1.5 spaces per ha.

- Wayfinding infrastructure to direct people around the site
- Some surfaced paths/boardwalks
- Wildlife viewing facilities (such as screens)
- Range of paths (some waymarked) that provide a range of different routes and circuits, potentially including some longer routes for cycling (perhaps family groups and relatively low-key mountain bike circuits) but not such that other access (e.g. appeal to dog walkers) is compromised
- Access to water for dogs to drink, bathe and splash in
- Benches/informal seating
- Viewpoints
- SANGs will need to be promoted through a range of different ways, including signage, so that they are easy to find and local residents (both new and existing) are well aware of the site.
- SANGs will need to provide access in perpetuity, and therefore require some legal mechanism to ensure this.
- Sites with significant nature conservation interest (SSSI) or particularly vulnerable species present are unlikely to be suitable as SANG.

Contribution towards strategic SANG/infrastructure projects.

Not all development will necessarily be able to provide bespoke SANG, particularly small development including windfall. In urban areas, there may be limited potential for new SANG. As an alternative and to provide flexibility to enable growth, contributions can be collected instead and these will be used to provide SANG/infrastructure projects in suitable locations.

The contributions will be used to fund:

- The provision of strategic SANG – new greenspace sites in strategic locations that will provide mitigation for development in a wide area, these would potentially be relatively close to the Cotswold Beechwoods;
- Improvements to existing open spaces which are already accessible but which could be managed or improved to make them more attractive to visitors who might otherwise visit the Cotswold Beechwoods.

Land purchases for strategic SANG will be costly and will also be dependent on opportunity – suitable land becoming available on the market. There is therefore an element of uncertainty around being able to deliver sufficient SANG using this approach. In order to provide certainty that mitigation is possible and suitable opportunities exist, it will be necessary for the Delivery Officer to work with local authorities and other partners to identify a range of projects at existing sites that could

provide suitable mitigation and a likely visitor catchment for each³⁰. This will initially focus on 'quick' wins such as existing parks, greenspace sites and the public rights of way network. It could include permitted routes for mountain bikers, changes to parking, signposts, promotion of existing greenspace sites etc. The Delivery Officer can work with local groups, landowners and managers to develop a suite of potential projects which can be approved by the oversight group prior to any funding being confirmed. Greenspace sites are shown in Map 8. These have been plotted using the Open Greenspace data from Ordnance Survey (i.e. a standard national dataset), and these have been filtered just to show public parks and gardens. It can be seen that there are a range of large sites with existing public access and therefore a range of options to draw recreation from the European sites. This would allow mitigation to be delivered in-pace with housing growth and in suitable locations, ensuring mitigation delivery matches the distribution and locations of housing growth.

The working and the oversight groups should be mindful of the potential opportunities for strategic SANG and equally, should opportunities arise, money could be used to purchase strategic SANG. There may be benefits in starting searches for potential purchases before they are on the open market. There may also be wider opportunities. New funding streams associated with nature recovery and biodiversity net gain are emerging, along with funds focused on reconciling environmental opportunities and constraints with the achievement of economic objectives, for example the River Severn Partnership and it's award of government funding to manage flood risk and pay for projects relating to carbon offsetting, habitat improvement and improved greenspaces for local people along the river network. Covid 19 has highlighted the importance of local greenspace and the role of green infrastructure for health and well-being. It may therefore be that opportunities for green infrastructure emerge that provide a means for mitigation money to be effectively targeted and used alongside other funding streams to maximise the benefits. It can be seen that from Map 8 that there is a large area around the Cotswold Beechwoods that appears to have a low density of greenspace sites, and in the long-term the aim should be to use money to address this apparent gap.

Should SANG/Infrastructure project funds accumulate and there be a lack of opportunity for the money to be spent effectively, then the funding should be used to increase the level of SAMM, for example through further wardening. Any such decisions will need to be made by the oversight group.

³⁰ In general, any small scale project involving local footpaths with no local parking are likely to relate to development within 500m; smaller sites with parking will draw people from 2.5km or so while larger sites with good parking are likely to draw people from 5km or so.

Map 8: Greenspaces (as defined by OS) around the SAC. Top 10 largest classified as parks and gardens within the buffer are labelled.



Appendix 4: SANG/infrastructure project costs

Should bespoke SANG provision not be provided, then SANG/infrastructure contributions will be at a rate of: £480 per dwelling.

This has been calculated on the assumption of:

- £25,000 per ha as typical land price (agricultural land)
- 0.0192 ha of SANG per dwelling (based on the 8ha per 1000 people originally used in the Thames Basin Heaths to estimate SANG delivery; we have assumed 2.4 people as typical numbers of people per dwelling)
- $0.0192 * 25,000 = 480$.

As can be seen above, the cost above does not allow any funds for in-perpetuity management of any land, simply the potential purchase cost. Land prices will however vary markedly and land for SANGs could well involve land that is not agricultural land and cheaper. The level of contribution can be refined further once an initial list of potential infrastructure projects has been established by the Delivery Officer. The charge will be adjusted annually to reflect inflation and ensure that the appropriate level of mitigation can be delivered over the plan period.