



# Ashdown Forest SPA Monitoring Strategy

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## Summary

This strategy has been commissioned by Wealden District Council on behalf of six local authorities (Wealden, Mid Sussex, Lewes, Tunbridge Wells, Tandridge and Sevenoaks) and sets out monitoring requirements that relate to strategic mitigation at Ashdown Forest SPA.

Monitoring is integral to the strategic mitigation 'package'; ensuring the successful delivery of the mitigation work, acting as an early warning system and providing the feedback to hone mitigation. Monitoring will be necessary to ensure approaches are working as anticipated and whether further refinements or adjustments are necessary.

We set out a strategy that contains the following key components; which would mostly continue indefinitely, apart from the grey shaded rows that are focussed on the effectiveness of particular mitigation elements and these would only be necessary within a fixed time period.

Key components	Description and output
Visitor interviews	Visitor survey involving face-face interviews, repeated every 5 years.
Counts of people: automated counters	A network of 10 counters installed to collect detailed data on footfall at locations across the Forest.
Counts of people: car-park counts	Driving transects, counting all parked vehicles across Ashdown Forest are established. A single transect would encompass all parking locations and 15 transects should be undertaken each year, April -July.
Bird numbers and distribution	Nightjar and Dartford Warbler surveyed across Ashdown Forest. Surveys undertaken every 3 years.
Mitigation delivery	Details of all mitigation work collected so that it can be related to other datasets and information recorded relating to what has been undertaken, where and when.
Housing	Record of all housing for which mitigation has been delivered. Data on new housing collated across relevant local authorities into a single database. Data to be collated in a standard way to reflect the time that buildings were completed or occupied in addition to when planning permission was granted.
Effectiveness of mitigation: visitor surveys on SANGs	Visitor surveys on SANGs to collect information about types of visitor, use of SANG, activities, use of SPA etc. Surveys repeated to check SANGs are working effectively and to monitor effects of changes (such as landscaping, planting, provision of infrastructure). Time limited to 10 years.
Effectiveness of mitigation: effectiveness of dog rangers	Vantage point watches to record visitor behaviour in areas targeted by volunteer dog rangers. Monitoring would commence prior to the rangers being in place and run for a fixed number of years to compare visitor behaviour before and after the rangers are deployed and to compare visitor behaviour when a ranger is present to when a ranger is absent. Time limited to initial few years, e.g. at least 3 years.

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## A s h d o w n F o r e s t S P A M o n i t o r i n g S t r a t e g y

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Fenella Lewin (Footprint Ecology) proof read an early draft.

## 1. Introduction

- 1.1 This strategy has been commissioned by Wealden District Council on behalf of six local authorities (Wealden, Mid Sussex, Lewes, Tunbridge Wells, Tandridge and Sevenoaks) and sets out monitoring requirements that relate to strategic access management and other mitigation at Ashdown Forest Special Protection Area (SPA).

### Background

- 1.2 The six local authorities who have commissioned this report have agreed to coordinate a strategic approach to collect developer contributions to deliver access management and monitoring measures at Ashdown Forest SPA. Once the joint strategy and governance is in place, access management and mitigation projects will commence proportionate to the levels of development that take place and the availability of funding.
- 1.3 Monitoring is necessary to ensure the successful delivery of the mitigation work, acting as an early warning system and providing the feedback to hone mitigation. Monitoring will be necessary to ensure approaches are working as anticipated and whether further refinements or adjustments are necessary. Monitoring will inform whether resources can be better allocated, and will pick up changes in access patterns (for example in response to changes in climate, new activities or in response to changes on the sites themselves). The monitoring is therefore aimed at ensuring mitigation effort is focused, responsive to changes in access and that money is appropriately allocated and spent. Monitoring is therefore integral to the mitigation 'package'.
- 1.4 In addition, monitoring is necessary for the relevant local authorities to demonstrate that, in times of austerity, measures have been effective and costs to developers are proportionate.
- 1.5 There are monitoring strategies in place at various other European sites where strategic mitigation has been established (for example see Underhill-Day *et al.* 2008; Liley & Underhill-Day 2009; Fearnley & Liley 2014; Liley *et al.* 2015) On the Dorset Heaths, Thames Basin Heaths and on the Solent, regular car-park counts are undertaken, visitor survey data are collected and automated counters record footfall. Such schemes provide useful context and precedents for this report.

### Ashdown Forest

- 1.6 Ashdown Forest is an extensive block of common land between East Grinstead and Crowborough in East Sussex and forms one of the largest areas of continuous

heathland in south-east England. It is internationally important for nature conservation, reflected in its designation as a Special Protection Area (SPA) due to the presence of breeding Nightjars and Dartford Warblers and as a Special Area of Conservation (SAC), primarily due to the heathland habitats present. The European designations cover around 3,000ha (the SPA is slightly larger than the SAC), as shown in Map 1. The responsibility for managing Ashdown Forest lies with an independent body, the Board of Conservators of Ashdown Forest

## Proposed Mitigation Measures: on site

1.7 Relevant local authorities and Natural England have been working with the Ashdown Forest Conservators to identify access management projects. These will promote responsible behaviour and use of Ashdown Forest and therefore mitigate impacts associated with increased recreation pressure that may arise from an increase in populations from new residential development. The Conservators will ultimately implement and manage the delivery of these projects, with the funding provided by developer contributions. The projects include the following:

- Project 1 - Code of conduct for dog walkers
- Project 2 - Code of conduct review and promotional materials
- Project 3 - Access Management Officer
- Project 3a - Volunteer Dog Rangers
- Project 3b - Community events
- Project 4 - Assistant Access Management Officer
- Project 5 - Delivery of access management objectives through the Dog Training Programme

## Off-site Mitigation: Suitable Alternative Natural Greenspace (SANGs)

1.8 Suitable Alternative Natural Greenspaces (SANGs) is the term given to greenspaces that are created or enhanced with the specific purpose of absorbing recreation pressure that would otherwise occur at sites designated as European wildlife sites. SANGs provide off-site mitigation, providing space for recreation that draws visitors away from designated sites. SANGs are being delivered on a local authority basis, for example: East Court and Ashplats Wood (Mid Sussex); Reedens Meadows SANG (Lewes) and Wealden District Council SANGs at Crowborough and Uckfield.

## Key areas for the monitoring strategy to cover

1.9 Key potential areas for monitoring within the strategy are:

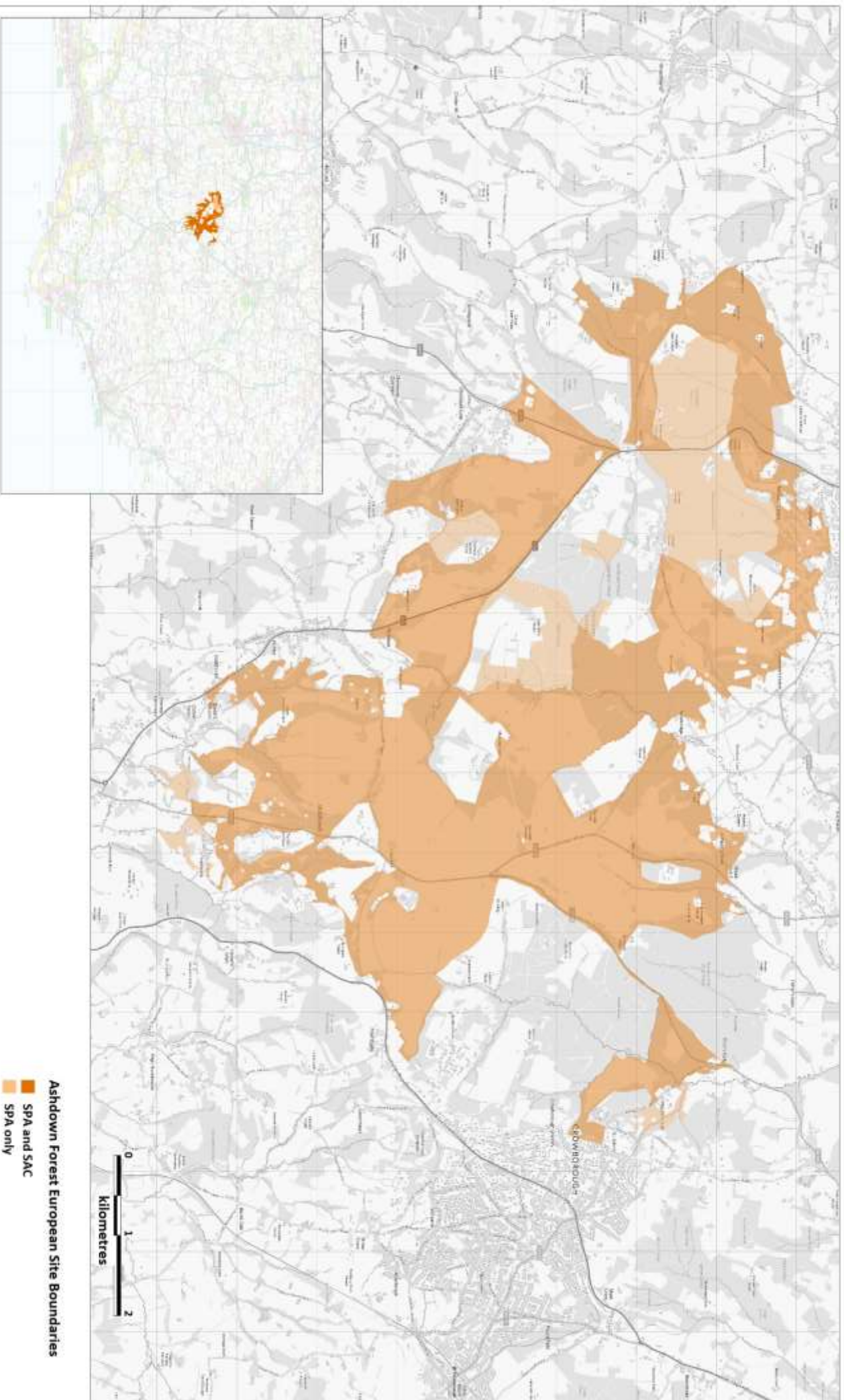
- Visitor use at Ashdown Forest SPA;
- Visitor use at mitigation locations outside the SPA;
- Bird monitoring at Ashdown Forest SPA;
- Monitoring the success of specific access management projects;

1.10 As such, the strategy has the following broad objectives

- To consider existing datasets and gaps in understanding;
- To determine how best to establish baseline data prior to the implementation of access management projects;
- To identify all elements that should be considered as part of the Ashdown Forest SPA monitoring programme and how this can be achieved;
- To identify detailed and standardised monitoring methods for each monitoring element;
- To make recommendations for the delivery of the monitoring strategy;
- To identify all considerations and any weaknesses in the monitoring strategy;
- To identify how different data sets can be combined to identify the success of the avoidance and mitigation strategy;
- To provide an estimate and breakdown of costs to deliver specific monitoring elements recommended; and
- To provide advice in relation to monitoring access management projects and associated reporting.



# Map 1: Overview



## 2. Summary of Existing Monitoring and Survey Data

2.1 In this section, we summarise existing monitoring and survey data which provides important context for the strategy.

### Visitor Data (Ashdown Forest)

2.2 In 2007 Natural England advised Mid Sussex and Wealden District Councils to gain information to facilitate their HRA process to identify whether an increase in development was likely to result in a significant impact on the protected bird species at Ashdown Forest SPA. A visitor survey (UE Associates 2009) was carried out at Ashdown Forest in September 2008 to provide information on visitor access patterns and where visitors who used Ashdown Forest lived. The survey involved interviews with 639 visitors of which 54% of interviewees provided full valid postcodes (i.e. providing accurate information on where they had travelled from). Further work (Clarke, Sharp & Liley 2010) was then commissioned by Natural England in 2010 to determine the extent to which visitor levels affected the distribution of the Annex I bird species present at the site. The further work found no evidence that the density of Annex I bird species was lower in areas with high levels of access. The report gave examples of the predicted number of additional visits arising from development in different locations around the SPA.

2.3 In 2016 a new visitor survey was undertaken, with visitor survey work undertaken to coincide with the bird breeding season. Survey work involved counts of visitors and interviews with a random sample of interviewees at twenty access points, selected to represent a range of parking capacities and geographical spread across the Forest. A total of 452 interviews were conducted (of which 98% gave full, valid postcodes). Additional survey work included the use of automated counters at a small number of additional locations to count visitors and fifteen driving transects – counting all parked cars across all car-parks – were undertaken.

2.4 These surveys provide important context as to how best monitor visitor use at Ashdown Forest. The most recent visitor survey in 2016 provides baseline data on overall visitor numbers, behaviour and access patterns and is therefore a foundation for future monitoring.

### Visitor Use (SANGs Surveys)

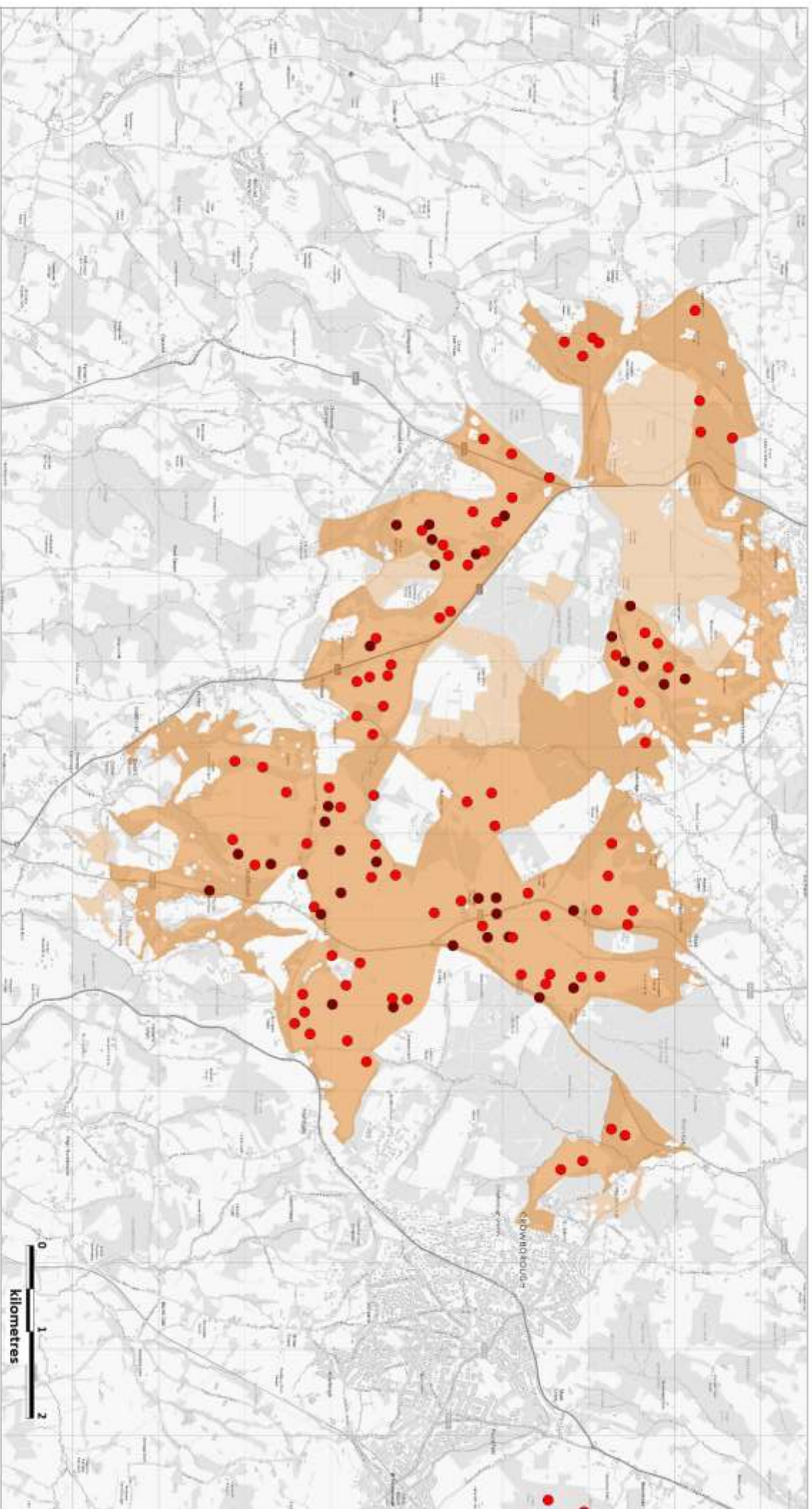
2.5 A visitor survey was undertaken at East Court & Ashplats Wood in April 2013 to support a planning application for a nearby development (Ecology Solutions 2013). The survey included 386 interviews and was undertaken prior to any works undertaken to enhance the site. Possible SANG sites in Wealden District were also

surveyed in 2013 (Liley & Floyd 2013), with 353 surveys conducted across six sites considered at the time to have potential as SANGs. These sites were not later identified as SANGs, but nonetheless the surveys provided useful information on about the recreational use of greenspaces in towns surrounding Ashdown Forest.

## Bird Data

- 2.6 The Conservators of Ashdown Forest run a number of volunteer groups including an [Ashdown Forest Bird Group](#). The group was set up in 1989 and its role is to monitor bird life on Ashdown Forest. The data it collects are submitted to the Sussex Ornithological Society which in turn supplies them to the Sussex Biodiversity Record Centre and the Forest Centre. The data contributes to the Conservators' management and conservation work and is also used by the Sussex Ornithological Society in a number of ways, including the compilation of its annual Bird Reports, assessing bird populations and status, and, again, for conservation and management.
- 2.7 Dartford Warbler and Nightjar monitoring data are collected by the Ashdown Forest Bird Group on an annual basis, but is not necessarily collected in a standardised way across the whole Forest in each year, with coverage and survey effort varying, reflecting volunteer input and availability.
- 2.8 In 2014 data (provided by Natural England) included 73 records of possible or probable Nightjar breeding and 118 records of birds present. Similarly, for Dartford Warbler in 2014 there were 53 recording of possible/probable breeding and 20 records of birds present.
- 2.9 National surveys of Nightjar and Dartford Warbler have provided complete SPA-wide coverage for Ashdown Forest and other SPA sites (see Conway *et al.* 2007 for overviews of previous surveys; Wotton *et al.* 2009). These surveys have in the past been coordinated by the BTO with those on Ashdown Forest being undertaken by the Ashdown Forest Bird Group and others. The last national surveys were in 2004 (Nightjar) and 2006 (Dartford Warbler) and the results for Ashdown Forest are summarised and discussed in Clarke, Sharp & Liley (2010). Data used in that report are summarised in Map 2, which shows totals of 82 Nightjar territories (in 2004) and 32 Dartford Warbler territories (in 2006). The density of these two species was considered low in comparison to other heathland SPA sites in southern England (see Clarke, Sharp & Liley 2010).

Map 2: Bird data from previous national surveys



Ashdown Forest European Site Boundaries

National Survey Data

SPA and SAC  
SPA only

Nightjar territories (2004 national survey)  
Dartford warbler territories (2006)

10

Contains Ordnance Survey Data. © Crown copyright and database right, 2015.  
Protected site boundaries downloaded from the Natural England website. © Natural England.  
Bird territory data drawn from Clarke et al. (2010)

## 3. Monitoring Elements

### Introduction and overview

- 3.1 In this section, we consider the different components of the monitoring strategy, setting out the different monitoring components and providing detail as to how they could be implemented and what the work would involve. Initial recording forms are included as appendices where relevant. Costs are given for each component. These costs are indicative and given for guide purposes/budgeting only. Costs are not based on formal quotes and actual costs may vary depending on how the work is commissioned or implemented. The costs do not allow for inflation or discounting and are indicative of how much the elements might cost if commissioned in 2017.
- 3.2 An overview of the recommended monitoring strategy is set out in Figure 1. There are six main areas covered by the proposed monitoring:
- Visitor interviews
  - Counts of people
  - Bird numbers and distribution
  - Mitigation Delivery
  - Housing
  - Targeted pieces of work to test the effectiveness of mitigation
- 3.3 The targeted pieces of work to test the effectiveness of mitigation represent discrete studies designed to run for a fixed time period and to test the effectiveness of particular mitigation elements. The rest of the recommendations relate to elements that would require continuous monitoring that would take place at regular intervals and continue to run indefinitely.

# Ashdown Forest SPA Monitoring Strategy

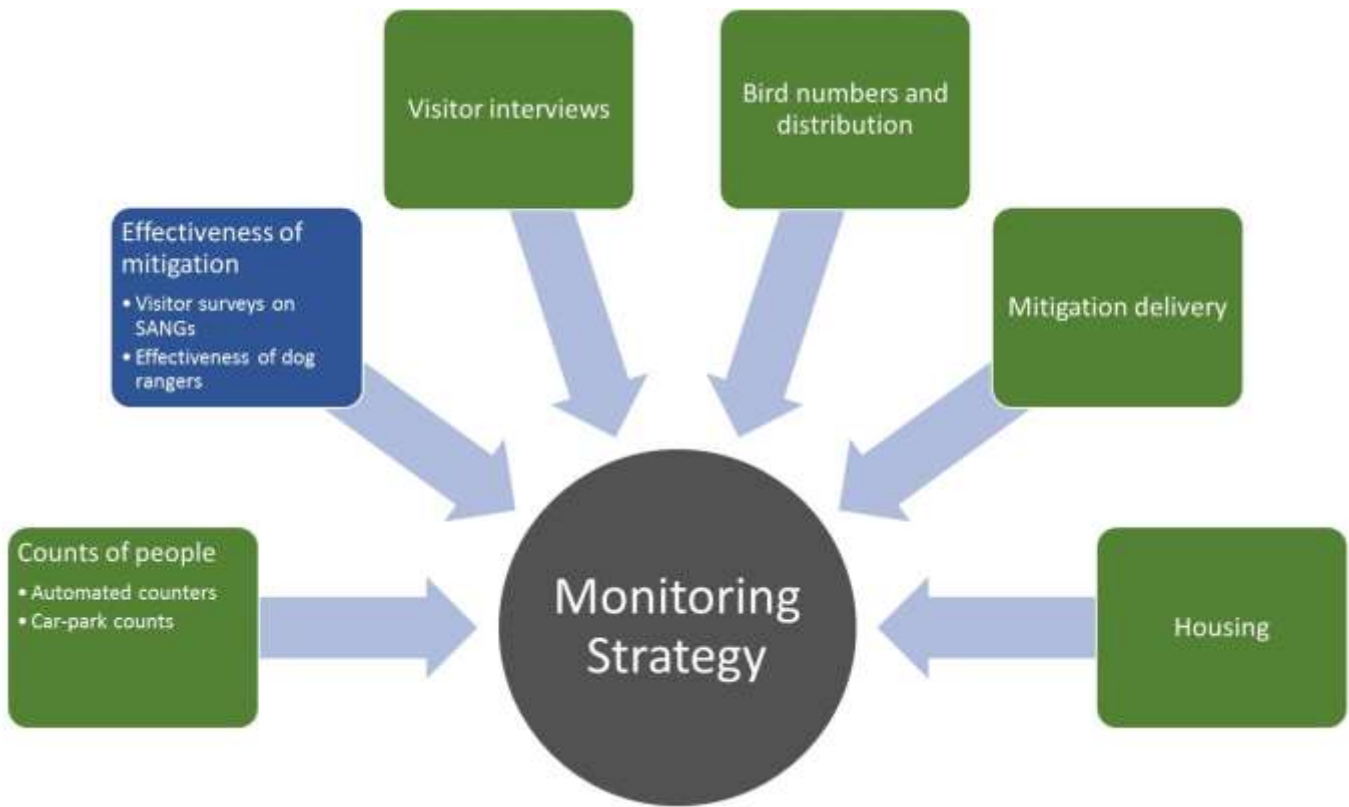


Figure 1: Overview of monitoring strategy. Green shaded cells represent monitoring that would be continuous whereas the blue shaded cells represent monitoring that is time limited and would not continue indefinitely.

## 4. Visitor Interviews

- 4.1 Visitor surveys within the SPA would provide detailed information on who is visiting the SPA and why. Such information supplements count data in that it provides information on visitor profiles, home postcodes, reasons for site choice etc. Questions would also be closely aligned to SANGs surveys to allow direct comparison between visitors to SANGs and visitors to the SPA.
- 4.2 We would envisage these interviews continuing indefinitely, with the same locations surveyed using a similar questionnaire and survey protocol (i.e. similar timing etc.) every five years. Surveys would be based on the visitor survey work undertaken in 2016, using that survey as a baseline. Surveys would be done at the same time of year (June/July) and we suggest ten locations would be sufficient, rather than a complete repeat of the 2016 survey work. Potential survey locations are shown in Map 3. On the map, all survey locations included in the 2016 survey are shown, with graduated symbols used to show the number of interviews that were undertaken. We have used red shading to indicate the 10 locations we suggest for future monitoring and these 10 locations are labelled.
- 4.3 Each location would be surveyed for 16 hours (split over a weekend day and weekend day), in line with the 2016 survey and ensuring a standard time window and approach. A total of 334 interviews were undertaken in 2016 at the 10 survey points we have identified, providing a reasonable sample for comparison in future years.
- 4.4 Surveys would best be deployed on tablets, ensuring benefits in questionnaire design, ease of surveying and no data entry costs. The 2016 survey took around 6 minutes to complete each interview (mean = 7.3 minutes, median=5.9 minutes). In the longer term the questionnaire could be reduced in length slightly. Core questions would need to include frequency of visit, activity, home postcode, alternative sites visited, reason for choosing the SPA etc. Questions that could potentially be dropped include question 14 (frequency of visit to alternative sites); question 15 (mode of transport when visiting alternative sites) and question 16 (reasons for choice of alternative sites). Depending on mitigation measures in place, additional questions could be added as necessary to gather information on particular interventions or changes to site management.
- 4.5 Analysis would focus on the comparison with previous surveys and look for emerging patterns and trends, for example in the proportion of interviewees who had interacted with a warden, the proportion of visitors who had visited a SANG etc. The interviews may also be able to provide relevant data on management initiatives implemented at Ashdown Forest (depending on what measures are implemented in the future). As an example, questions could address whether

interviewees are aware of current projects, or have visited particular websites. Home postcode data would allow any changing patterns in travel distance to be detected (for example if people start to use cars less and travel to closer sites). Comparison between years would include the ratio of different activity types, attitudes of dog walkers etc.

## Visitor Interviews

**Recommendation:** Visitor survey involving face-face interviews repeated at 5 year intervals on the SPA.

**Cost:** £10,000+VAT per survey, i.e. every 5 years (estimate; survey would require 20 person days of survey fieldwork, data entry (route digitisation) and analysis/report production). Costs could drop with time if reports follow set template.

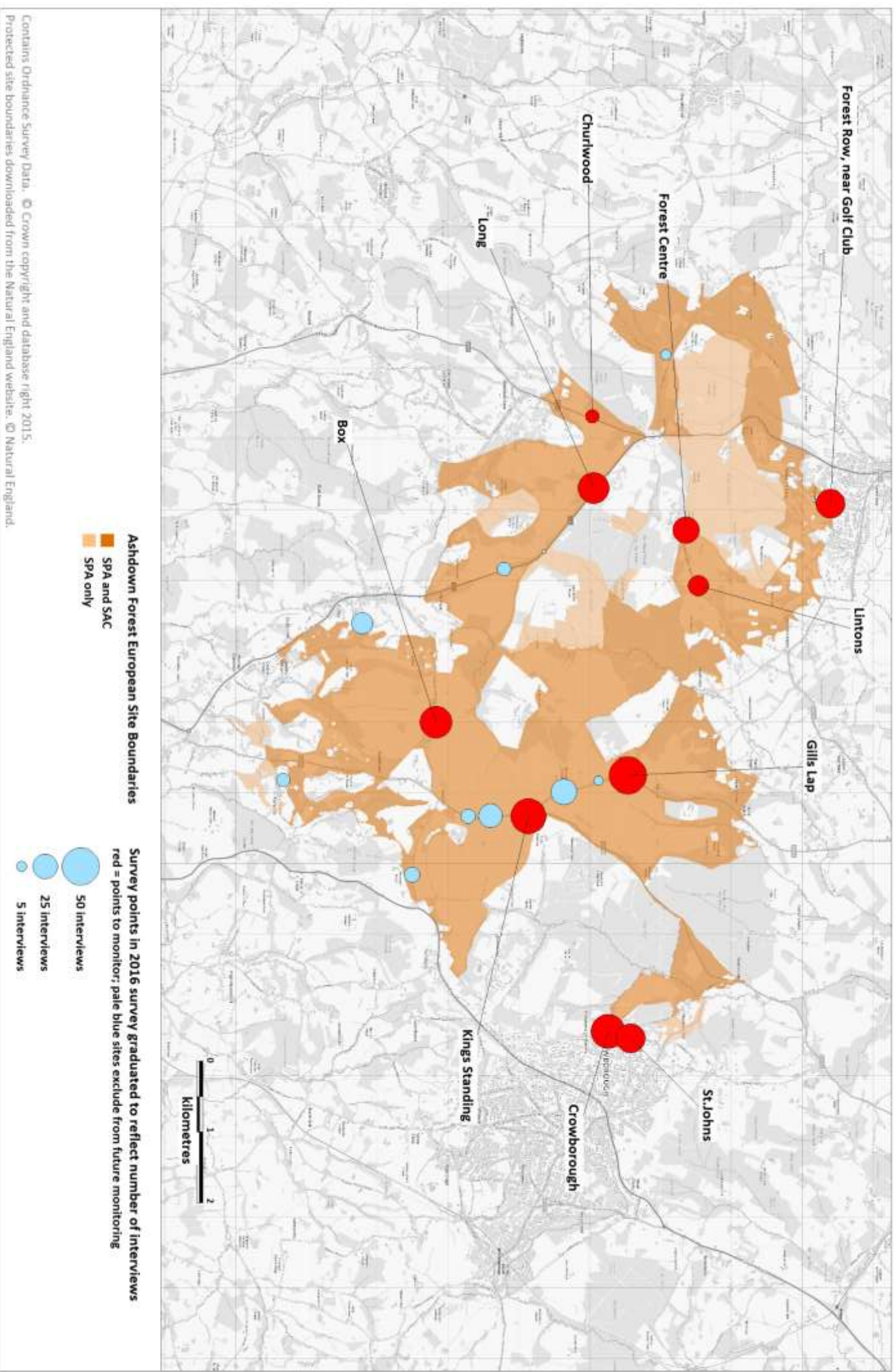
**Key Outputs:** Visitor survey data including questionnaire responses, routes (polylines in GIS) and home postcodes of interviewees. Report setting out key findings and comparison with previous years.

**Delivery:** Surveys undertaken by professional surveyors.

**Options:** Could be extended to be more frequent (useful if lots of changes in short time window), e.g. every 3 years. Additional locations could be included (e.g. 15 or 20 survey points), but probably only worthwhile if measures relate to particular locations. Costs could be reduced if volunteers used for survey work, but this is likely to prove challenging as survey work involves long hours and lots of work. It is usually harder to find volunteers to monitor people as opposed to wildlife.



**Map 3: Potential survey points for visitor interviews at Ashdown Forest**



## 5. Counts of People

### Automated counters

- 5.1 A small number of automated counters (pressure pads, infra-red beams or similar) would be established and maintained over an extended period to give information on visitor trends. The counters would automatically count the number of people passing a specific point, and would provide data on levels of use by hour, by day and by week through the year. The counters would be deployed within the SPA only at carefully selected locations.
- 5.2 We suggest around ten counters. This level is relatively cost effective and simple to maintain (counters need checking, calibrating and may need regularly visiting to collect data). The car-park counts (see later sections) provide count data over the whole of Ashdown Forest. The automated counters would supplement these, providing a much finer level of detail, allowing detailed interrogation of the data to extract information down to each hour. The counters would also collect data right through the year, again supplementing the other visitor count elements.
- 5.3 A comprehensive network of counters covering all the Forest is unnecessary and would be too expensive. A small, well maintained network of counters is more beneficial than lots of counters scattered over a wide area and not maintained well. The advantage of these counters is that they would provide a more detailed data set than the car-park counts can provide. As the automated counters will record footfall rather than cars they will provide an indication of people rather than cars and will record people passing who have travelled on foot. When combined with the car-park count data they should provide robust evidence on visitor trends and allow options for interrogation of the data at a range of spatial and temporal scales.
- 5.4 In Map 4 we show some possible locations. The locations are very approximate and would need to be finalised following discussion with the Ashdown Forest Conservators and other relevant parties. There would be the potential to shift any of the suggested locations to ensure a reliable counter location where it can easily be maintained. We have selected the locations such that:
- They provide good geographic coverage;
  - The locations are on the path network and are located close to major footpaths and path junctions. Rather than choose locations at access points we have chosen points away from car-parks and roads;
  - The locations are areas that have supported good numbers of Nightjars and Dartford Warblers (see Map 3).

- 5.5 We have given an indicative annual cost estimate based on a typical counter. There are a range of devices and types of counter that can be installed. Costs may depend on the location and type of device, for example it would be more expensive to install pressure pads (which are buried in the ground) on a wide track as opposed to a narrow path. A critical element to budget for is the calibration and checking of the devices. Checks need to be made that the device is working and functioning consistently. Devices may fail, be vandalised, accidentally damaged or stolen and regular checks are necessary to ensure no long gaps in data collection. Sometimes paths shift and change too, careful siting can remove many issues but over time as paths become muddy, waterlogged or blocked by vegetation, new desire lines appear, short-cuts or even the way people step may mean people walking the wrong side of a counter. Each counter will need some direct observations to check how accurately it is counting and to give an adjustment factor for the number of people passing. Dogs, buggies, cycles, different sized groups may all trigger individual counters. Only by watching the counter for a set period is it possible to estimate what the number of 'hits' recorded by the counter relates to in terms of visitor volume. Furthermore, at some locations people may tend to mainly go in a single direction, while at other locations people may tend to go both ways along a path, so it is not safe to assume that the number of actual people is equivalent to the number of 'hits'. Just after set up and at regular intervals counters will need some human observation of visitor flow (numbers of people, dogs, children etc.) in each direction to allow comparison between counters and give confidence in the data collected.
- 5.6 The supply, installation, checking, data collection etc. could all be done by specialist contractors or – depending on the device – some elements can be undertaken by local staff.

## Automated counters

**Recommendation:** To install a network of 10 counters to collect detailed data on footfall at locations across the Forest.

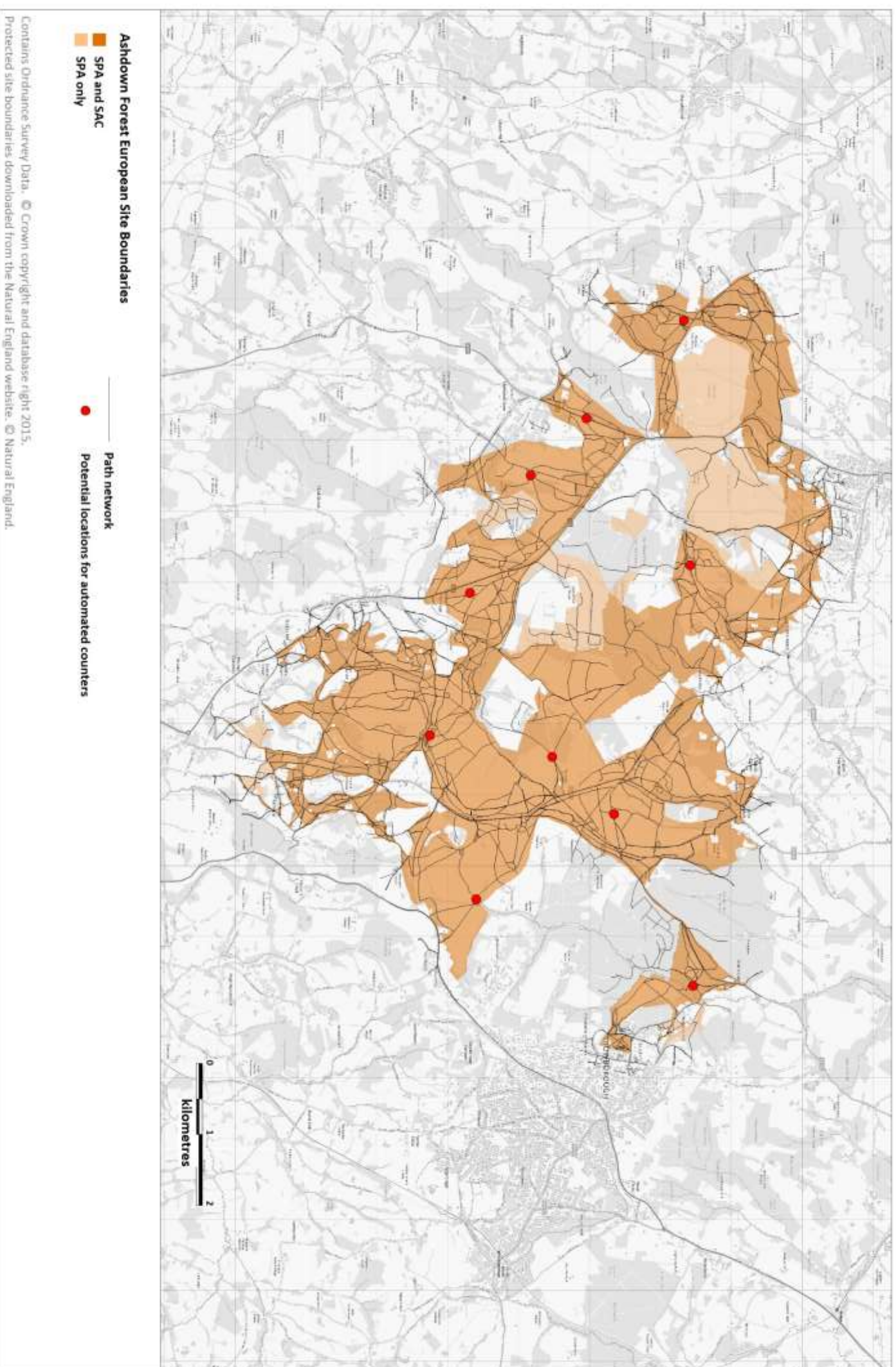
**Cost:** roughly £750 per counter, £7,500 for 10 counters, per year. This is an approximate budget; a good quality counter complete with recycled plastic posts is around £1,600 to purchase. Counters may need replacing every 5-7 years and would need checking and data retrieval at regular intervals (every 3 months or so) through the year. Annual cost allows for initial purchase (£1,600), replacement every 5 years and some staff time to install, check/maintain, calibrate and retrieve data (2 person days per counter per year at £200 per person day).

**Key Outputs:** Detailed, calibrated data on footfall per hour per day across the year at 10 locations.

**Delivery:** Counters could be installed, maintained and run by specialist contractors or alternatively purchased and installed by Ashdown Forest staff.

**Options:** Network could be expanded to cover additional locations or shrunk to cover fewer: 10 locations would provide good spatial coverage and should be straightforward to maintain. An additional option could include counters at car-parks to provide detailed data on car numbers, however the transects should provide enough data without a need for these.

**Map 4: Potential locations for automated counters**



## Car-park counts

- 5.7 Counts of parked cars are a cost-effective means of getting data on overall visitor numbers over a wide area, and is an approach used to monitor visitor numbers at other sites such as the Dorset Heaths and Thames Basin Heaths. At Ashdown Forest, there are relatively few foot-only access points and relatively low levels of housing directly around the edge of the SPA/SAC. As such a relatively high proportion of people travel by car and monitoring the number of vehicles using different car-parks provides a good proxy for how visitor numbers and distribution are changing over time.
- 5.8 Counts of parked vehicles were undertaken as part of the visitor survey work in 2016 and covered the whole of the SPA/SAC. Counts were undertaken by a single surveyor who drove a transect that covered all parking locations (including informal parking locations such as lay-bys etc.). Counts at most parking locations took just a few seconds - involving a snapshot count of the parked vehicles present when entering the car-park. A single transect took around two hours to complete. Routes (starting point and direction) were varied between transects.
- 5.9 In total 15 counts were undertaken. Transects were scheduled to ensure coverage across different times of day and types of day (weekends and weekdays) through July, and some transects also included dates within the main school holiday period (40% of counts in school holiday). The transects recorded an average of 159 vehicles per transect. There were typically more vehicles at weekends than weekdays and a peak at midday, followed closely by morning, however these differences were not statistically significant.
- 5.10 When repeated regularly such data provide a picture of which car-parks are being used regularly and how visitor levels are changing. The data provides an overall picture of use and allows changes at individual locations to be identified. Patterns in the data may reflect changes to different parts of Ashdown Forest or changing popularity of individual car-parks. Counts record different vehicle types (e.g. branded vehicles relating to commercial dog walking; cars with bike carriers; campervans etc.) and therefore provide some indication of how patterns of use change.
- 5.11 The 2016 transect data show the approach works and that a single driver can complete the transects in around 2 hours. The 2016 data provides a baseline and future monitoring should replicate the approach and include 15 transects. To give a slightly better temporal coverage, including more of the bird breeding season, transects should start in April and run through to mid-July. There would be some flexibility in the precise timings but the ideal would be to establish a schedule that can then be repeated year-on-year. The April to July timing could mean a transect

each week, with the times varied to cover different times of day and days of the week. For example, in week 1 the transect could be on a Tuesday and starting at 0700 whereas the transect in week 2 could be on a Saturday starting at 1400 hours. The design of such a schedule should be set up to ensure the transects are easy to complete and fit with the preferred delivery approach (e.g. transects could be undertaken by local staff based at Ashdown Forest or professional surveyors/consultants).

- 5.12 The transects should then be repeated indefinitely. We recommend that initially (at least) the transects are repeated each year. After gathering a few years' worth of data it should be possible to determine the relative scale of change between years and it may be worth reducing the frequency of the counts, for example undertaking the transects every other year.
- 5.13 Count data should be summarised regularly, with reports summarising change across the site and at individual locations. Count data can be mapped (e.g. graduated symbols reflecting the numbers of vehicles at different points).

## Car-park Counts

**Recommendation:** Establish driving transects, counting all parked vehicles across Ashdown Forest. A single transect would encompass all parking locations and 15 transects should be undertaken each year, April -July.

**Cost:** Total cost £2,150+VAT per year that surveys are undertaken. This cost is approximate and has been calculated to cover 15 transects (each of around 40 miles), allowing £75 per transect to cover fees and mileage ( $15 \times £75 = £1125$ ). Additional costs to allow for data entry report writing/data presentation (1 day data entry at £275; 2 days report writing/analysis at £375; £1,025).

**Key Outputs:** Spatially referenced data on car numbers which over time builds to allow trends to be determined and change at individual car-parks to be identified.

**Delivery:** Counts could be conducted by Ashdown Forest staff, local authority staff or external consultants/professional surveyors.

**Options:** Transects could be run through the year to allow more accurate predictions of annual visitor numbers. Fifteen transects through the spring provides a good, comparable metric of use but should resources be limited the number could be reduced.

## 6. Bird Numbers and Distribution

- 6.1 Nightjar and Dartford Warbler are both interest features of the SPA and both are vulnerable to impacts from recreation (Murison 2002; Liley & Clarke 2003; Murison *et al.* 2007). The numbers of birds of each species and their distribution will change over time and will likely be influenced by a range of factors, not just recreation pressure; for example Dartford Warblers are very vulnerable to cold winters and numbers tend to drop rapidly after prolonged, cold winter weather (Bibby & Tubbs 1975; Bibby 1979).
- 6.2 Monitoring bird numbers and bird distribution forms a fundamental component of the strategy because:
- It will allow trends to be determined, providing early warning of any particular issues emerging for the two key species at the site;
  - Any changes in bird numbers can be related to changes in visitor use to check whether recreation pressure may be causing the changes; and
  - It will identify key areas for the two species (these areas may change over time); as necessary access management measures can then be targeted to these areas.
- 6.3 At some other heathland SPA sites, bird monitoring is conducted annually and funded as part of the mitigation strategy, but different approaches are used. In Dorset, where there are many different heathland sites spread over a wide area, annual monitoring takes place at a carefully selected sample of squares (1km grid squares), that includes rural and urban locations and provides a good geographic spread. Surveying all parts of the SPA in all years is impractical given the area involved. Survey work in Dorset is undertaken by the RSPB, using professional surveyors, and the monitoring is funded directly using developer contributions. The Thames Basin Heaths sites are also fragmented but there are fewer areas to survey. Bird monitoring covers all sites in all years, and is therefore comprehensive. Developer contributions are used to fund the monitoring, but there is also some volunteer involvement.
- 6.4 We do not recommend the need for detailed nest finding and monitoring of breeding success. Nests are difficult to find and very time consuming to monitor, and such monitoring also potentially involves specialist equipment such as motion-sensitive nest cameras. Nest monitoring as such is more likely to form a component of detailed research as opposed to regular monitoring that is undertaken on a routine basis (e.g. multiple years).
- 6.5 At Ashdown Forest, we suggest that bird monitoring should involve a comprehensive survey of the site every three years. It would potentially be easiest



if both Nightjars and Dartford Warblers were surveyed in the same year, but this would not be essential. Monitoring of Dartford Warblers could be extended to include other species, such as Woodlarks, but again this is not essential. Three years would provide a standard dataset whereby changes in numbers or distribution could be picked up and trends over time determined. By not surveying in every year some cost savings are made.

- 6.6 Methods for fieldwork for nightjars should be based on the last national survey in 2004, which was largely carried out by volunteers (Conway *et al.* 2007). A minimum of two visits were required between the last week of May and mid-July, either at dawn or dusk. At least one visit was required in June with at least three weeks between visits. Surveyors were recommended to visit the site during daylight to familiarise themselves with the ground and during counts they were advised to cover no more than 80 ha per visit and to visit within 200m of all parts of the count site. Site visits were confined to calm and usually dry evenings or mornings with no more than a moderate breeze (Beaufort force 4). All calling (churring) males were recorded onto 1:2500 maps. It should be noted that nightjars tend to sing at dusk and dawn, and there is therefore a relatively limited time window during which it is possible to undertake the surveys. The fieldwork essentially needs to be conducted around 9-11pm and 02-4.30am (times do vary slightly between months etc.). Due to the time constraints, one person cannot survey large areas in a single evening/early morning visit. Suitable habitat is not just heathland but clearings within woodland too.
- 6.7 Dartford Warblers survey methods should also be based on those used in national surveys (Wotton *et al.* 2009). Dartford Warblers are associated with dry heath, nesting in mature heather and gorse and therefore surveys need to target such habitat. Surveys should involve a minimum of two visits, the first between 1st April and 15th May and the second between 16th May and 30th June, but with a minimum of ten days between visits. Ideally visits should be made between dawn and midday on warm, dry days with little wind. Although Dartford Warbler territories can be fairly constant from year to year, population crashes can occur after hard winters making the surviving birds difficult to find, but after a run of mild winters, populations can build up rapidly and every suitable area of habitat can be occupied. This means that the number and distribution of the Warblers can change considerably, affecting the time and resources needed to carry out a census, depending on the weather over the previous few winters.
- 6.8 The Ashdown Forest Bird Group are ideally placed to undertake the monitoring, given their long history of involvement with the site and local knowledge. However, it may be necessary to supplement their input with either consultant input or by using bird surveyors from different organisations.

- 6.9 Using 1km grid squares (100ha) provides an easy way of organising and planning fieldwork. There are a total of 65 grid squares (Map 5) that are potentially relevant. The proportion of suitable habitat within each square varies markedly, for example 35 of the squares shown in Map 5 have 50% or more of their area within the Ashdown Forest SPA. Previous national survey data provides a useful guide for the distribution of birds within the site and in 2004, 33 of the squares shown in Map 5 held Nightjar territories and in 2006 there were 17 squares that contained Dartford Warbler territories.
- 6.10 These totals suggest that potentially a maximum of 40 grid squares might need to be surveyed/checked for Nightjar in a given year, with two visits made to each and for Dartford Warbler survey effort might be less, but still potentially 20-30 squares. To achieve this level of survey effort around 20 volunteers may be required (assuming on average a volunteer might be able to cover 2 grid cells in a season – some may wish to do more than this while others may wish to do less or even share a square). Coordination of such survey work would therefore be essential and a considerable undertaking, requiring printing of fieldsheets and instructions, direct liaison and support for surveyors (including addressing any health and safety issues), checking that surveys have been undertaken and potentially filling in any gaps. At the end of each survey, data would need to be collated, checked and territories digitised within GIS. Data checks are important as both species can have large territories (e.g. Cadbury 1981) and there is a risk of double counting where different surveyors cover adjacent areas.
- 6.11 We therefore suggest that survey work is supported through professional help where necessary. Such help could include the production and printing of fieldsheets, some fieldwork (gap filling, extra visits and 'back-up'), GIS/data collation and report production. The professional support may be different in different years, depending on the numbers of volunteers involved and the support they need. Funding should also cover volunteer costs, for example travel expenses.

## Bird numbers & distribution

**Recommendation:** Nightjar and Dartford Warbler surveyed across Ashdown Forest every three years.

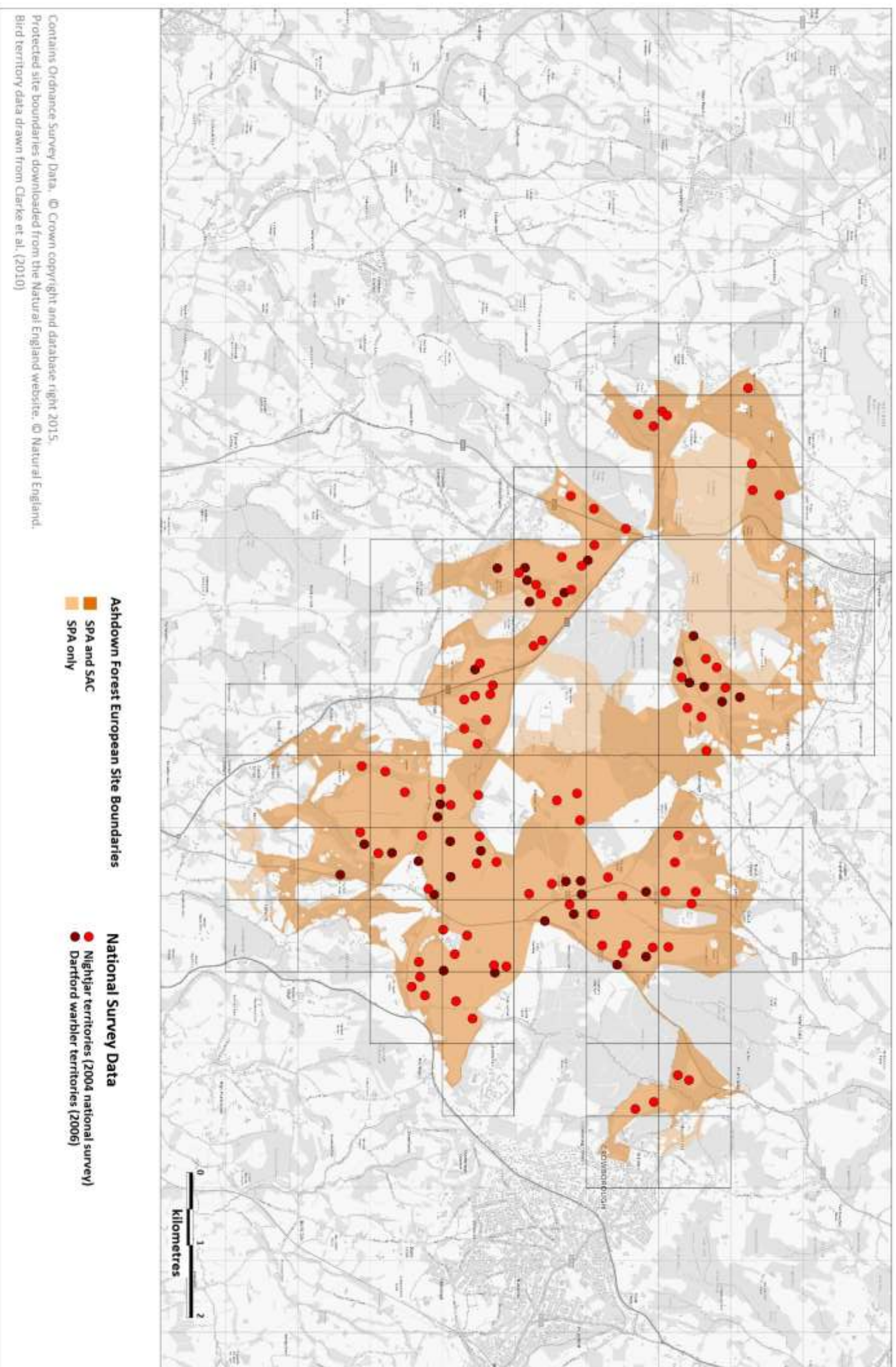
**Cost:** £5,000+VAT per survey, i.e. every 3 years (estimate and likely to be variable depending on level of volunteer interest and capacity).

**Key Outputs:** GIS data file showing territory centres (points) for each survey year

**Delivery:** If possible, surveys undertaken by local bird monitoring group with funding to cover expenses. Funding also made available to cover professional support/fees as necessary to ensure complete survey coverage, coordination of surveys and to provide data entry/GIS support as required.

**Options:** Could be extended to be annual monitoring rather than every 3 years, but this may be harder to maintain if reliance mainly on volunteers. Survey areas could be reduced to sample areas if budget/resource limitations. Sample areas would need to be carefully selected to ensure range of access levels and representative of habitats/conditions across the whole site.

**Map 5: Bird data from previous national surveys and 1km grid squares**



## 7. Mitigation Delivery

7.1 It is important to record all mitigation measures in a standardised way such that these can be related to changes in housing and changes in visitor numbers or visitor behaviour. Key details to record will include:

- SANGs provision: areas of SANG provided and when opened to public
- Works on SANGs: a record of enhancements such as car-parking and other infrastructure; promotional events; advertising etc.
- Any issues on SANGs: for example, periods of flooding which may influence use
- Community events: details such as type of event, location, timing, number of people attending
- Access management officer time: details of work undertaken, locations, number of people engaged/interacted with etc.
- Dog rangers and other staff deployment: details of how much time rangers are deployed and at which locations; number of people spoken to/engaged with and details of the interaction. These data would always be collected whenever the rangers are out. It may be necessary to have slightly different forms or recording protocols depending on whether the rangers are just doing day-day site visits or attending events etc.
- Other changes, such as significant new investment or changes to other countryside sites that may have a wider influence on visitor numbers (this may be difficult to record systematically but may help interpret broad patterns in the data).

7.2 Standard recording forms will be necessary and such recording should be streamlined such that the information can be recorded simply and easily as part of the mitigation delivery.

## Mitigation delivery

**Recommendation:** Collect details of all mitigation work so that it can be related to other datasets and information easily retrieved relating to what has been undertaken, where and when.

**Cost:** No costs included for this as these data should be recorded as part of the mitigation delivery.

**Key Outputs:** Details of all mitigation work undertaken recorded in a standard way that allows cross-reference with other datasets and easy retrieval of information.

**Delivery:** Data collected and collated by access management officer, dog rangers and other staff associated with strategic mitigation delivery.

## 8. Housing

- 8.1 A key component of the monitoring is to track housing delivery such that housing data can be related to the other monitoring data collected. Housing data would involve an annual record of new housing in a way that can be plotted on a map and overall change around Ashdown Forest identified. These data are already being kept and will relate to the amount of mitigation monies collected; the data will need to be collated to allow analysis. As an example, if count data (automated counters and car-park counts) indicated an increase in visitor numbers then it would be possible to check whether the rate of change in visitor numbers was broadly equivalent to the rate of housing delivery within the zone of influence (and if not it may indicate other factors such as tourist numbers playing a role). Should visitor numbers increase markedly in a particular part of Ashdown Forest it would be possible to check whether there were marked increases in housing on the equivalent side of the Forest or in other locations which could be affecting visitor patterns.
- 8.2 It may also be useful for the local authorities to collate future predictions of housing in order to ensure mitigation effort can be adapted and adjusted to the need. We have not included this or recommended a set timescale as this is probably best considered as part of any Local Plan review. This work will need to be undertaken at an appropriate time rather than at fixed intervals.

## Housing

**Recommendation:** Collate data on new housing across relevant local authorities into a single database. Data must be collated in a standard way and should ideally reflect the time that buildings were completed or occupied as well as when planning permission was granted.

**Cost:** No costs included for this as these data are collated by local authorities as part of their monitoring requirements.

**Key Outputs:** Database that allows housing change within the zone of influence of Ashdown Forest to be extracted. Data need to be spatially referenced (e.g. postcodes).

**Delivery:** Data collected and collated by local authority staff.

## 9. Effectiveness of Mitigation

### Visitor surveys of SANGs.

9.1 To determine how well different SANG sites are working it is necessary to interview visitors at the SANG to determine where they come from, why they visit, how often they visit and whether they visit the SPA. Visitor numbers are also important and count data could be recorded as part of the interviews, but visitor numbers alone would not be sufficient to assess how well a SANG is working. This is because SANGs might draw high numbers of visitors but if those visitors are not ones who would otherwise be visiting the SPA (were there to be no SANG) it is not effective as mitigation.

9.2 Face-face interviews will therefore be required at SANG sites. Survey points would involve main access points on the SANGs, and while not essential to target every entry point, main car-parks and busy access points should all be surveyed. Surveys should be hosted directly on tablets to avoid the need for manual data entry. The questionnaire design would replicate that used across the SPA (see para 4.4) to facilitate direct comparisons with the data. Key elements to include in the questionnaire would include:

- Whether on holiday or local resident visiting from home
- Activity(ies) undertaken
- Frequency of visit
- Duration of visit
- Mode of transport
- Length of time visiting the site
- Information on site choice (i.e. why that specific location chosen for given activity)
- Other sites visited (included specifically checking whether the Forest is visited or used to be visited, and which one site would have been visited as an alternative to the SANG)
- Reasons for choosing other site
- Views on current management of site and potential improvements
- Mapped route taken on site (and information about whether route as mapped is typical); this is important as it shows whether the SANG is being used to its full extent and allows comparison with SPA/SAC.
- Home postcode

9.3 Not all SANGS necessarily need to be surveyed, but it is impossible at this stage to recommend how many sites to survey as details of the long term mitigation have not been finalised. We therefore do not know how many SANGs might be components of the overall mitigation package and where those SANGs might be.



- 9.4 We have provisionally costed for surveys at 10 survey points. Survey points would be entry/exit points or path junctions inside sites (i.e. relatively independent, discrete locations where visitors can be intercepted and interviewed, ideally as they are completing their visit). This total could be sufficient for reasonably complete coverage of two to four SANG sites (most SANGs will have multiple points which warrant surveys); alternatively the ten survey points could be spread across 10 different SANG sites, providing sample data from multiple sites. The costs allow for surveys to be repeated twice, i.e. a baseline survey and two further surveys at each of the 10 survey points.
- 9.5 Surveys should follow the same survey protocol at each site surveyed and surveys should be repeated to match data from previous years. This would mean ensuring surveys were done at the same time of year (ideally the same month). Questions, survey effort etc. should be standardised. Additional questions (e.g. site specific ones) could be asked as long as they do not make the questionnaire overly long or complex.

## Visitor surveys of SANGs

**Recommendation:** Visitor surveys on SANGs to collect information about types of visitor, use of SANG, activities, use of SPA/SAC etc. Surveys repeated over 10 year time period to check SANGs are working effectively and to monitor effects of changes (such as landscaping, planting, provision of infrastructure).

**Cost:** £24,000. This cost is approximate and assumes 10 survey points (i.e. discrete survey locations, not SANG sites) and each point surveyed for 16 hours with survey effort split over weekend and weekdays (cost calculated at £37.50 per fieldwork hour, including travel, equipment), giving £6,000 for fieldwork. Additional £2,000 for report writing and analysis. Cost scaled to allow two repeat surveys spread over first 10 years SANG is running (i.e. surveys in years 1, 5 and 10 for each SANG).

**Key Outputs:** Database that allows housing change within the zone of influence of Ashdown Forest to be extracted. Data will need to be spatially referenced (e.g. postcodes).

**Delivery:** Surveys best done by professional surveyors.

**Options:** The ten survey points could be spread across as many as 10 SANGs although it will probably be best to focus on a smaller number with multiple survey points at each. Scope to expand or decrease the level of survey effort depending on resources and level of SANG provision.

## Effectiveness of Dog Rangers

- 9.6 One of the components of the mitigation package will be volunteer dog rangers. While other strategic mitigation schemes have dedicated dog projects<sup>1</sup> or use paid wardens to patrol sites, the use of volunteer rangers with a dog focus is novel. Monitoring is recommended to refine the approach, for example providing information on what kind of approaches work best, how much ranger time is necessary to maximise the effectiveness etc.
- 9.7 Monitoring would involve direct observations from a fixed vantage point. Vantage points would be on relatively high ground providing a wide view and a fixed recording area would be mapped out at each location (recording areas would vary in size and shape at each location depending on how much terrain is visible). The vantage points would need to be selected to provide a view of areas that the rangers would be targeting. Surveyors would record all access within the recording area over a fixed period (we suggest two hours). For each group of people observed, recording would include the number of dogs, the number of dogs off lead, how far dogs stray from their owners, whether the dog was seen to foul (and if so whether the owner picked up) and whether the group was seen to interact with a ranger. General information relating to each visit would include whether livestock were present, whether the ranger was present and weather conditions.
- 9.8 Monitoring should be targeted to selected locations which the volunteer rangers will be targeting and monitoring will need to commence before the ranger scheme is in place so that changes in behaviour can be picked up. Monitoring would then continue for a fixed time period, we suggest around 3 years, with ten watches (each of two hours) undertaken each year, in the same time window (late spring would be ideal as it is the bird breeding season). Once the rangers are in place, there would be scope to potentially split the ten watches in each year so that five were when a ranger was present and five were without a ranger present, providing the option for direct, paired comparisons. Initial results should be used to determine how long the monitoring is necessary.

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<sup>1</sup> Such as [Dorset Dogs](#)

## Effectiveness of dog rangers

**Recommendation:** Vantage point watches to record visitor behaviour in areas to be targeted by volunteer dog rangers. Monitoring would commence prior to the rangers being in place and run for a fixed number of years to compare behaviour before and after the rangers are deployed and potentially to compare visitor behaviour when a ranger is present to when a ranger is absent.

**Cost:** Total cost for three years £13,500+VAT. This cost is approximate and assumes four vantage points with 10 watches (each 2 hours) conducted at each per year. Assuming fieldwork costs of £25 per hour (and allowing 3 hours per count, to cover doing the watch and time to get into position etc.) then fieldwork costs would be £3,000+VAT per year. Allowing a further £1,500 for data collation and write-up each year gives an annual cost of £4,500+VAT. This then scaled up to cover three years.

**Key Outputs:** Data and short report(s) showing monitoring results, outputs to focus on considering effectiveness of monitoring and potential changes necessary (e.g. to what extent do visitors change their behaviour when a ranger is visible and how long do behavioural changes last).

**Delivery:** Surveys best undertaken by professional surveyors.

**Options:** There could be options to increase the number of vantage points (though four should be adequate, particularly if targeting areas where ranger effort is focused). Additional years may be necessary, particularly if the ranger deployment is slow off the ground or changes over time.

## 10. Implementation and overview

**10.1** Previous sections provide detail relating to the separate components of a monitoring strategy. In this section, we provide an overall summary of the costs and consider how the mitigation strategy could be implemented, for example how different datasets should be brought together and analysed.

### Overview of costs

**10.2** The different components of the strategy are summarised in Table 1 which also gives the overall estimated cost for each.

**Table 1: Summary of different components of the mitigation strategy**

Component of Strategy	Estimated cost	Output	Timing/details
Visitor interviews	£10,000 per survey	Visitor survey involving face-face interviews.	Repeated every 5 years. Cost is per survey, i.e. every 10 years.
Counts of people: automated counters	£7,500 per year	A network of 10 counters is installed to collect detailed data on footfall at locations across the Forest.	Counters to run indefinitely; cost is an annual cost
Counts of people: car-park counts	£2,150 per year	Driving transects, counting all parked vehicles across Ashdown Forest are established. A single transect would encompass all parking locations and 15 transects should be undertaken each year, April - July.	Initially undertaken every year, with potential to then switch to every other year.
Bird numbers and distribution	£5,000 per survey	Nightjar and Dartford Warbler surveyed across Ashdown Forest.	Surveys with complete coverage of the Forest undertaken every three years.
Mitigation delivery	No cost	Details of all mitigation work needs to be collected so that it can be related to other datasets and information easily retrieved relating to what has been undertaken, where and when.	On-going, logging all mitigation delivered
Housing	No cost	Record of all housing for which mitigation has been delivered. Data on new housing collated across relevant local authorities into a single database. Data collated in a standard way ideally reflecting the time that buildings were completed or occupied and planning permission was granted.	On-going.
Effectiveness of mitigation: visitor surveys on SANGs	£24,000	Visitor surveys on SANGs to collect information about types of visitor, use of SANG, activities, use of SPA etc. Surveys repeated to check SANGs are working effectively and to monitor effects of changes (such as landscaping, planting, provision of infrastructure).	Surveys conducted at 10 locations with SANGs and cost allows for initial survey and two repeats at each location, potentially spread over a 10-year period.
Effectiveness of mitigation: effectiveness of dog rangers	£13,500	Vantage point watches to record visitor behaviour in areas to be targeted by volunteer dog rangers. Monitoring would commence prior to the rangers being in place and run for a fixed number of years to compare behaviour before and after the rangers are deployed and potentially to compare visitor behaviour when a ranger is present to when a ranger is absent.	Monitoring for a fixed period of three years only, cost covers whole 3-year period.

## Implementation

- 10.3** It is important that the different components of the strategy are brought together to give an overall picture, particularly at key points such as local plan reviews or reviews of the mitigation strategy. For example, it will be important to be able to check whether changes in access are in proportion to changes in housing, and whether any changes in bird numbers or distribution relate to areas where access has changed. Such information will be important to help focus ranger activity or other on-site mitigation works.
- 10.4** The monitoring therefore needs some level of overall coordination and reporting. Coordination is necessary to ensure monitoring is fit for purpose and the data are collected in the same way each year. Over time, delivery approaches may change, reflecting changes in staff or volunteer availability. As such it will be important that one person, potentially the Access Management Officer, has oversight of the data and that the data that are collected are stored and archived in a sensible way to facilitate analysis and reporting. Data should therefore potentially be logged both with the Ashdown Forest Conservators but also with local authorities and/or the Sussex Biodiversity Records Centre.
- 10.5** In Dorset, the heathland mitigation monitoring is undertaken by a range of different parties, including wardens employed by local authorities. An annual monitoring report is produced, presenting data on car-park counts, bird numbers etc. Such an approach could be adopted at Ashdown Forest. Such a report might only be necessary at set intervals, say every two years, and would benefit from analysis/data presentation that puts different data elements together, for example visitor numbers and birds. Such reporting should also pull out trends that are emerging, for example year-on-year changes in visitor numbers or birds.

## Appendix 1: Car-park count recording form

A s h d o w n F o r e s t S P A M o n i t o r i n g S t r a t e g y

Date:	Surveyor:	Section:	
Start time:	End time:	Cloud cover (8ths):	Weather description/notes

Car park number	Time	Total parked vehicles	Commercial vehicles	Vehicles with bike racks	Vehicles branded with dog walking	MPV / minibus vehicles	Camper vans	Rain (enter 1 if present otherwise blank)	Notes

Record any details here relating to route/traffic or other general issues on the day that might affect count (road closures, world cup finals etc)

**Notes**

Car-park number is the unique ID number assigned to each car-park

Total parked vehicles is the total number of parked vehicles – columns to the right are subsets of this total

Commercial vehicles are vans or similar that have company branding on and may relate to people at work or linked to work

Dog branded vehicles are those used by commercial dog walkers

Campervans are separated from MPV/minibus type vehicles in that they clearly are used for sleeping in