FOOTPRINT ECOLOGY

Birklands & Bilhaugh SAC Recreation Impact Assessment - a report prepared for Bassetlaw District Council in conjunction with Newark and Sherwood District Council

Phil Saunders, Sophie Lake & Durwyn Liley

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

Footprint Contract Reference: 622
Date: 8th March 2022
Version: Final
Recommended Citation: Saunders, P., Lake, S. & Liley, D. (2022). Birklands & Bilhaugh SAC Recreation Impact Assessment Report- a report prepared for Bassetlaw District Council in conjunction with Newark and Sherwood District Council

Contents

Acknowledgements

This report was commissioned by Bassetlaw District Council and Newark and Sherwood District Council, and we are grateful to Kathy Bibby, Shukri Masseri, Rebecca Raine, and Karen Johnson for overseeing the work. Our thanks also Izi Banton, Carl Cornish, Jess Dumoulin, Sally Granger, Gemma Howarth, Rob James, Chloe Ryder, David Terry, and Dan Widdowson (all RSPB), Adrian Allenbury (Newark & Sherwood District Council), and Andrew Norton (Mansfield District Council) for very helpful discussion, provision of background information, and/or feedback on the initial draft report.

Survey work was carried out by Peter Brash, Annette Kelly, Anna Greenwood, Sophie Lake (Footprint Ecology), James Lowen, Emma Mayo, Philip Precey, and Phil Saunders (Footprint Ecology), and data was entered by Emma Bishop and Zoe Caals (both Footprint Ecology).

All photographs: Footprint Ecology

Summary

This report relates to Birklands & Bilhaugh Special Area of Conservation (SAC)/Sherwood Forest National Nature Reserve (NNR) and has been commissioned by Bassetlaw District Council and Newark and Sherwood District Council. The report provides the results of bird surveys (targeting Woodlark and Nightjar), a walk-over recreation impact assessment and a visitor survey. The implications of the findings are discussed in relation to the statutory protection afforded to the site and the impacts associated with recreation.

Key findings:

Woodlark and Nightjar

- 4-6 Woodlark territories were identified and mapped, with observations concentrated in the western half of the RSPB Reserve.
- Nightjar were distributed more widely across the study area and it was estimated that 4 to 5 churring/territorial males were present over the spring.

Other notable bird species

- Incidental records of other notable bird species (i.e. Birds of Conservation Concern or listed on Schedule 1 of the Wildlife and Countryside Act included Tree Pipit, Yellowhammer, Cuckoo, Lesser Redpoll, Hawfinch, Woodcock and Tawny Owl. In addition, 2 broods of Long-eared Owls were found.

Habitats and recreation impacts

- The habitats recorded (and mapped) within the study area boundary included a mix of semi-natural broad-leaved woodland, broad-leaved, mixed, and coniferous plantation, and open areas of heathy grassland mosaic with scattered trees.
- Trampling damage included a loss of heath vegetation from paths in otherwise heathy areas, having been replaced by acid grassland and in places this acid grassland has in turn been replaced by trampling-resistant rosette species of less conservation interest.
- More extreme trampling damage was evident through a loss of vegetation and compacted bare ground.
- Trampling damage was much more apparent within Sherwood Forest than Budby South Forest and trampling damage was particularly evident close to the new Visitor Centre and along the routes to the Major Oak.
- Within this area, many of the veteran trees that are visible from the paths have desire lines leading to them (sometimes through fences), these paths are often compacted and denuded of vegetation, and the trees generally have a similarly compacted area beneath the canopy.
- Within Sherwood Forest evidence of direct damage was also recorded, including bike jumps, scuff marks and broken branches on trees (as a result of tree climbing) and loss of habitat through visitor infrastructure.

- Contamination was noted in terms of eutrophication (e.g. from dog fouling) and was evident from the vegetation present at Budby South Forest and Sherwood Forest.

Number of visitor interviews and tally counts

- Counts of people passing indicated that the Sherwood Forest NNR Main Entrance was much busier than the Budby Forest car park in terms of people and the number of dogs.
- 151 interviews were conducted, with 82 conducted in the spring and 70 during the summer.

Types of visit and activities undertaken

- Most interviewees (84% in the spring, 87% in the summer) were on a short visit and had travelled directly from home that day.
- Holiday-makers and those staying with friends and family accounted for 10% of interviewees in the spring and 13% in the summer.
- The most frequently recorded main activity across both survey locations across the combined survey periods was walking (47% of interviewees), followed by dog walking (36%) and bird/wildlife watching (5%).
- Walking was the most commonly cited main activity at Sherwood Forest NNR Main Entrance (59% of interviewees) while dog walking was the most commonly cited activity at Budby South Forest RSPB Reserve Car Park (53%).

Visitor behaviour

- Approximately a fifth of all interviewees across both survey locations visited the survey area 1 to 3 times per week, whilst another fifth visited less than once per month.
- Dog walkers were the group who visited the most frequently, with >40% visiting most days or daily.
- More than one third of interviewees (38.9%) spent 1 to 2 hours on site, with another fifth (16.9%) spending between 30 minutes and 1 hour on site.
- Of the 3 most commonly represented activity types in the dataset, dog walkers exhibited the shortest visit duration, with more than half (54.6%) spending less than an hour on site.
- The majority of interviewees (51.6%) indicated that they tended to visit equally all year round.
- Overall, three quarters (75.0%) of interviewees had arrived by car/van, with most of the remainder (23.1%) having travelled on foot.
- Overall, proximity to home was by far the most commonly given reason for site choice, accounting for 23.5% of responses. Visiting the Major Oak, familiarity, the dog's enjoyment, and particular wildlife interest were also influential.

Use of other sites

- Approximately a third (34.8%) of interviewees across both survey locations stated that 75% or more of their visits (for the activity they were undertaking when interviewed) took place at the survey location.
- Amongst the more frequently recorded main activity types, dog walkers showed the highest level of site fidelity amongst user groups.
- A variety of other sites were regularly visited by interviewees, with Clumber Park being that most commonly identified across the survey locations.
- 60% of interviewees indicated that they would be likely to use a novel area of local greenspace, with 15.4% suggesting that they would not, and 18.7% suggesting potential use.

Memberships, resources used to plan visits, and awareness of sensitive ecological features

- Approximately 22% of interviewees across all survey locations and activity types were members of the RSPB, with 9.4% also members of the National Trust.
- Online or paper maps were the most frequently used information sources used to plan visits, followed by websites, and smartphone apps.
- A third of interviewees (38.1%) were unable to name any sensitive ecological features present on site, with breeding birds (20.2% of responses) and rare insects and invertebrates (6.9%) those most frequently named.

Visitor origins

- A total of 146 interviewee postcodes could be accurately mapped.
- The greater proportion of recorded postcodes were centred within an area bordered by Derby and Nottingham to the south, Sheffield and Doncaster to the north, and Lincoln and Newark to the east.
- Across all visit types during the spring survey period (79 interviewees) the mean straight-line distance between the interview location and the interviewees home postcode was 37.1km and the median was 9.6km (i.e. 50% of all interviewees during this period had come from a radius of <9.6km around the survey locations).
- The third quartile (75th percentile) distance was 38.6km (i.e. 75% of all spring survey period interviewees lived within this distance of the survey location).
- These values were similar during the summer survey period, but varied between the survey locations, with much larger distances travelled to the Sherwood Forest NNR Main Entrance.
- When holidaymakers are removed from the dataset the overall straight-line distances decreased substantially (see Table 18), with the overall spring mean distance being 19.7km, the median 8.7km, and the 75th percentile 28.3km.
- Interviewees who visited more frequently and/or accessed the site on foot were more likely to originate from closer postcodes than those who visited less frequently and/or accessed by car or bicycle.

Routes on site

- The route taken by the majority of interviewees overall (57.3%) was reflective of their normal route length.
- Previous knowledge/experience of the area was the most frequently provided reason behind route choice (24.5%), followed by visiting a particular feature or viewpoint (15.2%), the activity undertaken (14.6%), the presence of a marked trail (10.8%), and "other" (10.8%).
- A total of 142 visitor routes were mapped, with the majority of visitors to the study area undertaking routes between 3.2km and 4.9km in length.
- Amongst the three most frequently recorded main activity types, bird/wildlife watchers exhibited the longest mean routes within the study area (4.4km), with dog walkers the second longest (3.4km), and walkers the third (3.1km).
- Interviewee footfall was most concentrated along the entrance track heading northwest from the Visitor Centre into Sherwood Forest, along the main east-west/northwest-southeast access routes radiating from the Budby South Forest RSPB Car Park, and on trails in the vicinity of the Major Oak.
- Dog walker density mirrored the overall footfall pattern although routes leading from the RSPB car park were favoured. A preference for circular routes was also potentially indicated by the concentration of routes along the main east-west, north-south, and peripheral trails running across the study area.

Access points

- The main entrance to Sherwood Forest NNR, in proximity to the Visitor Centre and car park, was by far the busiest access point, with the access point adjacent to the Budby South Forest RSPB Reserve car park (on the eastern border of the study area) also heavily used.
- Access along the northern and western perimeter of the study area is more diffuse, although relatively large numbers of visitors appear to access/egress the site via western end of the main east-west footpath forming the border between Sherwood Forest and Budby South Forest RSPB Reserve.

Views on site management

- Suggestions from interviewees concerning potential improvements to management of other sites they visited primarily centred upon better/more parking provision and parking fees, the provision/maintenance of dog waste and litter bins, improved access and path maintenance, entry fees, provision of better signage, and improved facilities (toilets and café in particular.
- Many people enjoying the wildness and open spaces present, the friendly management team, and the presence of a large area of accessible greenspace on their doorstep.
- There was also a small cohort of local people who were not happy at all with RSPB management of the site or with the relocation/contents of the new Visitor Centre.

- Other issues identified included parking provision and fees, potholes, nudists, and horse dung, as well as conflicts between different user groups and the site managers (dog walkers and RSPB/birdwatchers in particular).

Recreation Impacts on habitats

- Trampling and compaction of ground flora and soils, alongside damage to tree roots within woodland areas, is an important impact throughout the SAC. These are less of an issue within the RSPB Reserve.
- Enrichment from dog faeces and urine is another key impact within the SAC. Limited effects are also evident along path edges within the RSPB Reserve.
- A major issue for the SAC is damage caused to veteran trees, including that arising from the building of dens in proximity to them.

Recreation Impacts on Woodlark and Nightjar

- Ground nesting Woodlark and Nightjar are susceptible to disturbance, and potentially predation by dogs, arising from recreation.
- Nightjar on site appear to currently favour less heavily utilised areas of the RSPB Reserve and the periphery of the SAC. As such, there is potential for any increase in footfall within these areas to have a negative impact upon the birds present.
- Woodlark are distributed across the two western thirds of the RSPB Reserve, and show a preference for fenced enclosures. They are nevertheless susceptible to disturbance from adjacent paths, free-ranging dogs, etc.
- The presence of 4 to 6 pairs of Woodlark, and 4 to 5 territorial Nightjar, within the NNR boundary indicate that the locality potentially supports a significant proportion of the populations associated with Sherwood Forest ppSPA.

Changes in housing numbers and visitor rates

- New housing detailed in the Bassetlaw Local Plan is located between 8km and 15km from the NNR boundary, whereas >8% of the new housing identified in the Newark and Sherwood Local Plan (comprising 922 dwellings) is located within 2km of the NNR boundary.
- 800 of the latter are located within the ShAP4 – Edwinstowe allocation, situated adjacent to the NNR boundary.
- In the absence of mitigation, it is predicted that there would be a very marked increase in visitor use within Birklands & Bilhaugh SAC/Sherwood Forest NNR of 250% compared to current use (i.e. at the time of survey) as a result of the increase in dwellings from the allocations in the Bassetlaw and Newark and Sherwood Local Plans.

Recreational Zone of Influence

- Sherwood Forest NNR/Birklands & Bilhaugh SAC are predominantly accessed by visitors within the local region and are particularly used by the local dog walking community.

- Using only the two most frequent activity types (walkers and dog walkers), and those who visit at least once a month, a recreational Zone of Influence of 8.9km was identified.
- Within this zone there will be a differential effect relating to distance, such that new development closer to the SSSI is likely to result in proportionally greater impact.

Mitigation

- In line with other mitigation approaches around the country, mitigation could consist of both Strategic Access Management and Monitoring and Suitable Alternative Natural Greenspace/infrastructure projects away from the SAC/NNR. Dedicated staff would be key in delivering and implementing any mitigation and providing an on-the ground wardening presence.
- SAMM would comprise measures within the SAC/NNR to address recreation impacts and make them more resilient to increased recreation. SAMM could comprise:
    - Management of paths to limit desire lines and focus use on particular paths that are appropriately managed;
    - Fencing of key areas of ecological importance;
    - Increased staff presence and wardening resource;
    - Additional resources for signage and interpretation relating to visitor behaviour and sensitive features (such as ground nesting birds);
    - Education & awareness raising initiatives with visitors around where to go, the need to pick-up after their dog, dogs off lead etc;
    - Wider engagement with the local community on site management (via e.g. public forums);
    - Measures to address contamination (particularly dog fouling); and,
    - Monitoring.
- Any SANG/infrastructure project would dovetail with SAMM in providing additional space for recreation and realistic alternatives to Birklands & Bilhaugh SAC/Sherwood Forest NNR.
- With SAMM in place, visitors would become more aware of their impacts and access better managed, and some use would be deflected away from the SAC entirely.

1. Introduction

Overview

1.1 This report was commissioned by Bassetlaw District Council and Newark and Sherwood District Council and is an evidence document to support the emerging Bassetlaw Local Plan.

1.2 The report (and associated survey work), as well as the separate Recreation Impact Assessment of Clumber Park SSSI (Saunders et al., 2022), and the earlier review of available historic ecological and recreation data for the two sites (Saunders & Liley, 2021), has been reviewed by a range of organisations, including Natural England, the National Trust, the RSPB, and seven Local Authorities. The latter comprise: Bassetlaw District Council, Newark & Sherwood District Council, Bolsover District Council, Mansfield District Council, Rotherham Metropolitan Borough Council, Ashfield District Council, Gedling Borough Council, and Nottinghamshire County Council.

1.3 This report comprises a Recreation Impact Assessment of Birklands & Bilhaugh SAC/Sherwood Forest NNR, the findings of which will inform the preparation and implementation of the Bassetlaw District Council Draft Local Plan. The report has informed the Habitats Regulations Assessment of the Local Plan, and will help inform other relevant Local Plans, the preparation of masterplan frameworks for housing allocations, and supplementary planning documents (such as the Worksop Central Development Plan Document).

1.4 The report should be read in conjunction with the separate Recreation Impact Assessment of Clumber Park SSSI (Saunders et al., 2022).

Aims of this work

1.5 This report has been commissioned in order to collect: (a) information on the distribution of Nightjar and Woodlark within the study area; (b) the distribution of habitats within Birklands & Bilhaugh SAC/Sherwood NNR and any evidence of recreation impacts upon them; and (c) detailed visitor information (including the activities undertaken on site, reasons for site choice, and routes taken on site).

1.6 The aim of the work is to identify the level of recreation impacts currently observable on site, the distribution of recreation in relation to sensitive ecological features, and where new housing development might result in recreation impacts for Birklands & Bilhaugh SAC. This includes the production of a recreational Zone

of Influence for the SSSI and an assessment of potential increases in visitor numbers resulting from Local Plan allocations.

1.7 The implications are then discussed with respect to housing and mixed use allocations in both the Bassetlaw and Newark and Sherwood Local Plans, including those allocations sited in close proximity to the site along with recommendations, where relevant, to minimise the impacts of any increased levels of recreation access resulting from the Local Plan allocations.

Other reports

1.8 The work forms part of a series of reports that relate to understanding the impacts of new housing development upon Clumber Park SSSI and Birklands & Bilhaugh SAC/Sherwood Forest NNR. This Recreation Impact Assessment report follows the production of the stand-alone report: Clumber Park SSSI & Birklands and Bilhaugh SAC/Sherwood Forest NNR – review of available historic ecological and recreation data (Saunders & Liley, 2021).

2. Methodology

2.1 This report details the results of a variety of surveys carried out within Birklands and Bilhaugh SAC/Sherwood Forest NNR in spring and summer 2021, comprising:

- Targeted bird surveys for Nightjar *Caprimulgus europaeus* and Woodlark *Lullula arborea*;
- Habitat mapping; and,
- A recreation impact assessment walkover, and two tranches of visitor interview surveys.

2.2 Note that all survey work was carried out against the backdrop of the Coronavirus pandemic. Please refer to Paragraphs 7.37 to 7.39 for more information.

Study area

2.3 Birklands and Bilhaugh SAC/Sherwood Forest NNR consists of, and is located within west central Nottinghamshire, to the south-east of Worksop, in Sherwood and Newark Administrative area (see Map 1). The SAC incorporates an internationally important area of ancient oak woodland, whilst the bordering northern half of the NNR (itself comprising a large proportion of Budby South Forest RSPB Reserve) predominantly consists of heathland habitat. The SAC consists of two discrete parcels; one forming the southern half of Sherwood Forest NNR with the other, smaller, component located within the privately owned and administered Thoresby Estate, to the north-east. The majority of Sherwood Forest NNR is also designated as the larger part of Birklands & Bilhaugh SSSI, which narrowly extends along the eastern boundary of the NNR and along A616/Worksop Road.

2.4 Distinct areas of the site are managed separately by the RSPB and Forestry England (FE), with the latter responsible for management of an area in the southwestern portion of the NNR. The differing areas experience differences in their current management and history, with FE's part of the site consisting of Plantation on Ancient Woodland (PAWS) undergoing conifer removal.

2.5 The study area incorporates the entirety of Sherwood Forest NNR, including the larger component parcel of Birklands & Bilhaugh SAC, and the majority of Budby South Forest RSPB Reserve and Birklands & Bilhaugh SSSI. The smaller, Thoresby Estate, component of the SAC has been excluded from the study area due to the absence of public access within the site, and a resultant assumption that any recreation impacts occurring within it will be minimal.

Woodlark and Nightjar surveys

Woodlark

2.6 Two survey visits were made to the study area in March and April 2021 in order to specifically map the presence of Woodlark. This species returns to breeding territories earlier in the spring than most, with single survey visits in March and April therefore required, as a minimum, to identify likely presence/absence on site. Both visits specifically targeted areas of suitable habitat identified from aerial photographs, historical records, and following consultation with on-site RSPB staff (see Map 2).

2.7 Each survey visit was made in suitable weather conditions (i.e. avoiding days with heavy rainfall or strong winds), and commenced approximately half an hour after sunrise and was completed prior to 11am (when bird territorial behaviour is usually reduced). During each visit the path network across the key areas was walked at a steady pace, and all Woodlark observed or heard, including those overflying the study area, were mapped using standard British Trust for Ornithology field codes. The behaviour of each bird was also recorded (i.e. in song, calling, with food, etc) and the presence of any juvenile birds or family parties noted.

Nightjar

2.8 Nightjar are a late-season arriving, nocturnal, migrant species, and additional species-specific surveys were therefore carried out to record the distribution of this species within the study area. Repeat survey visits were made to the transect route identified in Map 2, with the first visit undertaken at the start of June and the second at the end of the month. The transect comprised a fixed line across the survey area along which observations were made. The transect route again specifically targeted areas of suitable habitat identified from aerial photographs, historical records, and following consultation with on-site RSPB staff.

2.9 Each survey visit commenced half an hour after sunset and was concluded within a subsequent 2.5 hour period. During each visit the transect was walked at a steady pace and all Nightjars heard or seen were mapped, with the behaviour observed (e.g. churring, wing clapping, in flight, etc) also recorded.

Habitat mapping and recreation impact assessment walkover

Habitat mapping

2.10 Habitat mapping was based on an appraisal of aerial photography and historical habitat maps of the site (from 1977 and 1997). These were re(assessed) during the recreation impact assessment walkover (see section 2.11), with the habitats classified using UK Habs[1] categories (modified to differentiate different broad-leaved woodland types on site) and minor amendments made, as required, to any observed changes to the habitat types present in the intervening period.

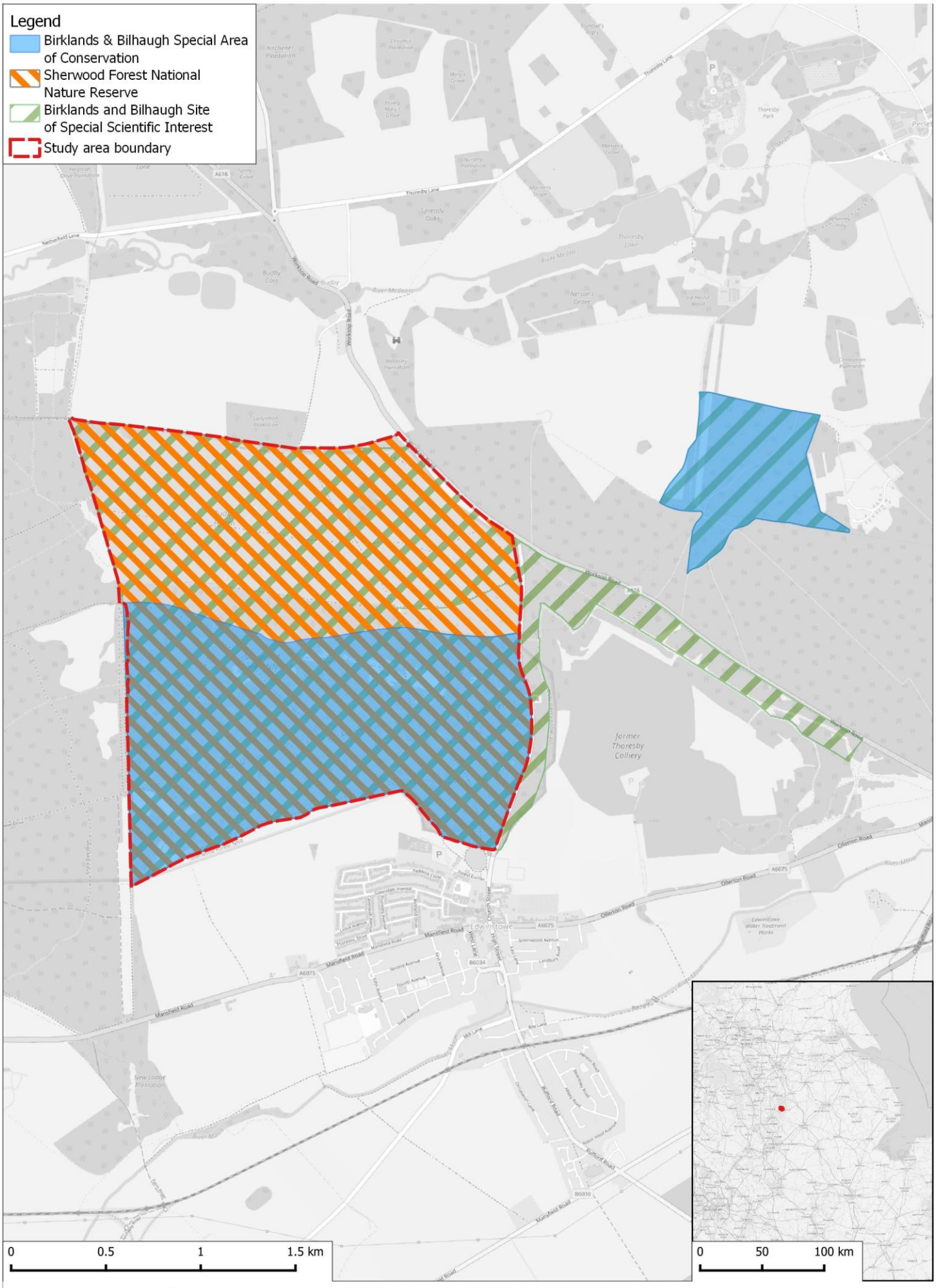
Recreation impact assessment walkover

2.11 A walkover survey was carried out within the Sherwood Forest NNR boundary in May 2021. As much of the site as possible was covered during the visit, and instances of recreational pressure mapped and recorded and the severity of the impact noted (light, moderate, severe), using our standard approach.

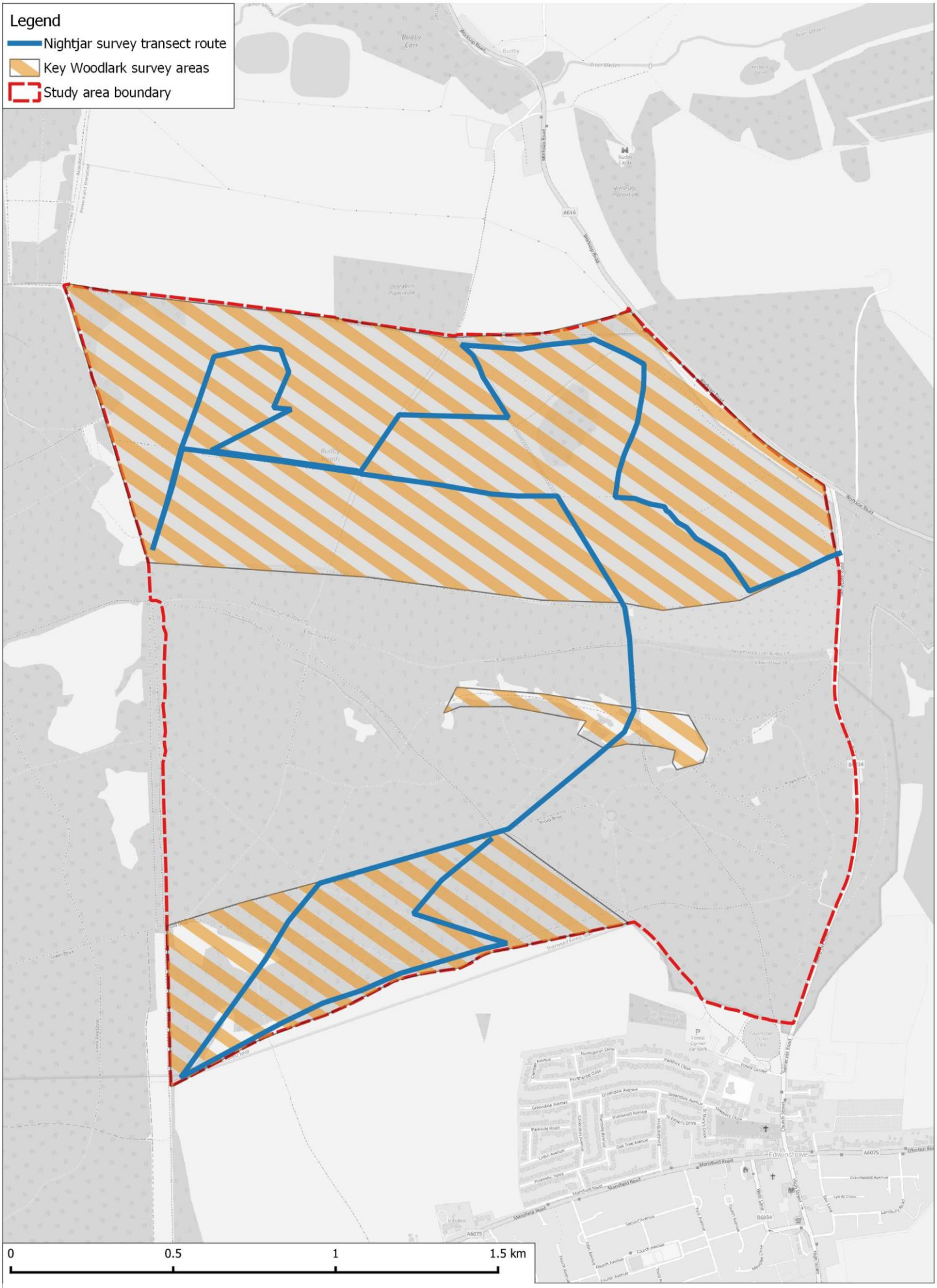
2.12 Impacts characterised as "light" were those that were either very highly localised (e.g. bare ground around a bench) or where the vegetation was somewhat modified but species characteristic of the habitat were still present (e.g. trampling pressure creating a shorter sward with more annuals and rosette species and little or no bare ground). Moderate impacts were generally those where vegetation was modified and no longer characteristic of the habitat (e.g. comprising ruderal or nitrophilous species such as Nettle) or bare ground was more extensive. "Severe" impacts where those where there was widespread loss of vegetation and compaction (not just confined to a path), for example at honeypot areas (such as the expanded main routes from the Visitor Centre into Sherwood Forest).

[1]UK Habitats Classification - https://ukhab.org/

Map 1: Study area (inset provides wider geographic context)



Map 2: Key Woodlark survey areas and Nightjar survey transect location



Visitor surveys

2.13 Visitor interviews and tally counts were carried out at 2 survey locations within the Birklands & BIlhaugh SAC/Sherwood Forest NNR study area (see Table 1 and Map 3) in 2021, during two separate survey periods (with both points surveyed during each). The first of these was in the spring during school term time (27th May to 12th June) and the second during the summer school holiday period (12th August to 21st August).

Table 1: Survey locations (also see Map 3)

Location number & name	Location details	Periods surveyed
1 – Budby South Forest RSPB Car Park	In small formal RSPB car park on eastern side of reserve, alongside access gate.	Term time & school holidays
2 – Sherwood Forest NNR Main Entrance	Alongside information board on main southern access track into Sherwood Forest NNR, in proximity to large formal car parks and Visitor Centre.	Term time & school holidays

2.14 The survey locations were selected to give a good geographic spread across the site and were at parking localities and/or pinch points where visitors could easily be intercepted, with Survey Point 2 comprising the main access point into the woodland/SAC component of the NNR, in proximity to the Visitor Centre. The location of all survey locations was reviewed and agreed with Bassetlaw District Council and the RSPB.

2.15 All visitor interviews and counts were conducted by trained, experienced, Footprint Ecology visitor surveyors. A tally was kept of visitors using the site whilst interviews were being conducted, with the numbers of groups, people, minors (under 18 year olds), and dogs passing through the site across the interview survey period recorded.

2.16 Face to face interviews were carried out with a random selection of visitors, with the surveyors interviewing the first person/s they saw after completing the previous interview. When groups were encountered, only one person within each was interviewed, and no unaccompanied minors were approached. Interviewees were asked a range of questions, including their point of origin (home postcode), their reasons for using the area, and their mode of transport. A full copy of the questionnaire is provided in Appendix 1.

2.17 Surveys were conducted on tablets hosting SNAP[2] survey software, a dedicated market research software which allows surveys to be done on mobile devices. The software allowed the questionnaire to be tailored, e.g. only asking dog-walkers about dog related behaviour. A GPS facility ensured that the surveyor was standing in the correct place, and each questionnaire took less than, or approximately, 10 minutes to complete.

2.18 Interviewees were also asked to identify the route they had taken whilst undertaking their specific recreational activity within the site boundary, with the routes and access/egress points used drawn on suitably scaled field maps. Each interview and field map were given the same unique identifier so that they could be cross-referenced during subsequent analyses.

2.19 The surveyors spent 16 hours at each of the 2 survey points, during each of the relevant spring and summer survey tranches, with this period split evenly between a weekday and weekend day. Surveys were carried out within the following time periods: 0700-0900hrs; 1030-1230hrs; 1400-1600hrs, and 1700-1900hrs, and were all completed in daylight hours.

[2] https://www.snapsurveys.com/

Map 3: Visitor interview survey locations

Modelling changes in visitor numbers

Changes in housing numbers

2.20 The level of housing increase in the area surrounding Sherwood Forest NNR, as a result of allocations detailed the Bassetlaw and Newark and Sherwood Local Plans, was assessed using a national postcode database. This allowed the total number of existing residences surrounding the NNR to be extracted using concentric buffers drawn at 500m intervals (out to 30km).

2.21 Bassetlaw District Council and Newark and Sherwood District Council provided GIS shapefiles of the relevant allocations detailed in their respective Local Plans. These comprised "DPD_Allocations_Ho", "DPD_Allocations_Mu_H", "NAP2" and "ShAP4" from Newark and Sherwood and "Garden Village", "Mixed use allocation", and "New Housing" from Bassetlaw. Points representing the relevant proposed maximum number of dwellings within each of the allocations, using information in the relevant Local Plan, were then randomly distributed within their respective boundaries (with a minimum of 10m between each dwelling).

2.22 We then used the same concentric 500m buffers to extract the number of new residences within them resulting from allocations in the two Local Plans. The percentage increase in housing in each of the 500m bands as a result of the allocations was then calculated using the two extracted datasets.

Changes in visitation

2.23 The home postcode data collected from interviewees was used to model potential changes in visitor rate to the survey area resulting from residential allocations detailed in the Bassetlaw and Newark and Sherwood Local Plans.

2.24 The number of interviewees recorded in an area relative to the level of housing can be used to assess the 'visit rate' in relation to distance from the site. Visit rates decrease with increased distance from the site (i.e. people who live close to sites are more likely to visit them), although the slope of this relationship, when presented graphically/statistically, often differs between locations and describes variation in their relative draw.

2.25 We again used the national postcode database to extract the total number of existing residences surrounding each survey point (extracting information using concentric rings drawn at 500m intervals around each point, out to 30km). We then extracted the number and location of all interviewee residences surrounding each respective survey point. This allowed us to calculate the number of interviewees

(from 16 hours of survey) per household (i.e. the visit rate). These rates were then plotted in increasing distance bands from the survey point, with a curve then manually fitted to describe the relationship shown (i.e. how the visit rate at each survey location changed with distance). The fitted curves for the interview survey postcode data were then used to predict the potential increase in visits for the combined allocations based upon distance from the different survey points.

3. Woodlark and Nightjar

Overview

3.1 The approximate location of Nightjar and Woodlark territories (see Map 4) have been identified using standard territory mapping techniques (Bibby et al., 2000), whereby clusters of records of territorial birds or birds in song, as well as those visiting nest sites, have been grouped when observed over multiple dates. This had been further informed by the identification of synchronously singing birds, allowing the presence of two different abutting territories to be delineated. It should be noted however that the identification of territories within localities with an abundance of registrations (e.g in the central area of Budby South Forest RSPB Reserve) was far from straightforward, and the territories presented in Map 4 are considered precautionary.

3.2 Incidental records of a range of other notable bird species were also noted during the Nightjar and Woodlark surveys.

Species distribution within the study area

Woodlark and Nightjar

3.3 Woodlark were recorded exclusively from heathland and acid grassland habitats within Budby South Forest RSPB Reserve (see Map 4), equating to approximately 4 to 6 territorial birds/pairs. Observations were concentrated in the western half of the RSPB Reserve. Pairs were recorded collecting food on the extreme western boundary of the study area, and within the central area of the RSPB Reserve, and it was considered likely that the former birds were visiting a nest site within the immediate vicinity of the observation. Birds were often observed in song flight over the heath or perched in trees/foraging in areas adjacent to the path network running across the site.

3.4 Nightjar were distributed more widely across the study area (see Map 4) and it was estimated that 4 to 5 churring/territorial males were present over the spring. Records were concentrated within two disparate locations within the study area. These comprised several birds on territory across heathland areas within the RSPB Reserve and at least one just outside the extreme south-western corner of the study area, alongside an area of plantation woodland managed by Forestry England. The RSPB additionally recorded a single male churring within the southwestern site boundary (not shown on map), to the east of the southernmost

Footprint Ecology records shown on Map 4, although it is not clear whether this comprised a separate individual/territory to that already depicted.

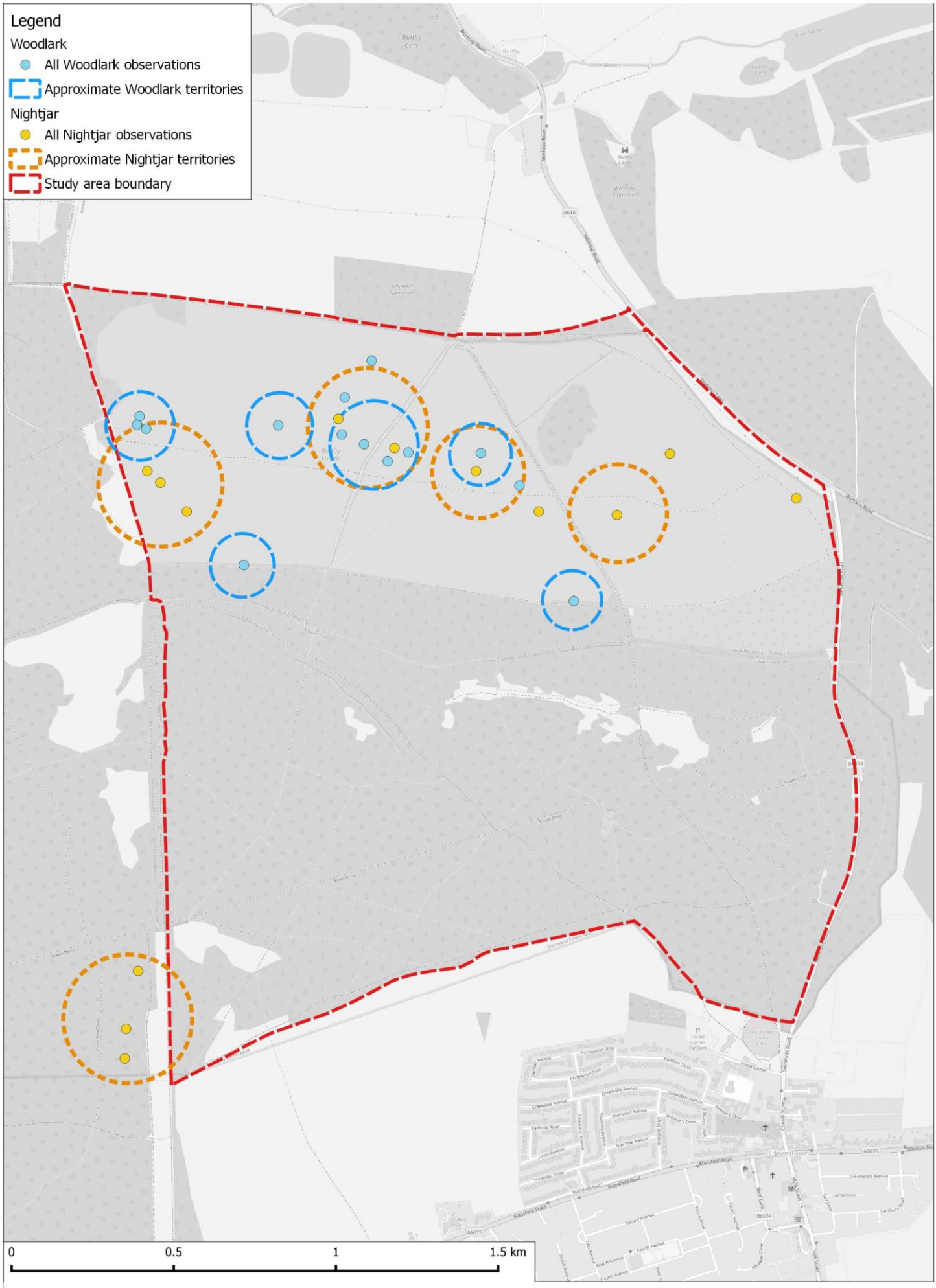
Other notable species

3.5 Although outside the scope of the targeted Woodlark and Nightjar surveys, a range of other notable bird species (comprising those listed on Schedule 1 of the Wildlife and Countryside Act 1981[3] and/or on the Red or Amber List of Birds of Conservation Concern[4]) were anecdotally recorded during the survey visits.

3.6 These species included multiple territorial Tree Pipit within the heathland/acid grassland areas of Budby South Forest RSPB Reserve, as well as Yellowhammer, Cuckoo, and Lesser Redpoll. Hawfinch were also noted overflying the area on two separate occasions. During the Nightjar surveys Woodcock and Tawny Owl were both found to be widespread along the transect route (within both the SAC and the RSPB Reserve). Although not qualifying as notable under the criteria identified above, the presence of two recently fledged broods of Long-eared Owls within the RSPB Reserve was also notable, as this secretive and under-recorded species is highly susceptible to disturbance throughout its annual cycle.

[3] Schedule 1 - Wildlife and Countryside Act 1981
[4] Birds of Conservation Concern

Map 4: Distribution of Nightjar and Woodlark



4. Habitats and recreation impacts

Habitats present within study area

4.1 The habitats recorded within the study area boundary are depicted in Map 5. They include a mix of semi-natural broad-leaved woodland, broad-leaved, mixed, and coniferous plantation, and open areas of heathy grassland mosaic with scattered trees. It should be noted that a small number of the habitats present did not fall implicitly within standard UK Habs categories.

Semi-natural broad-leaved woodland

4.2 The Birklands and Bilhaugh SAC is designated for its old acidophilous oak woods with *Quercus robur* on sandy plains. Within Sherwood Forest, this largely takes the form of ancient wood pasture, with widely spaced, standing veteran oak trees (both Pendunculate and Sessile Oak) that have gradually become surrounded by secondary Silver Birch or planted oak. The site has one of the largest concentrations of ancient trees in the UK. The ground flora is generally dominated by Bracken, except where it has been modified by recreational pressure (e.g. around veterans, where it may be entirely absent) and along paths (where it has been replaced by more nitrophilous vegetation, often grassy and including Nettle, Dandelion etc). The exact boundaries between plantation and woodpasture are often unclear on the ground but could be deduced from historic maps. The area where the visitor complex was previously situated has not yet recovered following the remove of the buildings and development of a new centre outside the SAC boundary.

Plantation woodland

4.3 Plantation woodland is frequent throughout both Budby South Forest and Sherwood Forest. In Budby South Forest, there are numerous clearly defined areas of oak and pine plantation, including Church Road, Crown Hill and Pigeon Pond plantations, plus smaller areas. In some places the boundaries are a little blurred with secondary woodland (mainly Silver Birch and Scots Pine). In general, these areas are unaffected by recreational pressure.

4.4 Several areas within Sherwood Forest have also been planted. In some cases this is apparent in the regular spacing of trees and even age structure, but boundaries are not always clear. In some places where restoration to wood pasture is taking places, planted trees have been removed, resulting in dense growth of young

birch. Some of these areas are affected by trampling and contamination along paths, although this reduces with distance from the Visitor Centre and Major Oak.

Heathland/grassland mosaic

4.5 Much of Budby South Forest RSPB Reserve is dominated by heath. In places this is grassy, whilst other areas are Heather dominated, and Bracken is abundant and forms continuous cover in patches. The heather is general even-aged (mature) although linear strips have been cut in some areas, presumably to diversify the structure. There are also some scrapes with associated banks (mainly dominated by more mesotrophic grasses such as Yorkshire Fog). Other species include Heath Bedstraw and Sheep's Sorrel.

4.6 The acid grassland is generally quite species poor (with Common Bent, Sweet Vernal-grass and occasional Mat Grass and Wavy Hair-grass). In areas experiencing intermediate levels of disturbance (such as along paths) a shorter, more diverse sward supports a range of annual species including Birdsfoot, Common Whitlowgrass, Parsley Piert, Squirrel's-tail Fescue, as well as Buck's-horn Plantain and Procumbent Pearlwort (e.g. point 18).

4.7 Bare ground is generally limited to tracks, paths and desire lines. The bare ground along the Public Right of Way (PRoW) is of limited interest – these have been surfaced in the path and are pebbly and compacted. Within the grazing compartments the bare ground is of more interest and there are also some scraped strips parallel to tracks, created to provide additional habitat for invertebrates at risk of trampling on main path (latterly confirmed by RSPB).

4.8 The heathland areas support scattered trees, particularly Silver Birch with some open-grown oak. There are also heathy glades within Sherwood Forest, mostly dominated by Wavy Hair-grass with Heather, Tormentil and Heath Bedstraw.

Grassland margins

4.9 Within Budby South Forest, the larger tracks tend to support a more mesotrophic, rank, sward along the ungrazed margins, particularly on the periphery of the site; these include Hogweed, Cow Parsley, Cock's-foot, etc, and are likely to be a result of lack of grazing combined with some eutrophication e.g. from dog faeces and also in places from the dry deposition of nitrous oxides from road traffic.

Map 5: Broad-scale UK Habitats classification of Birklands & Bilhaugh SAC/Sherwood Forest NNR

Recreation impacts on habitats

Overview

4.10 The route taken during the recreation impacts walkover within the study area, and the location of any recreation and habitat target notes made, are depicted in Map 6. Table 2 provides a summary of the observed recreational impacts on habitats within Birklands and Bilhaugh SAC/SSSI. Further background and context on these recreation impact pathways is set out in the earlier review report Saunders & Liley (2021).

4.11 Note that the table summarises impacts that were observable at the time of the site visit. Other impacts (such as fire) may not necessarily be picked up in our approach due to the likely sporadic (and weather dependent) occurrence. It should also be noted that the assessment is solely based on a walkover and visual assessment by experienced ecologists and long-term subtle effects, for example associated with veteran tree health, may not necessarily have been recorded. The observed recreation impacts are described more fully below, with detailed target notes provided in Appendix 2.

Map 6: Recreation impacts walkover route

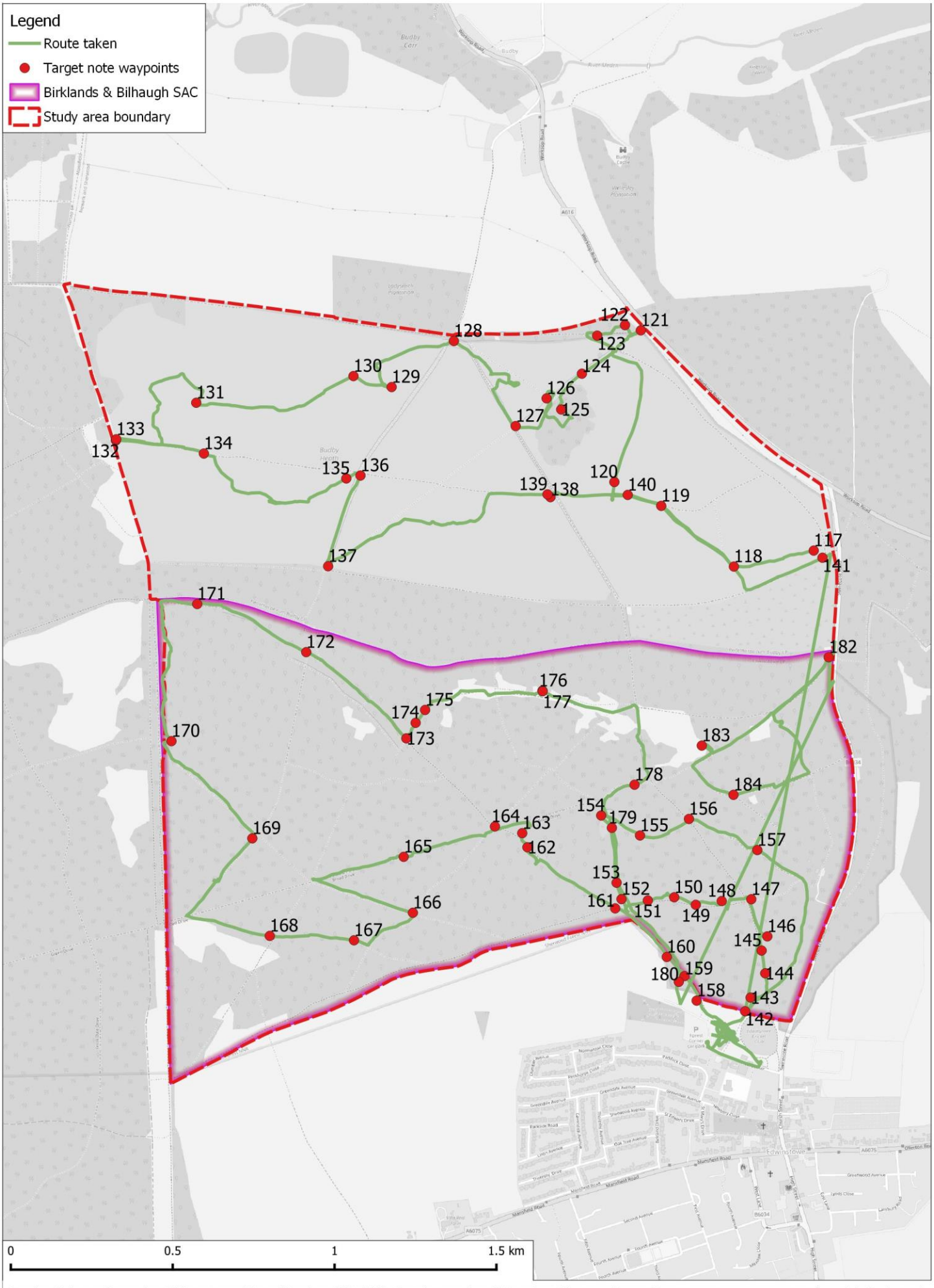


Table 2: Summary of recreational impacts on habitats of Birklands and Bilhaugh SSSI/SAC

Habitat	Fire	Trampling	Physical Damage	Contamination
Heathland/acid grassland	Not observed	Localised loss of vegetation, soil compaction. Generally a light impact, restricted to paths and tracks with an expanded zone around path junctions	Not observed	Eutrophied path edges (replacement of characteristic heathland/grassland vegetation) on main routes/entrances
Wood pasture	Not observed	Loss of ground flora and leaf litter habitat plus compaction (inc. around veteran trees) – severe in places	Damage to exposed roots of veteran trees and some abrasion to tree limbs and trunks from climbing. Removal of deadwood from ground through creation of dens	Eutrophied path edges (loss of characteristic woodland ground flora); occasional rubbish
Plantation	Not observed	As above where features are present	Damage to exposed roots of veteran trees where present	Eutrophied path edges (replacement of characteristic woodland ground flora where present)

Fire

4.13 No evidence of wildfire (including barbeques and campfires) was evident at the time of the survey.

Trampling

4.14 Within Budby South Forest, trampling damage is apparent throughout but is generally light or highly localised. Heath vegetation is absent from paths in otherwise heathy areas, having been replaced by acid grassland (although it is occasionally present in the centre of less-used tracks, e.g. point 124). In places, this acid grassland has in turn been replaced by trampling-resistant rosette species of less interest, such as Broad-leaved Plantain (e.g. point 133). At major junctions where trampling is more severe, there are patches or strips of bare compacted ground (e.g. point 128). However, in places, moderate trampling is providing additional diversity through the creation of suitable conditions for annual plants species that are outcompeted in the thicker swards characteristic of most of the site (e.g. point 118). The main Rights of Way, which are fenced out of the grazing compartments, have a pebbly compacted surface generally of little conservation interest (see point 127).

4.15 Trampling impacts are therefore currently largely localised and limited in Budby South Forest, and in some places are beneficial. However, there are frequent small desire lines and livestock paths (e.g. point 120) and also occasional disused tracks or temporary tracks caused by management work – all of these are likely to become more heavily used should visitor pressure increase. This would increase the area of affected vegetation and reduce the area of undisturbed heathland.

4.16 In contrast, within Sherwood Forest, the impact of trampling is very evident. The main paths (e.g. point 152) are generally much widened and compacted and lack vegetation and leaf litter, and with modified margins, where these are still present (see contamination). Some unsurfaced paths are also quite poached. These impacts are greatest close to the new Visitor Centre and along routes to the Major Oak. Within this area, all veteran trees that are visible from the paths have desire lines leading to them (sometimes through fences). These paths are often compacted and denuded of vegetation (e.g. point 148a), and the trees generally have a similarly compacted area beneath the canopy (e.g. point 148). Even many of those further afield have similar, although less intense, impacts evident. Trampling is also exposing the roots of trees adjacent to paths (e.g. point 160).

Physical damage

4.17 No signs of physical damage were observed in Budby South Forest during the survey.

4.18 In Sherwood Forest, damage included bike jumps (some now dismantled). Repeated climbing is likely to damage trees (e.g. breaking branches, damaging bark) and this was evident from scuffs on trees with low branches (see point 176). There were also numerous dens, which both remove deadwood from the forest floor (destroying habitat for invertebrates) and cause people to approach them, leading to desire lines and associated trampling which results in soil compaction and the loss of vegetation and leaf litter. There is also significant impact in the vicinity of the Major Oak, a consequence of the long-term status of the site as a key visitor attraction. This includes loss of habitat through provision of picnic areas etc. (e.g point 154).

Contamination

4.19 At Budby South Forest, there is evidence of long-standing eutrophication at some access points and within the fenced bridleway and path (e.g. point 127), with ranker grasses and nitrophilous species such as nettles in places (although sward height is in part also due to lack of grazing). Where most flowery (e.g. with Hogweed – see point 141) this may provide needed nectar sources for invertebrates.

4.20 Within Sherwood Forest, the effects of contamination (from dog faeces) are apparent on the edges of paths (where vegetation has not already been destroyed by trampling) (point 173). Typically, the ground flora of acidic, well-drained wood pasture would be characterised by acid grassland and heathland species in open areas (including Wavy Hair-grass, Heather, Bilberry, Heath Bedstraw, Tormentil) and Bracken and Creeping Softgrass under a closed canopy. However, path edges within Sherwood Forest more frequently support species such as docks, Nettle, Cleavers, Dandelion, Cock's-foot and Perennial Ryegrass. Wood Avens and Creeping Soft grass are present where recreational pressure is lower.

Point 124, heathy track

Point 127, surfaced and fenced PRoW

Point 133, degraded vegetation

Point 120, livestock path

Point 128, grassy junction, bare patch

Point 152, e.g. of path widening

Point 118, moderate trampling

Point 148, desire line to veteran tree

Point 148, compaction around veteran tree

Point 141, more mesotrophic sward with nectar sources

Point 176, scuffing associated with low branches

Point 173, grassy, eutrophied verges

Point 160, loss of soil and compaction resulting in exposed roots

Point 154, picnic area

Point 127, eutrophied verges

Recreation impacts in relation to SSSI features

4.21 Table 3 provides a summary of Natural England's condition assessment of the Birklands and Bilhaugh SSSI in relation to the recreational impacts observed during the 2021 survey. Map 7 details the location of the individual SSSI units.

4.22 Budby South Forest condition was assessed as unfavourable recovering largely due to dense bracken, scrub and insufficient structural variation in the sward, issues which are being addressed through a Higher Level Stewardship (HLS) scheme. The current recreational impacts do not appear to be contributing to the unfavourable condition. The minor loss/degradation of habitat caused by trampling and nutrient enrichment along paths has not been identified as a problematic. In localised areas, a degree of recreational pressure may be contributing to recovery through (i) an increase in ephemeral acid grassland plants, (ii) a small increase in nectar sources through conversion of heathland to more mesotrophic swards with flowering umbellifers, and (iii) the creation of bare ground (although this is often too compacted to be suitable for invertebrates). These benefits are at a very small scale and are entirely dependent on the level of recreational pressure – an increase in recreation could increase the distribution of such impacts but increased intensity at existing locations would ultimately destroy the feature of interest.

4.23 Sherwood Forest was also assessed as unfavourable recovering. It is being restored to wood pasture from more closed canopy woodland (both secondary woodland and plantation) and failed to meet a range of targets relating to a suitable age structure in the trees, canopy competition of veterans, cover of bracken and long grass and a lack of nectar and seed sources. This is being addressed through a Countryside Stewardship Scheme and is a long-term project. Most of the recreational impacts observed do not directly relate to the failed targets. However, issues such as compaction will affect the long-term health of trees and the loss of habitat through path widening is cumulative. The requirement for a high level of visitor management work means less resources and staff time are available for the required habitat management. SSSI units 001 and 002 are unfavourable.

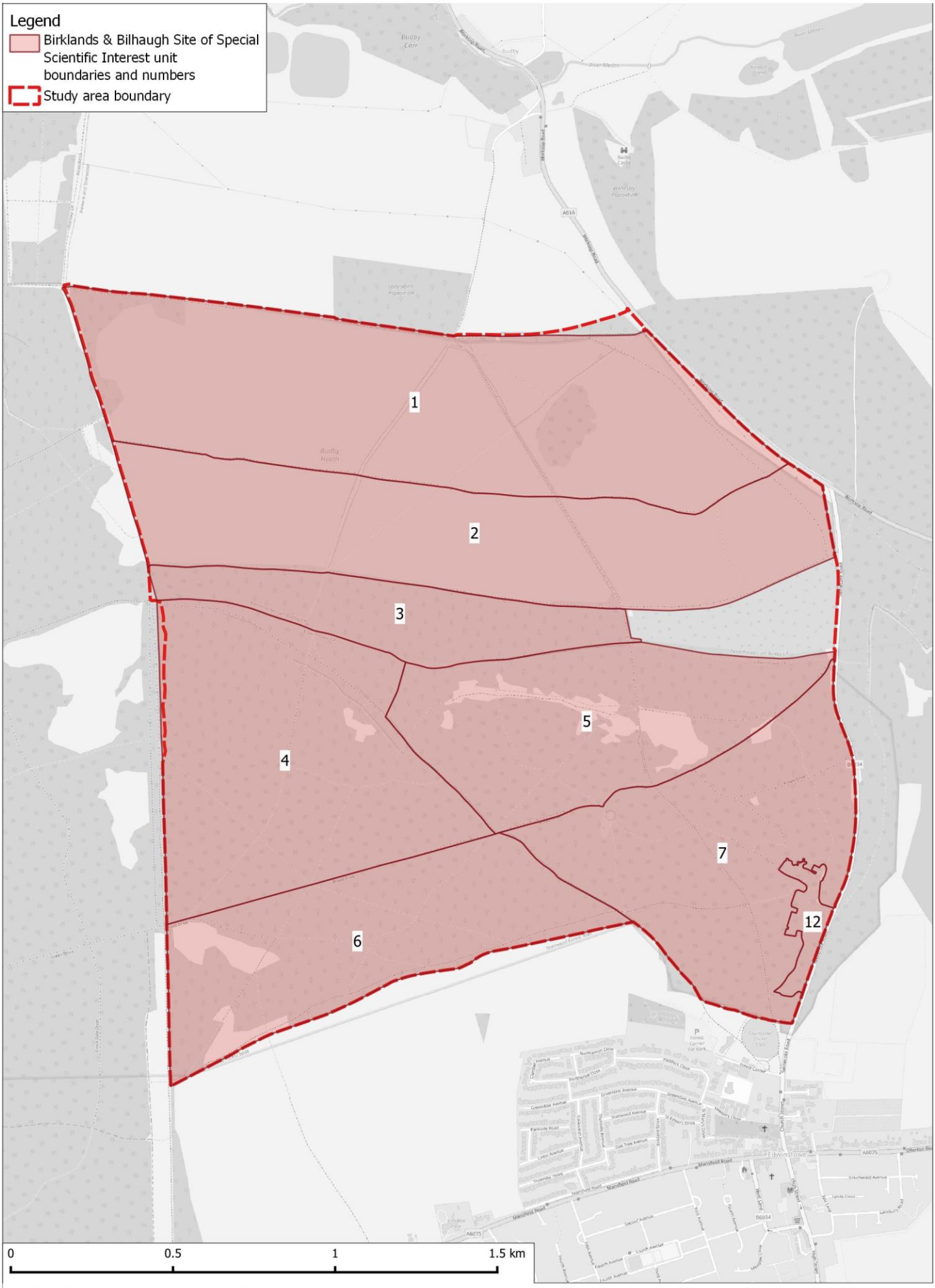
Table 3: Summary table of the condition of SSSI units (drawn from Natural England's condition assessment[5](undertaken in 2016) and recreational impacts observed during the 2021 survey.

SSSI unit	Status	Summary of negative recreational impacts	Summary of postive recreational impacts	Relevance to condition status
1, 2	**Unfavourable recovering** Failed target for dense bracken cover, dominance of Wavy Hair-grass, scrub cover, lack of nectar sources for invertebrates, lack of pioneer stage Heather (002)	• Loss of heathland vegetation and conversion to grassland along paths and notably at path junctions (historic) • Modification of path edge vegetation along PRoWs and near access points to more mesotrophic stands (although this can provide nectar source for inverts where flowery) • Change of vegetation on paths from acid grassland to ruderal species that can withstand trampling and compaction	• Localised creation of bare ground (although not always suitable for inverts) • Increase in species diversity of acid grassland along moderately trampled paths through creation of conditions suitable for ephemeral and smaller acid grassland species	• Small scale reduction in dominance of Wavy Hair-grass and bracken with associated increase in diversity • Small contribution to limited provision of nectar sources
4 – 6, 7	**Unfavourable recovering** Failed targets for appropriate variation in tree size classes, young oak (too low), fallen dead wood (too low), presence of grass characteristic of	• Trampling leading to path widening and compaction, loss of woodland understorey and litter along paths • Modification of path edge vegetation to more mesotrophic swards		• Modification of path edges is potentially contributing to the failure of the characteristic grass type and presence of nectar sources target • Den building detracts from dead wood target (localised) • Necessity for significant visitor management may be detracting from time

[5] https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003476&ReportTitle=Birklands%20and%20Bilhaugh%20SSSI

SSSI unit	Status	Summary of negative recreational impacts	Summary of postive recreational impacts	Relevance to condition status
	NVC type, cover of bracken and associated litter, canopy competition of the Ancients, presence of seed heads for overwintering invertebrates, presence of nectar sources-sward and shrubs, over long grass			and resources for the necessary habitat management

Map 7: Birklands & Bilhaugh SSSI unit boundaries and numbers



Recreation impacts in relation to SAC features

4.24 The designated feature at Birklands and Bilhaugh SAC is Annex I habitat H9190 Dry oak-dominated woodland, which at this site takes the form of ancient wood pasture. A number of issues are currently impacting or threatening the condition of the features. The 2015 Site Improvement Plan (SIP) for the site[6] identified public access/disturbance as the foremost pressure. Since the SIP was produced, the Visitor Centre has been removed from within the SAC and the location is being restored to wood pasture.

4.25 However, the SIP notes that "*the use of the SAC as a public park is relatively recent and, in common with other wood pasture sites like Burnham Beeches and Epping Forest, can cause localised soil compaction, nutrient enrichment, direct loss of trees (vandalism, health and safety), introduction of non-native species (including new diseases) as well as an altered ecological succession. Such impacts can affect the health of soils, tree roots and the associations with mycorrhizal fungi which in turn can have impacts on the health of the veteran and ancient trees as well as emerging cohorts*". The recreation impacts survey undertaken for this report suggests that there is clearly an ongoing problem with localised soil compaction, nutrient enrichment, and damage to trees.

[6] http://publications.naturalengland.org.uk/publication/6727956374224896

5. Visitor survey results

5.1 The following section details the results of the visitor interview surveys carried out during spring and summer 2021 at Birklands & Bilhaugh SAC/Sherwood Forest NNR. An overall summary is provided, in addition to the results of the tally counts, followed by in-depth analyses of responses to the questionnaire (see Appendix 1).

Summary

5.2 A total of 299 individuals were approached for interviews across the two survey periods (see Table 4). Approximately half of the individuals approached were receptive to being interviewed. 38% of those approached refused to be interviewed, with approximately 12% having already been interviewed during a previous session. The latter category comprised approximately 23% of those approached at Survey Point 1 (Budby South Forest RSPB Reserve Car Park), potentially indicating a large proportion of frequent visitors at that location.

Table 4: Summary of visitor interviews carried out and reasons for refusals, stratified by survey location

Survey location	Interviews carried out	Already Interviewed	Number of refusals		Total approached
			Language issues	Other reasons	
1 - Budby South Forest RSPB Car Park	56 (51.9%)	25 (23.2%)	0 (0.0%)	27 (25.0%)	108 (100%)
2 - Sherwood Forest NNR Main Entrance	95 (49.8%)	10 (5.3%)	3 (1.6%)	83 (43.5%)	191 (100%)
Total	**151 (50.6%)**	**35 (11.8%)**	**3 (1.1%)**	**110 (36.8%)**	**299 (100%)**

Tally Counts

5.3 Tally counts were maintained by the surveyor when on-site conducting interviews. These tallies included the number of people entering, leaving, and passing through at the survey point, therefore providing an indication of total 'footfall' within the relevant survey window (32 daylight hours, across seasons, at each Survey Point). Nevertheless, it was noted during the study that a large proportion of those interviewed were carrying out circular walks on site, with tally counts of those entering and leaving at each Survey Point being similar. Therefore, in order to avoid duplication, only counts of those entering at the Survey Point are provided here.

5.4 Data are summarised in Table 5 and Map 8, which present the combined daily weekend and weekday tally totals for those entering at each survey location, stratified by survey period. The total counts of both minors and bicycles (cyclists) are also incorporated in the total number of individuals column in the table.

Table 5: Tally counts of groups, individuals, minors, dogs, and bicycles recorded entering at each survey location, stratified by survey period. Grey shading reflects the largest two values in each column, with the darker shading highlighting the larger value. Spring surveys are highlighted blue and summer surveys are highlighted pink.

Survey location	Survey period	Total groups	Total individuals	Total minors	Total bicycles	Total dogs
1 - Budby South Forest RSPB Car Park	Spring	42	94	21	3	26
	Summer	43	79	17	0	31
2 - Sherwood Forest NNR Main Entrance	Spring	277	820	172	37	86
	Summer	576	1,871	517	41	176
Total	**Spring**	**319**	**914**	**193**	**40**	**112**
	Summer	**619**	**1,950**	**534**	**41**	**207**

5.5 Overall, similar tally totals were recorded across the survey locations during both the spring and summer survey periods. A total of 319 groups, comprising 914 individuals, were recorded entering the study area during the spring survey period, with 619 groups and 1,950 individuals recorded during the summer survey period. This equates to 57.2 individuals per hour of survey across the two survey locations in the spring, and 121.9 individuals per hour of survey in the summer. The tally data varied between survey locations however, with that from Survey Point 2 (Sherwood Forest NNR Main Entrance) being consistently much larger than at Survey Point 1 (Budby South Forest RSPB Car Park).

5.6 A marked seasonal effect was also apparent at Survey Point 2, with much larger tallies made during the summer survey period, whereas the tallies from Survey Point 1 were relatively similar across the two survey periods. The largest total number of minors (517), bikes (41), and dogs (176) were all made from Survey Point 2 during the summer survey period. The extreme scarcity of bicycle counts within the tally data from Survey Point 1 was also noteworthy.

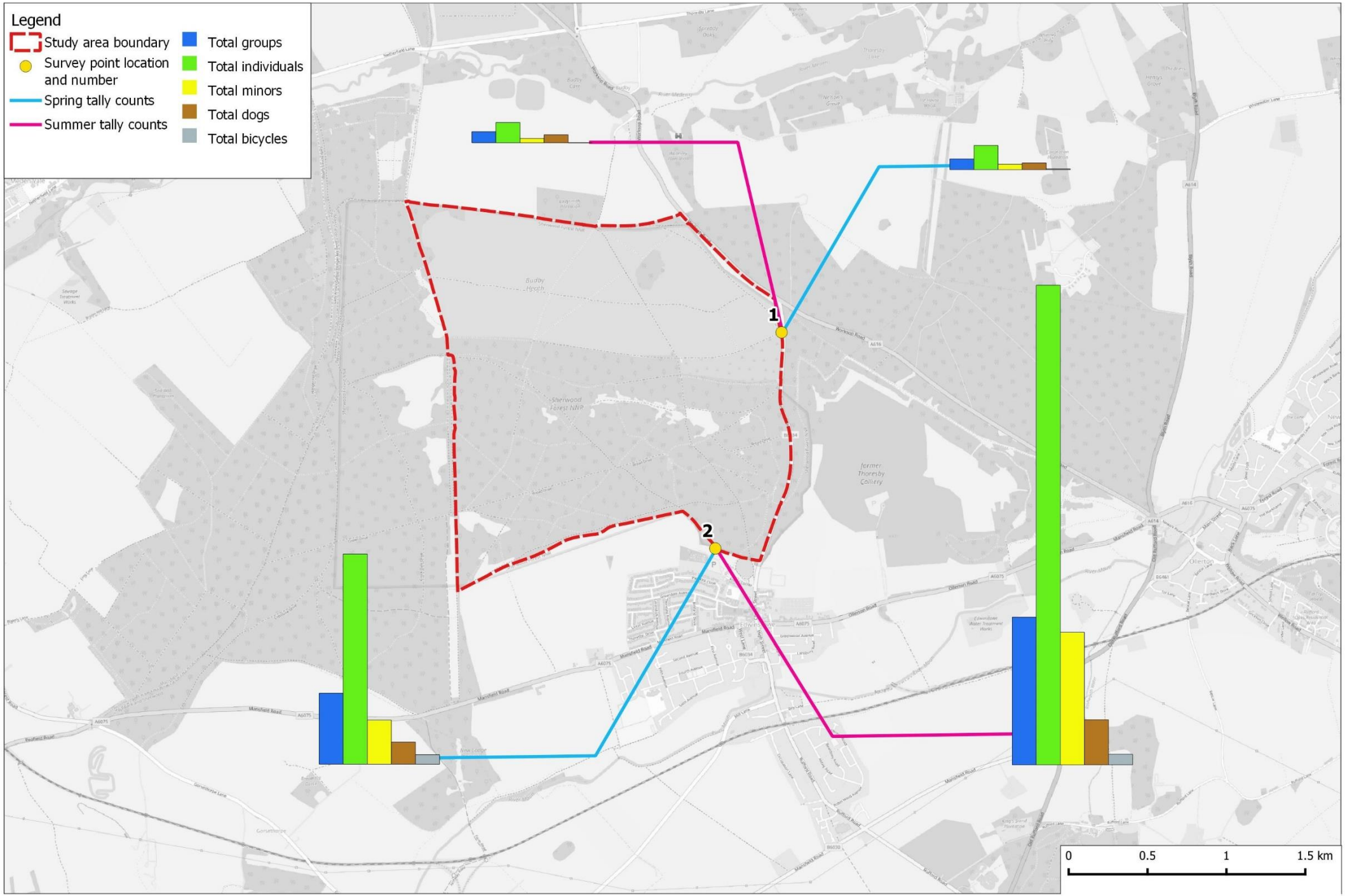
5.7 The figures in Table 5 can be used to calculate ratios of people and dog numbers with respect to group size at each of the survey locations. These are provided in Table 6. Survey Point 2 (Sherwood Forest NNR Main Entrance) recorded the largest mean number of people per group (2.4) during the summer survey period, with Survey Point 1 (Budby South Forest RSPB Car Park) recording the largest mean number of people per group (2.3) during the spring survey period. The smallest mean number of people per group (1.9) was recorded from Survey Point 1 during the summer survey period.

5.8 The joint largest mean number of minors per group (0.5) were recorded from Survey Point 1 (Budby South Forest RSPB Car Park) in the spring and from Survey Point 2 (Sherwood Forest NNR Main Car Park) in the summer. The largest mean number of dogs per group (0.8) was recorded from Survey Point 1 during the summer survey period, with the joint second largest value (0.7) recorded from both survey locations during the spring. The smallest number of minors per group (0.3) was recorded from Survey Point 2 during the spring, whilst the smallest number of dogs per group (0.4) was recorded from Survey Point 2 during the summer survey period.

Table 6: Mean number of individuals, minors, and dogs per group at each survey location, stratified by survey period. Grey shading reflects the largest two values in each column, with the darker shading highlighting the larger value. Spring surveys are highlighted blue and summer surveys are highlighted pink.

Survey location	Survey period	Mean no. individuals per group	Mean no. minors per group	Mean no. dogs per group
1 - Budby South Forest RSPB Car Park	Spring	2.3	0.5	0.7
	Summer	1.9	0.4	0.8
2 - Sherwood Forest NNR Main Entrance	Spring	2.2	0.3	0.7
	Summer	2.4	0.5	0.4
Total	**Spring**	**2.9**	**0.6**	**0.4**
	Summer	**2.4**	**0.5**	**0.4**

Map 8: Tally counts of visitors entering at survey locations, stratified by survey period



Visitor survey: interviews

Overview

5.9 A total of 82 interviews were conducted across the two Survey Points during the spring survey period (see Table 7), with a further 70 interviews undertaken in total during the summer survey period. The largest number of total interviews (82 combined across the spring and summer) were carried out at Survey Point 1 (Budby South Forest RSPB Car Park), and a larger number of interviews were carried out at both survey locations during the summer survey period than during the spring. More interviews were carried out at Survey Point 1 on weekdays during spring, and on weekends during the summer, with this pattern reversed at Survey Point 2 (Sherwood Forest NNR Main Entrance). Nevertheless, there was an approximately even split between weekday and weekend survey dates overall across the two survey locations combined.

Table 7: Number of interviews per survey location during each survey period, stratified by day type. Spring surveys are highlighted blue and summer surveys are highlighted pink.

Survey location	Survey period	Number and % of interviewees		
		Weekday	Weekend	Total
1 - Budby South Forest RSPB Car Park	Spring	13 (43.4%)	17 (56.7%)	30 (100%)
	Summer	16 (59.3%)	11 (40.8%)	27 (100%)
2 - Sherwood Forest NNR Main Entrance	Spring	27 (52.0%)	25 (48.1%)	52 (100%)
	Summer	20 (46.6%)	23 (53.5%)	43 (100%)
Total	**Spring**	**40 (48.8%)**	**42 (51.3%)**	**82 (100%)**
	Summer	**36 (51.5%)**	**34 (48.6%)**	**70 (100%)**

Type of visit (Q1)

5.10 The majority of interviews carried out across all survey locations, during both the spring (84.2%) and summer (87.2%) survey periods, were with those who had undertaken a day trip or short visit directly from home that day (see Table 8). This was the case at all of the survey locations during each relevant survey period. Amongst the remaining interviewees, a larger relative proportion comprised holidaymakers at Survey Point 2 (Sherwood Forest NNR Main Entrance: 11.6% and 11.7% in spring and summer, respectively). Overall, only

2.6% of interviewees consisted of people staying away from home with friends or family.

Table 8: Number (and %) of interviews at each survey location during each survey period, stratified by visit type. Grey shading reflects the largest value in each row. Spring surveys are highlighted blue and summer surveys are highlighted pink.

Survey location	Survey period	Type of visit				Total
		Short visit from home	Staying away from home in a second home, mobile home, or on holiday	Staying away from home with friends or family	Other	
1 - Budby South Forest RSPB Car Park	Spring	28 (93.4%)	1 (3.4%)	0 (0.0%)	1 (3.4%)	30 (100%)
	Summer	26 (96.3%)	1 (3.8%)	0 (0.0%)	0 (0.0%)	27 (100%)
2 - Sherwood Forest NNR Main Entrance	Spring	41 (78.9%)	6 (11.6%)	1 (2.0%)	4 (7.7%)	52 (100%)
	Summer	35 (81.4%)	5 (11.7%)	3 (7.0%)	0 (0.0%)	43 (100%)
Total	**Spring**	**69 (84.2%)**	**7 (8.6%)**	**1 (1.3%)**	**5 (6.1%)**	**82 (100%)**
	Summer	**61 (87.2%)**	**6 (8.6%)**	**3 (4.3%)**	**0 (0.0%)**	**70 (100%)**

Main activities undertaken (Q2)

5.11 The most frequently recorded main activity across both survey locations across the combined survey periods was walking (47.4% of interviewees; see **Figure 1**), followed by dog walking (36.2%), and bird/wildlife watching (5.3%), with the remaining activities combined comprising 12% of responses.

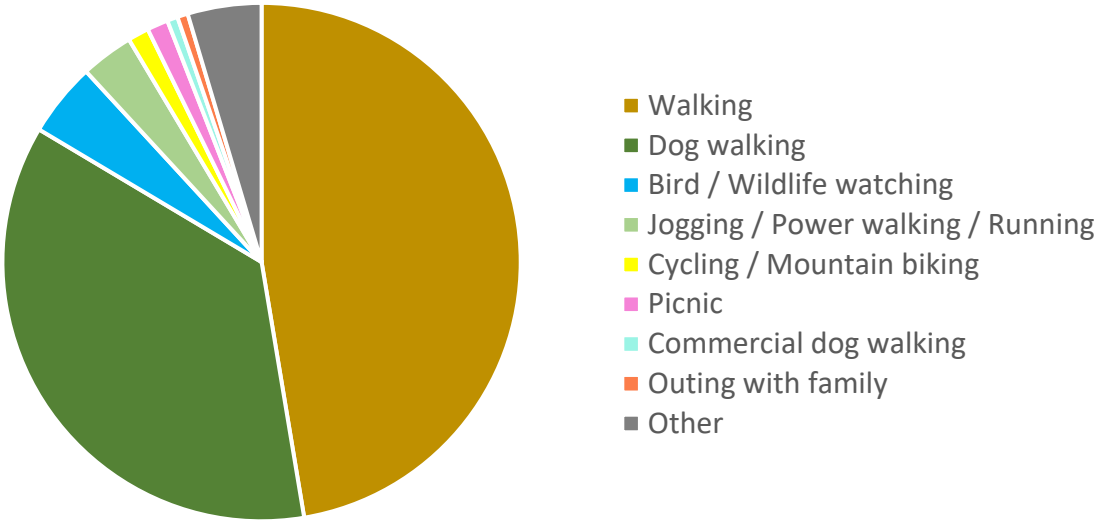


Figure 1: Main activities undertaken across all survey locations across all respondents.

5.12 Table 9 provides a breakdown of recorded main activities from each of the survey locations. Walking was the most commonly recorded main activity by far at Survey Point 2 (Sherwood Forest NNR Main Entrance), comprising 59.0% of responses, with dog walking the second most frequently recorded (26.4%). Dog walking was the most commonly recorded main activity at Survey Point 1 (Budby South Forest RSPB Reserve Car Park) however, comprising approximately half of the responses at that locality, with walking the second most frequently recorded main activity there (28.1% of interviewees).

5.13 Bird/wildlife watching comprised 12.3% of responses at Survey Point 1 (Budby South Forest RSPB Reserve Car Park), but only 1.1% at Survey Point 2 (Sherwood Forest NNR Main Entrance). Of the remaining named main activities, only jogging/running comprised >4% of the observations made at either of the Survey Points (4.3% of observations at Survey Point 2).

Table 9: Main activities undertaken at each survey location across all respondents, arranged in order of overall prevalence. Grey shading reflects the largest two values in each column, with the darker shading highlighting the larger value.

Activity	Survey location		Total
	1 – Budby South Forest RSPB Reserve Car Park	2 – Sherwood Forest NNR Main Entrance	
Walking	16 (28.1%)	56 (59.0%)	72 (47.4%)
Dog walking	30 (52.7%)	25 (26.4%)	55 (36.2%)
Bird / Wildlife watching	7 (12.3%)	1 (1.1%)	8 (5.3%)
Jogging / Power walking / Running	1 (1.8%)	4 (4.3%)	5 (3.3%)
Cycling / Mountain biking	0 (0%)	2 (2.2%)	2 (1.4%)
Picnic	0 (0%)	2 (2.2%)	2 (1.4%)
Commercial dog walking	1 (1.8%)	0 (0%)	1 (0.7%)
Outing with family	0 (0%)	1 (1.1%)	1 (0.7%)
Other	2 (3.6%)	4 (4.3%)	6 (4%)
Total	**57 (100%)**	**95 (100%)**	**152 (100%)**

Secondary activities (Q3)

5.14 Interviewees were also asked to identify any secondary activity that they were undertaking at the survey location on the day of the interview. A total of 53 interviewees, across both survey periods, identified a secondary activity (see Table 10). Bird/wildlife watching comprised the most frequently recorded secondary activity overall (32.1% of responses), although it only comprised the second most frequently reported secondary activity at Survey Point 1 (Budby South Forest RSPB Reserve Car Park).

5.15 Walking was the second most frequently recorded secondary activity overall (24.6%), although it formed the most frequently recorded secondary activity at Survey Point 1 (Budby Forest South RSPB Car Park). Meeting up with friends (15.7%) was the second most frequently recorded secondary activity at Survey Point 2 (Sherwood Forest NNR Main Entrance), with picnicking the only other secondary activity comprising >10% of responses at either survey location (12.5% at Survey Point 2).

Table 10: Secondary activities undertaken at each survey location across all respondents, arranged in order of overall prevalence. Grey shading reflects the largest two values in each column, with the darker shading highlighting the larger value.

Activity	Survey location		Total
	1 – Budby South Forest RSPB Reserve Car Park	2 – Sherwood Forest NNR Main Entrance	
Bird / Wildlife watching	6 (28.6%)	11 (34.4%)	17 (32.1%)
Walking	10 (47.7%)	3 (9.4%)	13 (24.6%)
Picnic	2 (9.6%)	4 (12.5%)	6 (11.4%)
Meeting up with friends	0 (0.0%)	5 (15.7%)	5 (9.5%)
Dog walking	1 (4.8%)	3 (9.4%)	4 (7.6%)
Other fitness / sports	0 (0.0%)	2 (6.3%)	2 (3.8%)
Jogging / Power walking / Running	0 (0.0%)	1 (3.2%)	1 (1.9%)
Other	2 (9.6%)	3 (9.4%)	5 (9.5%)
Total	**21 (100%)**	**32 (100%)**	**53 (100%)**

Temporal visiting patterns, frequency of visit, time of year etc. (Q4-5 & 7-8)

5.16 Overall, approximately a fifth of interviews across both survey locations visited the survey area 1 to 3 times per week, with another fifth visiting less than once a month, and another fifth making their first visits to the survey location (see Table 11). Nevertheless, approximately a fifth of interviewees at Survey Point 1 (Budby South Forest RSPB Reserve Car Park), and a quarter of interviewees at Survey Point 2 (Sherwood Forest NNR Main Entrance), visited daily or on most days.

Table 11: Number (row %) of all interviewees and frequency of visit (Q7), stratified by survey location. Grey shading reflects the largest two values in each row, with darker shading highlighting the larger row value.

Survey location	Frequency of visit											Total
	More than once a day (365+ visits a year)	Daily (300-365 visits)	Most days (180-300 visits)	1 to 3 times a week (40-180 visits)	2 to 3 times per month (15-40 visits)	Once a month (6-15 visits)	Less than once a month (2-5 visits)	Less than annually	First visit	Other	Don't know	
1 - Budby South Forest RSPB Car Park	2 (3.6%)	7 (12.3%)	2 (3.6%)	21 (36.9%)	2 (3.6%)	5 (8.8%)	10 (17.6%)	0 (0%)	8 (14.1%)	0 (0%)	0 (0%)	57 (100%)
2 - Sherwood Forest NNR Main Entrance	9 (9.5%)	9 (9.5%)	6 (6.4%)	12 (12.7%)	1 (1.1%)	2 (2.2%)	20 (21.1%)	5 (5.3%)	26 (27.4%)	2 (2.2%)	3 (3.2%)	95 (100%)
Total	**11 (7.3%)**	**16 (10.6%)**	**8 (5.3%)**	**33 (21.8%)**	**3 (2%)**	**7 (4.7%)**	**30 (19.8%)**	**5 (3.3%)**	**34 (22.4%)**	**2 (1.4%)**	**3 (2%)**	**152 (100%)**

5.17 Dog walkers (both commercial and non-commercial) were the group who visited the most frequently (see **Figure 2**), with >40% of the latter visiting most days or daily, and the sole commercial dog walker interviewed visiting more than once a day. Furthermore, >13% of walkers visited most days at least, with another fifth visiting 1 to 3 times per week. The sample sizes of the other activities recorded were generally too small to make meaningful assessments of the relevant interviewees visit frequency.

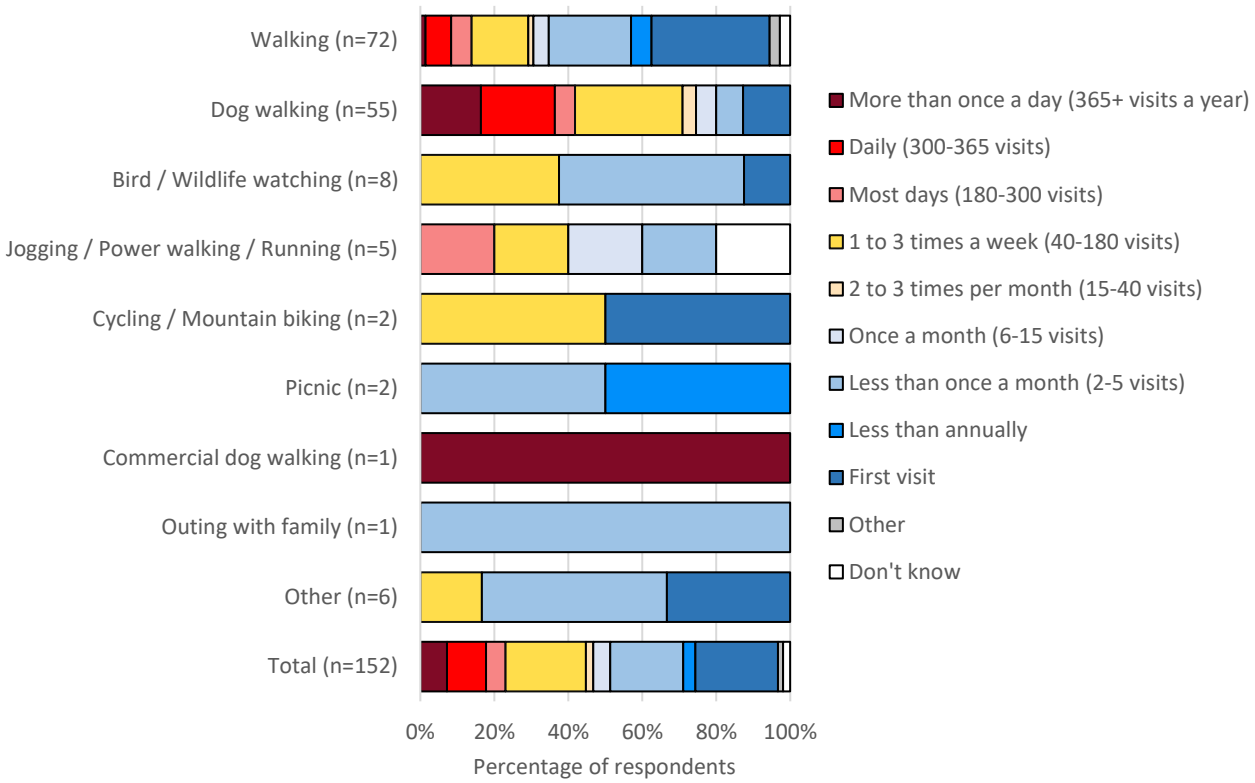


Figure 2: Summary of respondents visit frequency, stratified by main activity. Values in brackets indicate the number of respondents for each activity.

5.18 More than a third of interviewees (38.9%) across both survey locations spent 1 to 2 hours on site (see Table 12), with another fifth (27.7%) spending between 30 minutes and an hour on site. These two visit duration periods were the most frequent at each of the survey locations. Nevertheless, nearly a fifth (16.9%) of interviewees at Survey Point 2 (Sherwood Forest NNR Main Entrance) spent 2-3hours on site, with another fifth (20.1%) spending more than 3 hours there. In contrast, 79.1% of interviewees at Survey Point 1 (Budby South Forest RSPB Reserve Car Park) spent between 30 minutes and 2 hours at the survey location, with approximately a third (33.4%) spending less than an hour there.

Table 12: Number (row %) of interviewees and duration of visit (Q5) stratified by survey location. Grey shading reflects the largest two values in each row, with the darker shading highlighting the larger row value.

Survey location	Duration of visit						Total
	Less than 30 minutes	Between 30 minutes and 1 hour	1-2 hours	2-3 hours	3-4 hours	4 hours +	
1 - Budby South Forest RSPB Car Park	4 (7.1%)	19 (33.4%)	26 (45.7%)	4 (7.1%)	1 (1.8%)	3 (5.3%)	57 (100%)
2 - Sherwood Forest NNR Main Entrance	4 (4.3%)	23 (24.3%)	33 (34.8%)	16 (16.9%)	12 (12.7%)	7 (7.4%)	95 (100%)
Total	**8 (5.3%)**	**42 (27.7%)**	**59 (38.9%)**	**20 (13.2%)**	**13 (8.6%)**	**10 (6.6%)**	**152 (100%)**

5.19 Of the 3 most commonly represented activity types in the dataset, dog walkers exhibited the shortest visit duration, with more than half (54.6%) spending less than an hour on site (see Table 13). More than fifth of walkers (20.9%) also spent a similar length of time at the survey location, although nearly half (47.3%) spent 1-2 hours on site. The majority of bird/wildlife watchers (62.5%) spent between 30 minutes and 2 hours on site, although the remaining third of those interviewed spent a minimum of 3 hours at the survey location.

Table 13: Number (row %) of interviewees and duration of visit (Q5) stratified by main activity. Grey shading reflects the largest two values in each row, with the darker shading highlighting the larger row value.

Activity	Duration of visit						Total
	Less than 30 minutes	Between 30 minutes and 1 hour	1-2 hours	2-3 hours	3-4 hours	4 hours +	
Walking	2 (2.8%)	13 (18.1%)	34 (47.3%)	12 (16.7%)	6 (8.4%)	5 (7%)	72 (100%)
Dog walking	5 (9.1%)	25 (45.5%)	19 (34.6%)	3 (5.5%)	1 (1.9%)	2 (3.7%)	55 (100%)
Bird / Wildlife watching	0 (0%)	2 (25.0%)	3 (37.5%)	0 (0%)	2 (25.0%)	1 (12.5%)	8 (100%)
Jogging / Power walking / Running	1 (20.0%)	2 (40.0%)	1 (20.0%)	1 (20.0%)	0 (0%)	0 (0%)	5 (100%)
Cycling / Mountain biking	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100.0%)	0 (0%)	2 (100%)
Picnic	0 (0%)	0 (0%)	0 (0%)	1 (50.0%)	1 (50.0%)	0 (0%)	2 (100%)
Commercial dog walking	0 (0%)	0 (0%)	1 (100.0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)
Outing with family	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100.0%)	1 (100%)
Other	0 (0%)	0 (0%)	1 (16.7%)	3 (50.0%)	1 (16.7%)	1 (16.7%)	6 (100%)
Total	**8 (5.3%)**	**42 (27.7%)**	**59 (38.9%)**	**20 (13.2%)**	**13 (8.6%)**	**10 (6.6%)**	**152 (100%)**

5.20 The majority of interviewees across all survey locations (51.6%) indicated that they tended to visit equally all year round, with the summer months the next most preferred time of year overall (15.6%). A similar pattern was seen amongst walkers and dog walkers, when interviewees were stratified by activity type (see Table 14), whilst 36.4% of responses form bird/wildlife watchers indicated that they preferred to visit in the spring. Amongst the less frequently recorded main activity types there was an indication that respondents generally preferred to visit during the summer months.

Table 14: Number (row %) of interviewees and time of year (Q8) that they tend to visit, stratified by main activity. Grey shading reflects the largest two values in each row, with darker shading highlighting the larger row value. Interviewees could give multiple responses and the percentages, based upon the row totals, may therefore total >100.

Activity	Time of year					Don't know	First visit	Total
	Equally all year	Spring (Mar-May)	Summer (Jun-Aug)	Autumn (Sept-Nov)	Winter (Dec-Feb)			
Walking	34 (46.0%)	1 (1.4%)	11 (14.9%)	2 (2.8%)	1 (1.4%)	2 (2.8%)	23 (31.1%)	74 (100%)
Dog walking	41 (73.3%)	0 (0%)	4 (7.2%)	1 (1.8%)	2 (3.6%)	1 (1.8%)	7 (12.5%)	56 (100%)
Bird / Wildlife watching	3 (27.3%)	4 (36.4%)	2 (18.2%)	1 (9.1%)	0 (0%)	0 (0%)	1 (9.1%)	11 (100%)
Jogging / Power walking / Running	3 (42.9%)	1 (14.3%)	1 (14.3%)	1 (14.3%)	0 (0%)	1 (14.3%)	0 (0%)	7 (100%)
Cycling / Mountain biking	0 (0%)	1 (33.4%)	1 (33.4%)	0 (0%)	0 (0%)	0 (0%)	1 (33.4%)	3 (100%)
Picnic	1 (50.0%)	0 (0%)	1 (50.0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)
Commercial dog walking	0 (0%)	0 (0%)	1 (100.0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)
Outing with family	0 (0%)	0 (0%)	1 (100.0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)
Other	1 (16.7%)	0 (0%)	3 (50.0%)	0 (0%)	0 (0%)	0 (0%)	2 (33.4%)	6 (100%)
Total	**83 (51.6%)**	**7 (4.4%)**	**25 (15.6%)**	**5 (3.2%)**	**3 (1.9%)**	**4 (2.5%)**	**34 (21.2%)**	**161 (100%)**

5.21 Nearly half of interviewees overall (47.4%), across both survey locations, indicated that the frequency of their visits to the survey location had not changed since the onset of the Coronavirus pandemic (see **Figure 3**). More than a tenth of interviewees overall (15.8%) indicated that they had visited more during this period however, with another tenth (9.9%) stating that they had made fewer visits than before.

5.22 This pattern was repeated across the two most commonly recorded main activity types (walking and dog walking), although a larger proportion of walkers (32%) were making their first visit to the site and a larger proportion of dog walkers (71%) were visiting with the same frequency as previously.

Furthermore, the admission that more than a third of bird/wildlife watchers (37.5%) were visiting less frequently than before the onset of the pandemic was of note.

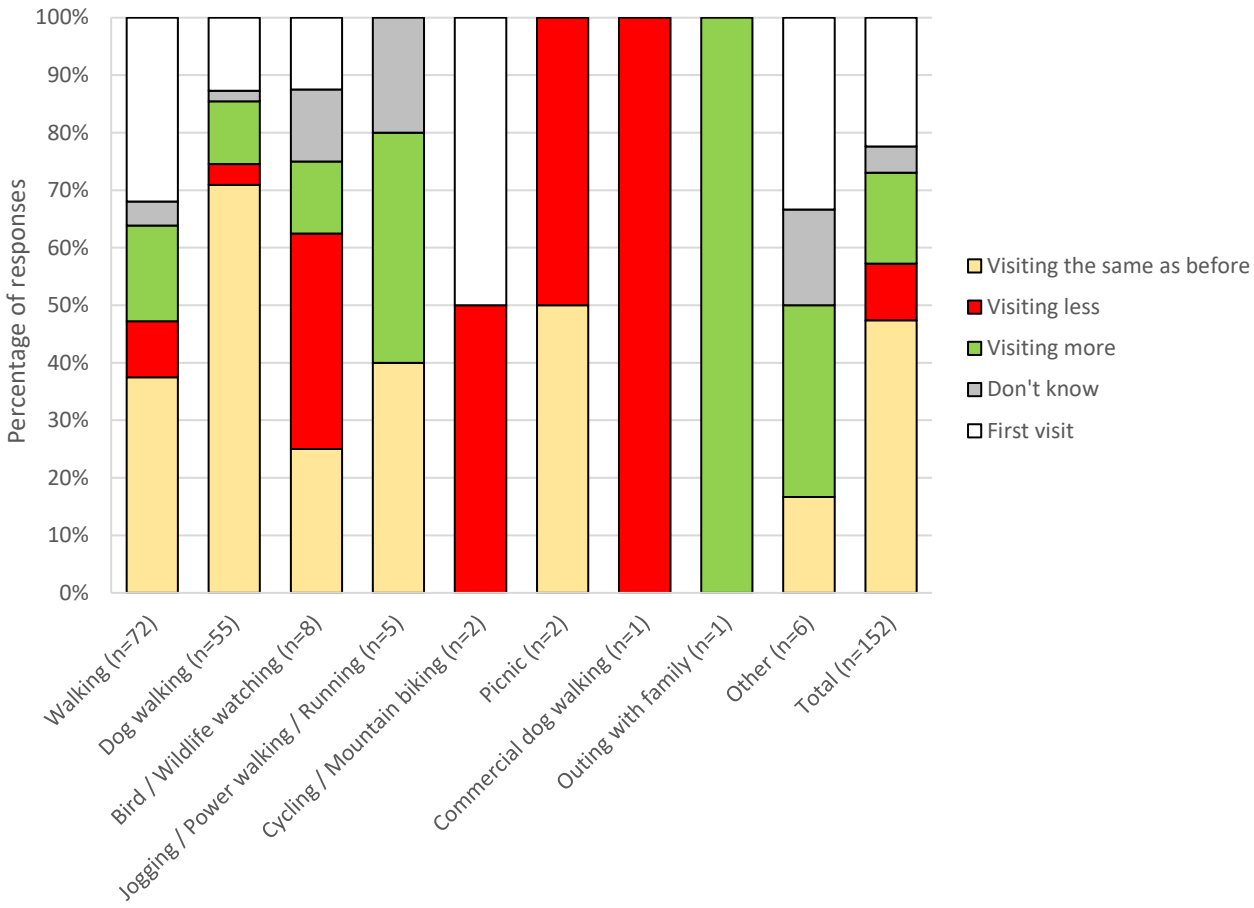


Figure 3: Changes in the visit frequency of interviewees due to the Coronavirus pandemic (Q6), stratified by main activity.

Mode of transport (Q4)

5.23 Overall, three quarters (75.0%) of interviewees had arrived by car/van, with most of the remainder (23.1%) having travelled on foot (see Table 15). With the exception of the 2 cyclists interviewed, the majority of all main activity types arrived by car, with >70% of walkers (75.0%), dog walkers (72.8%), and bird/wildlife watchers (87.5%) doing so. None of the interviewees used public transport to access the study area.

Table 15: Number (row %) of interviewees and mode of transport (Q4), stratified by main activity. Grey shading reflects the largest two values in each row, with darker shading highlighting the larger row value.

Activity	Mode of transport			Total
	Car/van	On foot	Bicycle	
Walking	54 (75.0%)	17 (23.7%)	1 (1.4%)	72 (100%)
Dog walking	40 (72.8%)	15 (27.3%)	0 (0.0%)	55 (100%)
Bird / Wildlife watching	7 (87.5%)	1 (12.5%)	0 (0.0%)	8 (100%)
Jogging / Power walking / Running	3 (60.0%)	2 (40.0%)	0 (0.0%)	5 (100%)
Cycling / Mountain biking	0 (0.0%)	0 (0.0%)	2 (100%)	2 (100%)
Picnic	2 (100%)	0 (0.0%)	0 (0.0%)	2 (100%)
Commercial dog walking	1 (100%)	0 (0.0%)	0 (0.0%)	1 (100%)
Outing with family	1 (100%)	0 (0.0%)	0 (0.0%)	1 (100%)
Other	6 (100%)	0 (0.0%)	0 (0.0%)	6 (100%)
Total	**114 (75.0%)**	**35 (23.1%)**	**3 (2.0%)**	**152 (100%)**

Reasons for site choice (Q9)

5.24 Reasons for site choice are summarised in Figure 4. Interviewees were asked why they chose to visit the specific location where interviewed, rather than another local site, with answers categorised by the surveyor, using pre-determined categories which were not shown to the interviewee.

5.25 Overall, proximity to home was by far the most commonly given reason, accounting for 23.5% of responses. 'Other' reasons comprised the second most frequent reason provided (12.0%), with a visit to the Major Oak (8%), habit/familiarity (5.8%), enjoyment of the dog (4.9%), and particular wildlife interest (4.9%) also influential. 'Other' reasons comprised those not identified by the pre-determined options in advance, including an interest in Robin Hood, naturism, volunteering, shade, and exploring a novel area. All remaining reasons comprised <4.9% of the responses recorded.

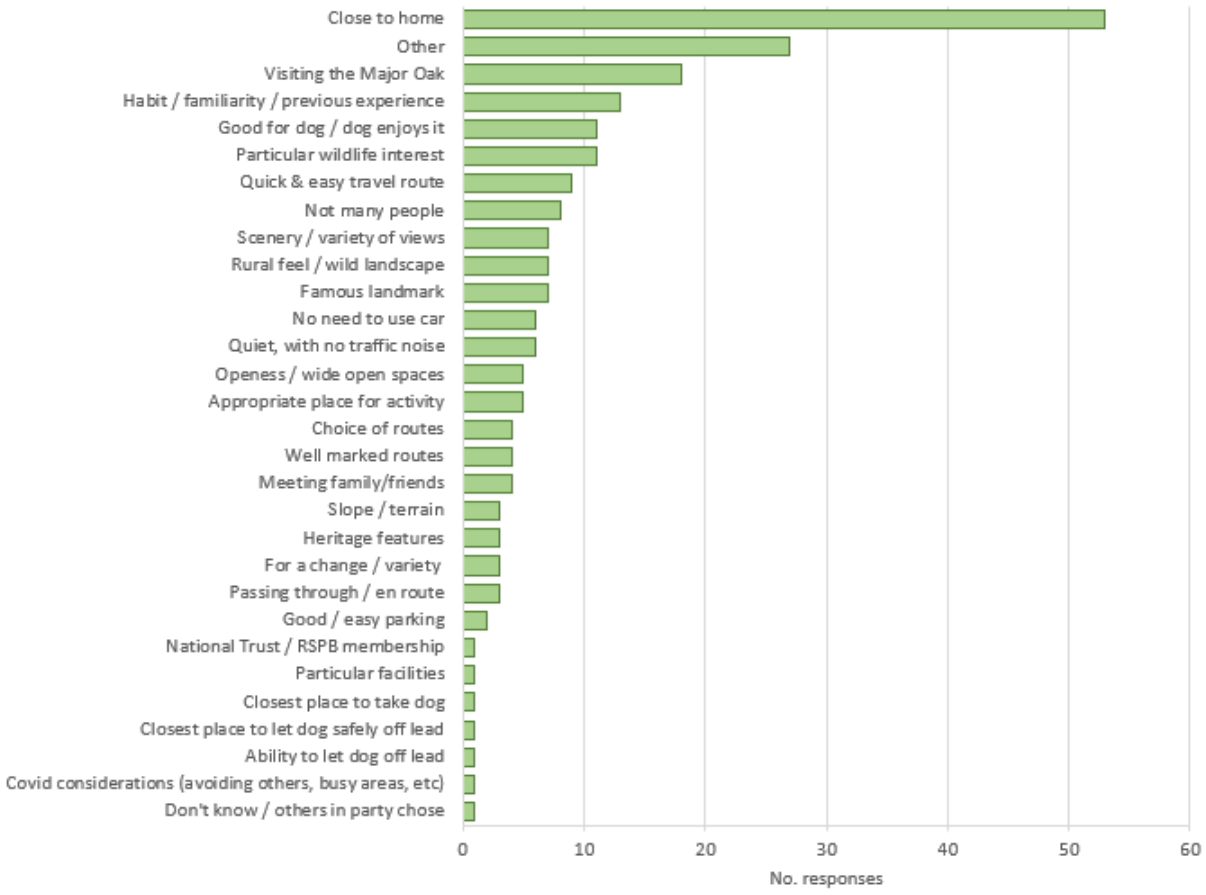


Figure 4: Reasons for site choice (Q9). Note that interviewees could give multiple responses.

Use of other sites (Q17-20)

5.26 Approximately a third (34.8%) of interviewees overall across both survey locations stated that 75% or more of their visits (for the activity they were undertaking when interviewed) took place at the survey location (see Table 16). This figure was slightly higher at Survey Point 2 (Sherwood Forest NNR Main Entrance: 38.5%) than at Survey Point 1 (Budby South Forest RSPB Reserve Car Park: 28.4%). Nevertheless, a third of interviewees at Survey Point 1 (37.8%) indicated that <25% of their visits took place at the survey location, and nearly half of interviewees at Survey Point 2 (46.2%) were either on their first visit to the locality or were unsure of their visit frequency.

Table 16: Number (row %) of interviewees and proportion of weekly visits to the site (Q17), stratified by survey location. Grey shading reflects the two largest values in each row, with the darker shading highlighting the larger value.

Survey location	Proportion of visits						Total
	All take place here	75% or more	50-74%	25-49%	less than 25%	Not sure / don't know / first visit	
1 – Budby South Forest RSPB Car Park	3 (5.7%)	12 (22.7%)	11 (20.8%)	2 (3.8%)	20 (37.8%)	7 (13.3%)	53 (100%)
2 – Sherwood Forest NNR Main Entrance	15 (16.5%)	20 (22.0%)	6 (6.6%)	2 (2.2%)	8 (8.8%)	42 (46.2%)	91 (100%)
Total	**18 (12.5%)**	**32 (22.3%)**	**17 (11.9%)**	**4 (2.8%)**	**28 (19.5%)**	**49 (34.1%)**	**144 (100%)**

5.27 Amongst the more frequently recorded main activity types, dog walkers showed the highest level of site fidelity amongst user groups (see Table 17), with more than half (56.7%) stating that 75% or more of their weekly visits took place at the interview location. A fifth of walkers (21.0%) also fell into that category, although this proportion increase to 46% if those on their first visit or who are unsure (comprising nearly half of the relevant dataset) are excluded. Half of bird/wildlife watchers (50.0%) carried out <25% of their visits for the activity at the survey location. Patterns for the other recorded activities were less obvious due to the smaller sample sizes, although there was an indication that joggers/runners may comprise a frequent visitor type.

Table 17: Number (row %) of interviewees and proportion of weekly visits to the site (Q17), stratified by main activity. Grey shading reflects the two largest values in each row, with the darker shading highlighting the larger value.

Activity	Proportion of visits						Total
	All take place here	75% or more	50-74%	25-49%	less than 25%	Not sure / don't know / first visit	
Walking	5 (7.5%)	9 (13.5%)	7 (10.5%)	3 (4.5%)	10 (15.0%)	36 (53.8%)	67 (100%)
Dog walking	10 (18.9%)	20 (37.8%)	6 (11.4%)	1 (1.9%)	11 (20.8%)	6 (11.4%)	53 (100%)
Bird / Wildlife watching	0 (0%)	1 (12.5%)	1 (12.5%)	0 (0%)	4 (50.0%)	2 (25.0%)	8 (100%)
Jogging / Power walking / Running	2 (40.0%)	0 (0%)	1 (20.0%)	0 (0%)	1 (20.0%)	1 (20.0%)	5 (100%)
Cycling / Mountain biking	0 (0%)	1 (50.0%)	0 (0%)	0 (0%)	0 (0%)	1 (50.0%)	2 (100%)
Picnic	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)	2 (100%)
Commercial dog walking	0 (0%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)
Outing with family	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)
Other	1 (20.0%)	1 (20.0%)	1 (20.0%)	0 (0%)	1 (20.0%)	1 (20.0%)	5 (100%)
Total	**18 (12.5%)**	**32 (22.3%)**	**17 (11.9%)**	**4 (2.8%)**	**28 (19.5%)**	**49 (34.1%)**	**144 (100%)**

5.28 A variety of other sites were regularly visited by interviewees (see Figure 5), with Clumber Park (14 interviewees) being that most commonly identified across the survey locations. Only three other alternative locations were named by >5 interviewees however, namely: Rufford (8 interviewees), Sherwood Pines (8 interviewees), and Sherwood Forest (6 interviewees). It is nevertheless important to note that several of the localities named (e.g. "seaside") potentially refer to multiple, disparate, sites, or are potentially synonyms for the same locations (e.g. "Rufford" and "Rufford Park").

Figure 5: Word cloud detailing other sites given by interviewees (Q18-20). Graphic created using the Wordclouds app.

Memberships (Q12)

5.29 Approximately a third (28.2%) of interviewees across both survey locations and all activity types were members of the National Trust (who manage nearby Clumber Park: see Table 18), with 9.4% also members of the RSPB. 12.8 % of interviewees were solely members of the RSPB. Nevertheless, more than half (58.4%) of all interviewees were not members of either organisation, with the majority of interviewees across almost all activity types falling into that category. The one exception was bird/wildlife watchers, with 75.0% of relevant interviewees being members of one or both organisations, although nearly half of walkers (46.5%) and a third of dog walkers (34.7%) were also members of at least one.

Table 18: Number (row %) of interviewees and membership of the National Trust and RSPB (Q12), stratified by main activity. Grey shading highlights the two largest values in each row, with darker shading identifying the larger value.

Activity	Memberships					Total
	Both National Trust and RSPB	National Trust only	RSPB only	Neither	Not sure / Don't kow	
Walking	6 (8.7%)	19 (27.6%)	7 (10.2%)	36 (52.2%)	1 (1.5%)	69 (100%)
Dog walking	5 (9.1%)	6 (11.0%)	8 (14.6%)	36 (65.5%)	0 (0%)	55 (100%)
Bird / Wildlife watching	2 (25.0%)	1 (12.5%)	3 (37.5%)	2 (25.0%)	0 (0%)	8 (100%)
Jogging / Power walking / Running	0 (0%)	1 (20.0%)	0 (0%)	4 (80.0%)	0 (0%)	5 (100%)
Cycling / Mountain biking	0 (0%)	1 (50.0%)	0 (0%)	1 (50.0%)	0 (0%)	2 (100%)
Picnic	0 (0%)	0 (0%)	0 (0%)	2 (100%)	0 (0%)	2 (100%)
Commercial dog walking	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)
Outing with family	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)
Other	1 (16.7%)	0 (0%)	1 (16.7%)	4 (66.7%)	0 (0%)	6 (100%)
Total	**14 (9.4%)**	**28 (18.8%)**	**19 (12.8%)**	**87 (58.4%)**	**1 (0.7%)**	**149 (100%)**

Resources used to plan visit (Q13-16)

5.30 Interviewees were asked whether they had used a range of information sources to plan their visit to the survey location, with 58 positive responses recorded (see Table 19). The use of online or paper maps was the most frequent response overall (38.0%), followed by websites (27.6%), and smartphone apps (15.6%). A small number of interviewees used recommendations from friends or family (13.8%), whilst social media, perhaps surprisingly, accounted for only 5.2% of responses overall.

5.31 Nearly half of the responses from walkers (43.6%) indicated that the interviewee used online or paper maps to plan their visit, with a third of walker responses (30.8%) stating that they used websites. Only a small number of responses were received from the other activity types, and no clear pattern was therefore discernible for them due to their small sample

sizes. Nevertheless, there was an indication that dog walkers, in particular, may be influenced by recommendations from friends or family.

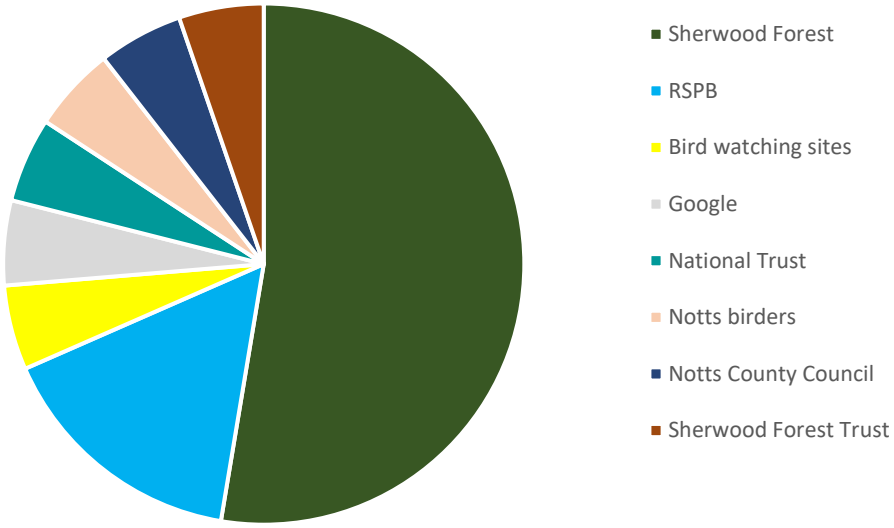
Table 19: Resources used to plan visit (Q13), stratified by main activity. Grey shading reflects the largest two values in each row, with darker shading highlighting the larger row value.

Activity	Information used					Total
	Online or paper maps	Websites	Smartphone app	Recommendations from friends or family	Social media	
Walking	17 (43.6%)	12 (30.8%)	5 (12.9%)	4 (10.3%)	1 (2.6%)	39 (100%)
Dog walking	1 (20.0%)	1 (20.0%)	0 (0%)	3 (60.0%)	0 (0%)	5 (100%)
Bird / Wildlife watching	0 (0%)	2 (28.6%)	2 (28.6%)	1 (14.3%)	2 (28.6%)	7 (100%)
Jogging / Power walking / Running	1 (50.0%)	0 (0%)	1 (50.0%)	0 (0%)	0 (0%)	2 (100%)
Cycling / Mountain biking	1 (33.4%)	1 (33.4%)	1 (33.4%)	0 (0%)	0 (0%)	3 (100%)
Other	2 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)
Total	**22 (38.0%)**	**16 (27.6%)**	**9 (15.6%)**	**8 (13.8%)**	**3 (5.2%)**	**58 (100%)**

5.32 8 websites, and 4 apps, used to plan the interviewees visit were identified by a small number of respondents overall (see Figure 6). The most frequently used website was "Sherwood Forest" (assumed to indicate www.visitsherwood.co.uk) which comprised 52.7% of the responses recorded. The RSPB website was also frequently used (15.8% of responses), with all others identified by only a single interviewee.

5.33 Google maps (66.7% of responses) was the only app identified as being used to plan the visit by more than a single interviewee. Amongst social media users (not illustrated), 2 interviewees indicated that they had used Facebook to plan their visit.

a: websites (n=19)



b: apps (n=9)

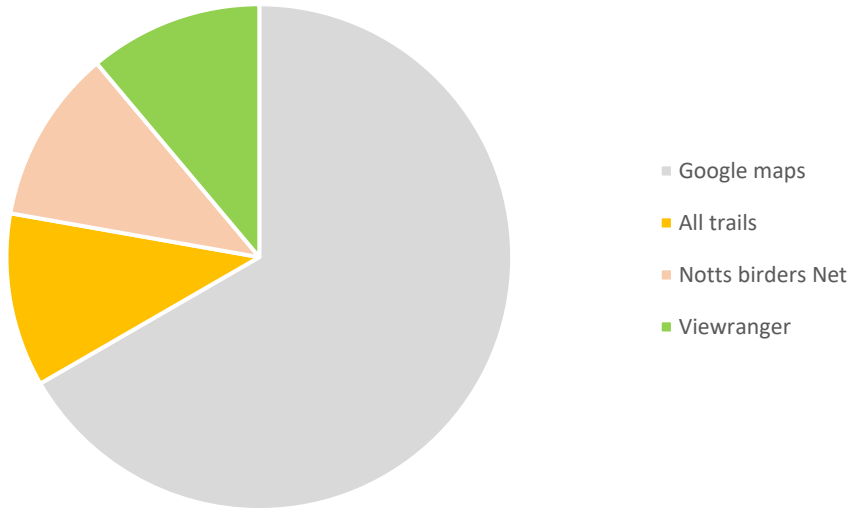


Figure 6: Websites (a) and smartphone apps (b) identified by interviewees that were used to plan their visit (Q14-16).

Awareness of sensitive features (Q24)

5.34 Interviewees were asked whether they were aware of any sensitive habitats or species found within the study area. A third of interviewees (38.1%) were unable to name any (see Figure 7), with breeding birds (20.2% of responses), rare insects and invertebrates (6.9%), and Nightjar (5.3%) those most frequently named. 'Other' habitats and species comprised the second largest number of responses overall (18.6%), however, with this category mainly including specifically named invertebrates (with multiple mentions of Oil Beetles, for example), deer, and general awareness of the site's importance for biodiversity. Of particular note was the rarity of responses identifying heathland or woodland habitats and veteran/ancient trees (2.2%, 3.2%, and 3.8% of responses overall, respectively).

5.35 Nevertheless, a quarter of responses from dog walkers (26.1%) identified the presence of breeding birds on site, with a further 6.9% and 4.2% of dog walker responses specifically mentioning Nightjar and Woodlark, respectively. This compares with 13.0%, 2.4%, and 0.0% of responses from walkers within the same categories.

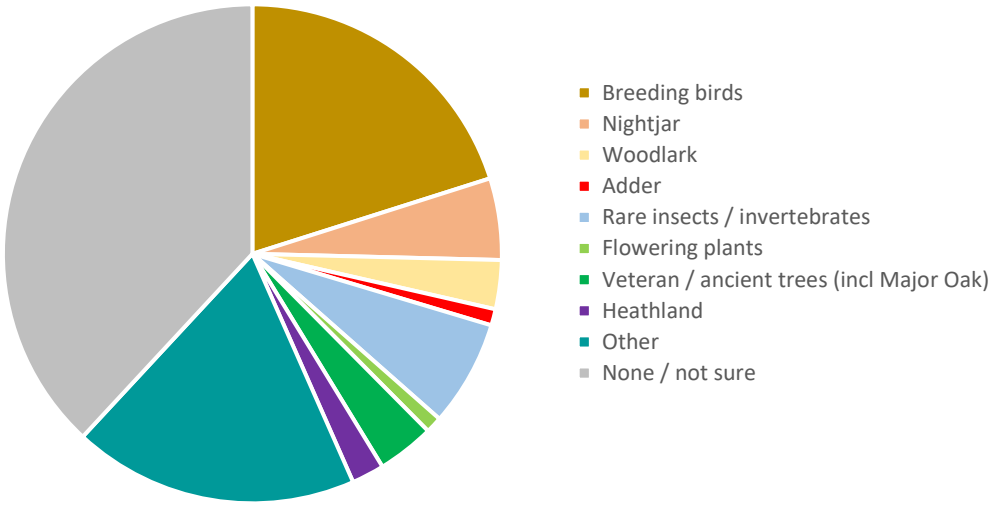


Figure 7: Sensitive habitats and species identified as present on site by interviewees (Q24).

Potential use of alternative greenspace (Q22-23)

5.36 Interviewees were asked whether they would be likely to use a novel area of local greenspace for their main activity and, if so, what features they would like to see it incorporate. Overall, 60% of interviewees indicated that they would be likely to use such a novel destination, with 15.4% suggesting that they would not, and 18.7% suggesting potential use (see Figure 8). Amongst the three most frequently recorded main activity types, dog walkers (67.3%) were more likely to use novel greenspace then either bird/wildlife watchers or walkers (62.5% and 54.3%, respectively), with a larger proportion of bird/wildlife watchers (37.5%) equivocal about using such a site.

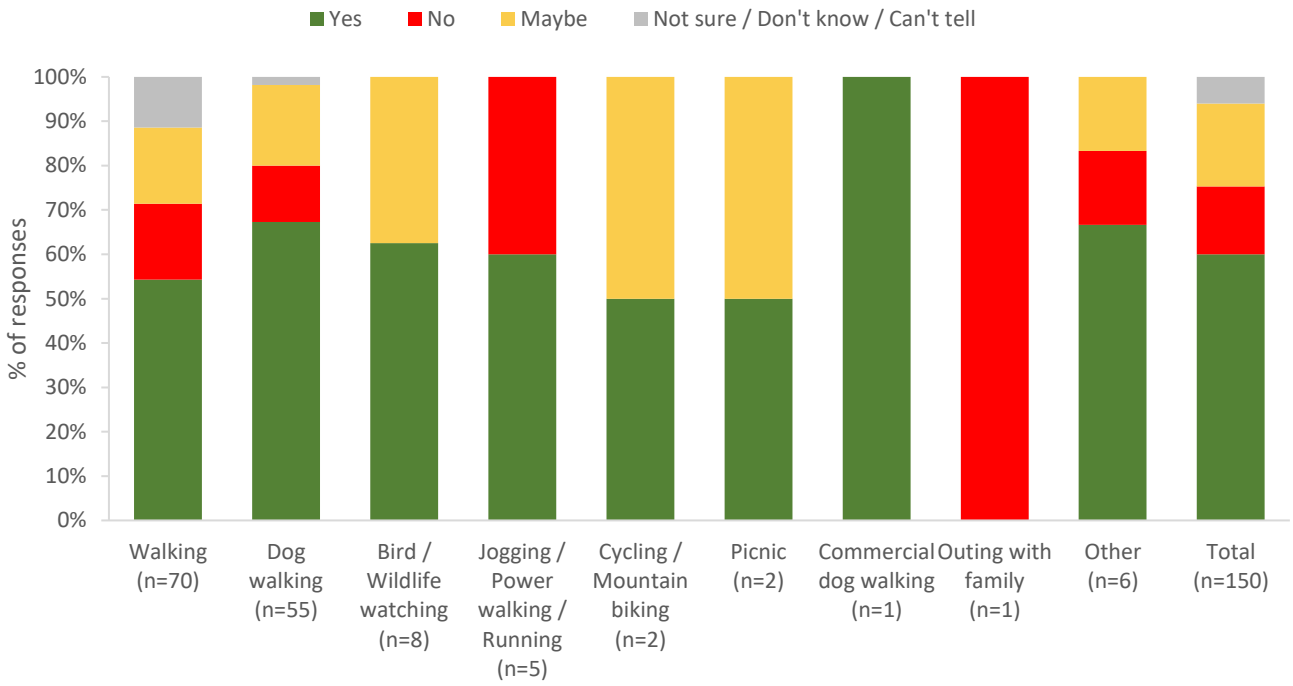


Figure 8: Potential use of novel local greenspace by interviewees, stratified by main activity (Q22).

5.37 A range of features that they would like to see incorporated into a new Country Park or area of greenspace were identified by the interviewees (see Figure 9). The presence of extensive/good walking routes (22.4% of responses), a café (16.3%), open water (14.6%), woodland (12.9%), and toilets (11.8%) were the most frequently identified features overall, with all other features identified in <10% of responses. Dog walkers also specifically identified the provision of off-lead areas for dogs (15.7%) and sufficient parking (13.8%).

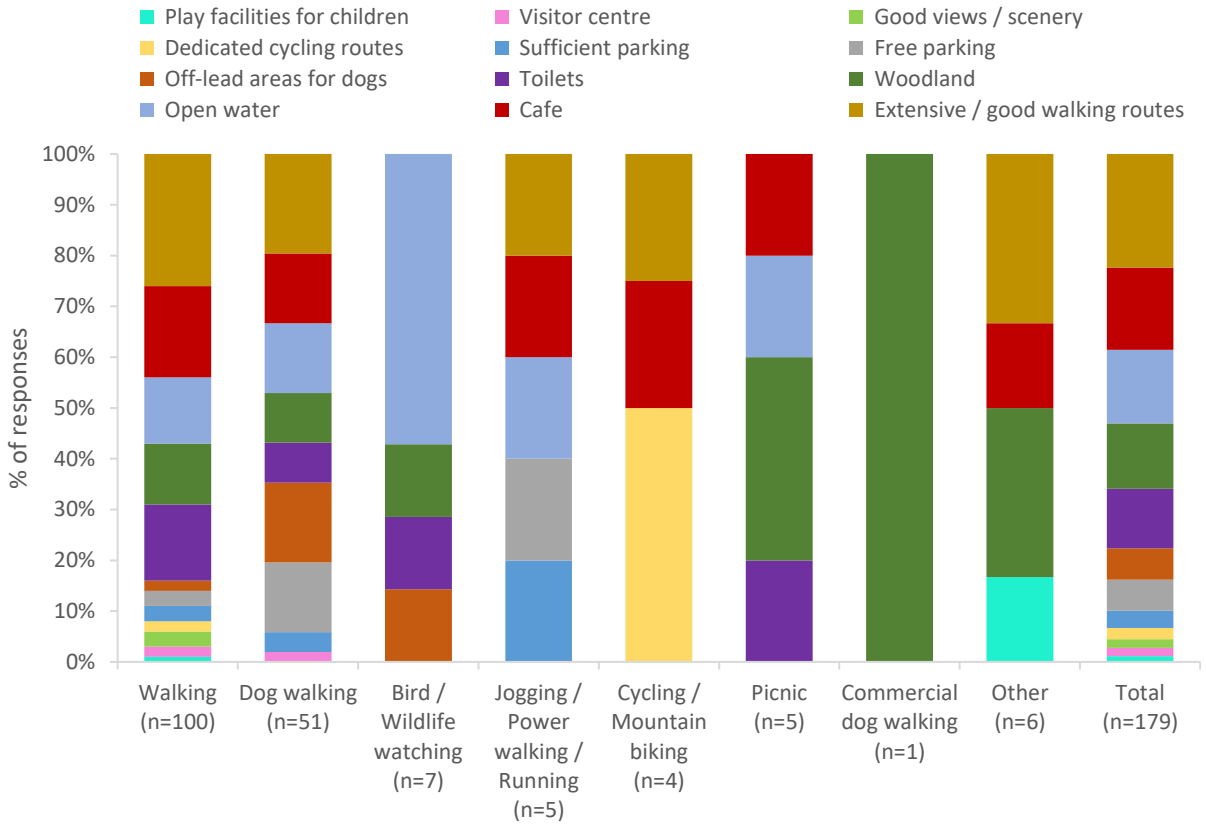


Figure 9: Features identified by interviewees which they would like to see in a novel Country Park or area of greenspace (Q23). Note that interviewees could give multiple responses.

Visitor origins (Q25)

5.38 A total of 146 interviewee postcodes (96.1%) could be accurately mapped, with the full postcode given in the interview matching the standard national postcode database. A total of 6 interviews (4.0%) were therefore not assigned to a home postcode. The greater proportion of recorded postcodes were centred within an area bordered by Derby and Nottingham to the south, Sheffield and Doncaster to the north, and Lincoln and Newark to the east (see Map 9). The remaining scattering of postcodes spread from Kent and the Home Counties in the south-east and south Wales in the south-west, to Manchester in the west and then north to Sunderland.

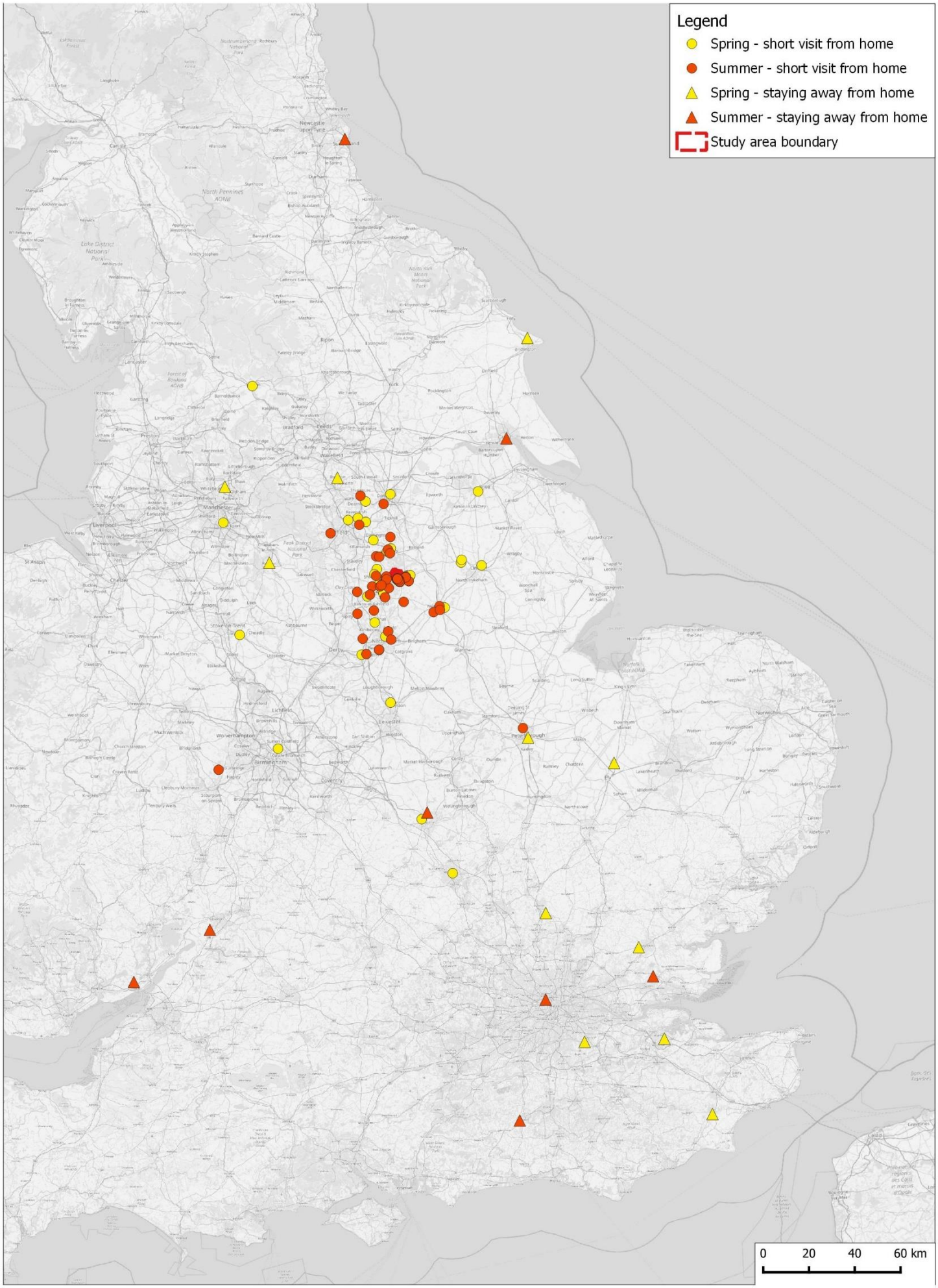
5.39 Maps 10 and 11 present the 75th percentile minimum convex polygons (MCPs) of straight-line home postcode interviewee distance from their respective survey locations. MCPs show the area in which the closest three-quarters of interviewees originated and provide a good way to summarise where most visitors to each survey location came from. Map 10a depicts the 75th percentile MCP for all interviewees, whereas Map 10b depicts that for

interviewees on a day trip/short visit from home only. Maps 11a and 11b depict the 75th percentile MCPs for day visit interviewees at each of the 2 Survey Points individually.

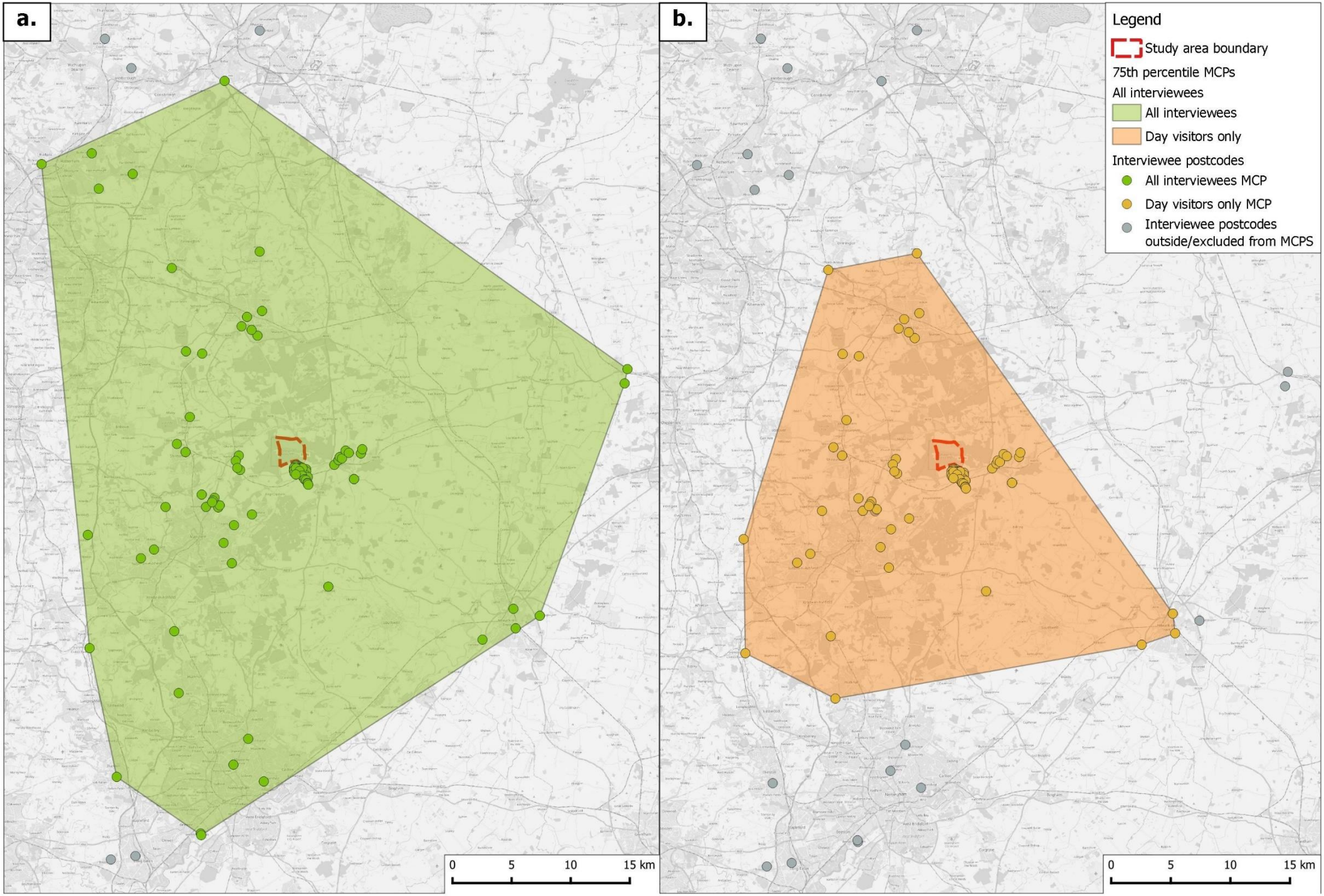
5.40 The 75th percentile MCPs of straight-line travel distance for all interviewees on a day visit from home (Map 10b) encompasses an area bordered by Nottingham to the south, Dinnington and Langold to the north, Newark to the east, and Alfreton to the west. The MCP stretches much further north, east, and southwards, in particular, if the postcodes of those interviewees on holiday/staying away from home are included (Map 10a).

5.41 Interviewees postcodes from home visits to Survey Point 1 (Budby South Forest RSPB Reserve Car Park: Map 11a) describe a much smaller MCP to that seen in the combined home visit dataset, incorporating the towns/areas of Edwinstowe, Ollerton, Warsop, north-east Mansfield, and Worksop. Conversely, the MCP produced for Survey Point 2 (Sherwood Forest NNR Main Entrance: Map 11b) incorporated an area much larger than that produced using the combined 75th percentiles for all home visits combined (Map 11b), indicative of an apparent wider geographic draw at Survey Point 2.

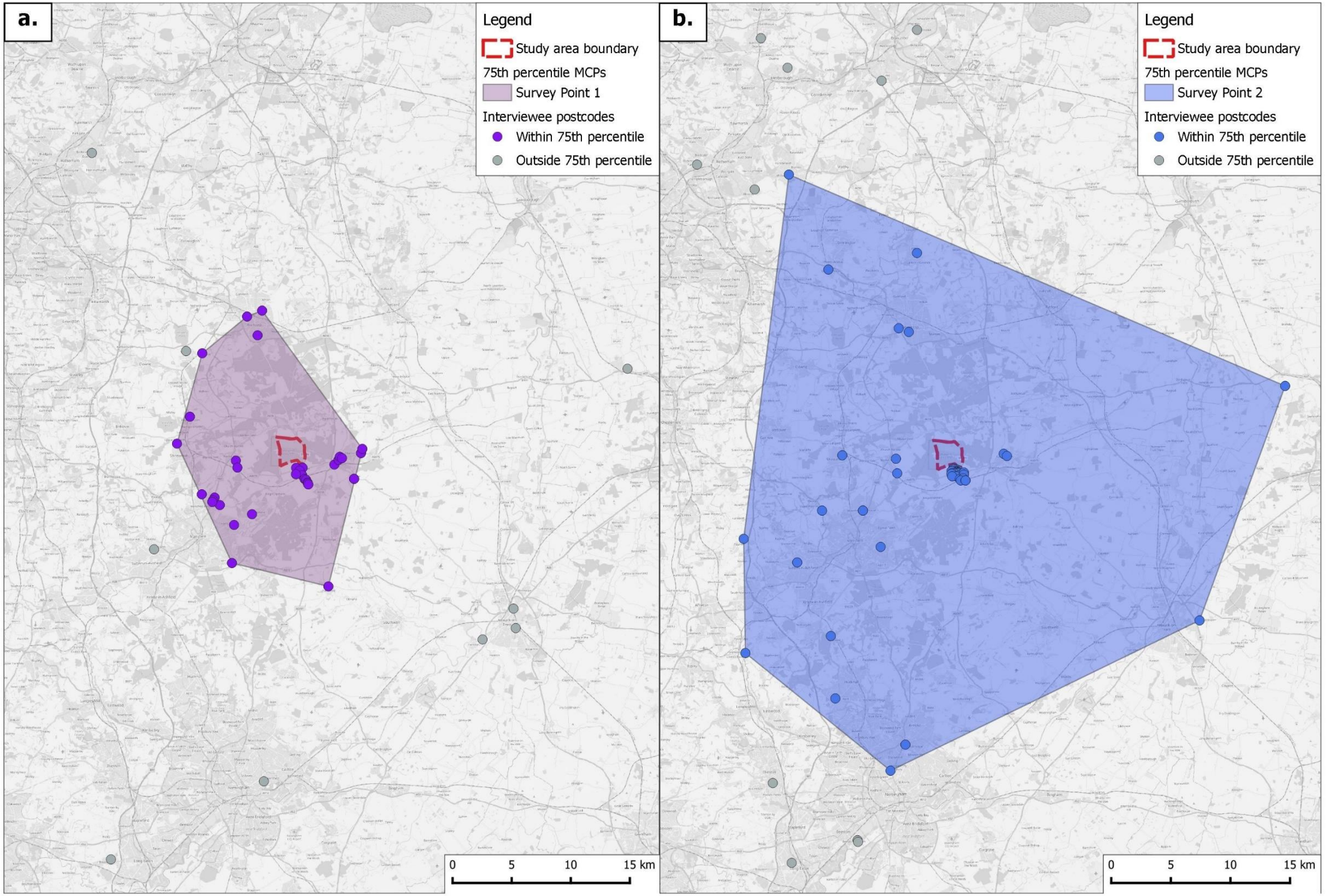
Map 9: Home postcodes of all interviewees, stratified by season and visit type



Map 10: 75th percentile Minimum Convex Polygons of straight-line distances for (a) all interviewee postcodes and (b) only those interviewees carrying out day visits from home



Map 11: 75th percentile Minimum Convex Polygons of straight-line distances for all day visitor interviewee postcodes at: (a) Survey Point 1 (Budby South Forest RSPB Car Park); and, (b) Survey Point 2 (Sherwood Forest NNR Main Entrance)



5.42 The straight-line distance ('as the crow-flies') from each interviewee's home postcode to the relevant survey location was calculated. Data from all interviewee visit types is provided in Table 20, with data solely from interviewees undertaking day visits form home provided in Table 21.

5.43 It can be seen that across all visit types during the spring survey period (79 interviewees) the mean distance was 37.1km and the median was 9.6km (i.e. 50% of all interviewees during this period had come from a radius of <9.6km around the survey locations). The mean is much higher than the median as there are a few large values (up to 271.8km) that skew the data. The third quartile (75th percentile) was 38.6km (i.e. 75% of all spring survey period interviewees lived within this distance of the survey location). Overall distances for the summer survey period (67 interviewees) were similar, with a mean of 33.3km, a median of 10.3km, and a 75th percentile of 28.8km.

5.44 These statistics varied between the survey locations however, with much larger mean (44.4km in spring and 40.2km in summer) and 75th percentile (55.2km in spring and 35.6km in summer) distances recorded from Survey Point 2 (Sherwood Forest NNR Main Entrance). Mean and 75th percentile values at Survey Point 1 (Budby South Forest RSPB Car Park) were correspondingly smaller during both the spring and summer, although their medians were similar to the overall values.

Table 20: Summary statistics for the straight-line distances between the home postcode of each interviewee (all visit types) and their respective interview location. N is the sample size (number of valid postcodes) and Q3 is the 75th percentile. Spring surveys are highlighted blue and summer surveys in pink.

Survey location	Survey period	N	Distance (km)				
			Mean (+ 1SE)	Min	Median	Q3	Maximum
1 – Budby South Forest RSPB Reserve Car Park	Spring	29	24.6 (+8.9)	1.8	6.0	20.1	233.7
	Summer	25	21.9 (+8.4)	2.0	10.3	18.8	192.2
2 – Sherwood Forest NNR Main Entrance	Spring	50	44.4 (+8.9)	0.4	20.9	55.2	271.8
	Summer	42	40.2 (+10.3)	0.3	10.8	35.6	243.2
Total	**Spring**	**79**	**37.1 (+6.6)**	**0.4**	**9.6**	**38.6**	**271.8**
	Summer	**67**	**33.3 (+7.2)**	**0.3**	**10.3**	**28.8**	**243.2**

5.45 When holidaymakers are removed from the dataset (leaving 126 interviewees in total) the overall straight-line distances decreased substantially (see Table 21), with the overall spring mean distance being 19.7km, the median 8.7km, and the 75th percentile 28.3km. Similar distances were calculated for the summer survey period, with a mean of 14.1km, a median of 8.8km, and a 75th percentile of 22.3km.

5.46 There was still some variation between survey locations, with Survey Point 1 (Budby South Forest RSPB Reserve Car Park) recording smaller than average distances during the spring and (marginally) larger than average values during the summer. Survey Point 2 (Sherwood Forest NNR Main Entrance) recorded (marginally) larger than average values in the spring, but values close to the overall means during the summer months.

Table 21: Summary statistics for the straight-line distances between the home postcode of each interviewee (day visits from home only) and their respective interview location. N is the sample size (number of valid postcodes) and Q3 is the 75th percentile. Spring surveys are highlighted blue and summer surveys in pink.

Survey location	Survey period	N	Distance (km)				
			Mean (+ 1SE)	Min	Median	Q3	Maximum
1 – Budby South Forest RSPB Reserve Car Park	Spring	28	17.1 (+5.0)	1.8	5.5	11.8	104.6
	Summer	24	14.8 (+4.7)	2.0	9.6	14.8	116.2
2 – Sherwood Forest NNR Main Entrance	Spring	39	21.5 (+4.9)	0.4	9.3	32.6	131.4
	Summer	35	13.6 (+3.1)	0.3	5.1	23.8	85.4
Total	**Spring**	**67**	**19.7 (+3.5)**	**0.4**	**8.7**	**28.3**	**131.4**
	Summer	**59**	**14.1 (+2.7)**	**0.3**	**8.8**	**22.3**	**116.2**

5.47 Amongst the three most frequently recorded activity types (walkers, dog walkers, and bird/wildlife watchers), dog walkers exhibited the smallest straight-line distances (see Table 22) with a mean distance of 7.5km, a median of 3.2km, and a 75th percentile of 9.3km. Walkers reported a mean distance of 22.8km, a median of 18.3km, and a 75th percentile of 32.6km, whilst bird/wildlife watchers reported distances of 31.7km, 26.2km, and 80.2km for the same metrics. The small sample sizes for the other activity types did not allow for robust interpretation, although there was an indication that joggers/runners were likely to live in relative proximity to the survey location.

Table 22: Summary statistics for the straight-line distances between the home postcodes of all interviewees, stratified by main activity. Data from interviewees undertaking day trips from home are highlighted in mauve. N is the sample size (number of valid postcodes) and Q3 is the 75th percentile.

Activity	Visit type	N	Distance (km)				
			Mean (+ 1SE)	Min	Median	Q3	Maximum
Walking	All	67	53.8 (+8.4)	0.5	26.2	77.3	271.8
	Day visits only	51	22.8 (+3.9)	0.5	18.3	32.6	116.2
Dog walking	All	55	11.6 (+4.5)	0.3	3.4	9.3	233.7
	Day visits only	53	7.5 (+1.9)	0.3	3.2	9.2	91.3
Bird / Wildlife watching	Day visits only	6	31.7 (+10.8)	8.7	26.2	49.0	80.2
Jogging / Power walking / Running	All	5	19.7 (+17.6)	0.5	1.4	48.0	90.0
	Day visits only	4	2.2 (+1.3)	0.5	1.1	4.8	6.0
Cycling / Mountain biking	All	2	122.3 (+121.0)	1.4	N/A	N/A	243.2
	Day visits only	1	1.4	N/A	N/A	N/A	1.4
Picnic	Day visits only	2	28.1 (+8.4)	19.8	N/A	N/A	36.4
Commercial dog walking	Day visits only	1	2.8	N/A	N/A	N/A	2.8
Outing with family	Day visits only	1	85.4	N/A	N/A	N/A	85.4
Other	Day visits only	7	35.2 (+16.7)	6.0	15.7	36.9	131.4

5.48 Interviewees who visited the most frequently (i.e. most days as a minimum) were more likely to originate from closer postcodes than those who visited less frequently (see Table 23), with mean ranges of 1.9km to 2.1km and 9.2km to 107.2km, and 75th percentile ranges of 2.6km to 3.1km and 10.3km to 232.3km, respectively. Nevertheless, those who visited between once a week and once a month (i.e. relatively frequent visitors) were still likely to live within approximately 10km to 20km of the survey location. Interviewees undertaking either their first visit to the site, or visiting less than annually, travelled the largest distances, with means of 101.6km and 107.2km, and 75th percentiles of 178.9km and 232.3km, respectively.

Table 23: Summary statistics for the straight-line distances between the home postcode of all interviewees at their respective interview locations and the regularity of their visits to the locality. N is the sample size (number of interviewees) and Q3 is the 75th percentile.

Visit frequency	N	Distance (km)				
		Mean (+ 1SE)	Min	Median	Q3	Maximum
More than once a day (365+ visits a year)	11	1.9 (+0.1)	0.3	0.5	2.8	8.8
Daily (300-365 visits)	15	2.2 (+0.1)	0.4	1.8	3.1	8.8
Most days (180-300 visits)	8	2.1 (+1.2)	0.5	0.7	2.6	9.6
1 to 3 times a week (40-180 visits)	33	9.2 (+1.6)	0.4	7.9	12.1	32.5
2 to 3 times per month (15-40 visits)	3	10.2 (+6.8)	2.8	4.1	23.6	23.6
Once a month (6-15 visits)	7	7.3 (+2.2)	1.4	5.0	10.3	18.3
Less than once a month (2-5 visits)	29	30.7 (+5.2)	0.3	24.1	37.8	116.2
Less than annually	5	107.2 (+52.7)	18.9	32.6	232.3	271.8
First visit	30	101.6 (+14.1)	4.9	88.5	178.9	243.2
Other	2	11.5 (+10.6)	1.0	11.5	N/A	22.0
Don't know	3	71.2 (+34.5)	4.3	90.0	119.2	119.2

5.49 Amongst interviewees making a day trip from home, those who travelled to the survey location on foot were more likely to have travelled from a closer postcode than those who had travelled by bicycle or car/van, with mean values of 0.8km, 1.4km, and 22.8km, respectively (see Table 24).

Table 24: Summary statistics for the straight-line distances between the home postcode of interviewees at their respective interview locations and their mode of transport to the locality. Data from interviewees undertaking day trips from home are highlighted in mauve. N is the sample size (number of interviewees) and Q3 is the 75th percentile.

Mode of transport	Visit type	N	Distance (km)				
			Mean (+ 1SE)	Min	Median	Q3	Maximum
Car/van	All	110	43.3 (+5.8)	0.6	18.0	38.9	271.8
	Day visits only	93	22.8 (+2.8)	0.6	12.0	29.8	131.4
On foot	All	33	3.1 (+2.4)	0.3	0.6	0.9	77.3
	Day visits only	32	0.8 (+0.2)	0.3	0.6	0.8	5.1
Bicycle	All	3	100.5 (+73.2)	1.4	56.7	243.2	243.2
	Day visits only	1	1.4	N/A	N/A	N/A	1.4

Visitor routes during their visit (Q10-11)

5.50 For the majority of interviewees overall (57.3%) the route they took was reflective of their normal route (see Table 25), with 22.4% on their first visit to the locality, and a further 7.9% who did not have a typical visit. This pattern held at both of the survey locations. A larger relative proportion of interviewees at Survey Point 2 (Sherwood Forest NNR Main Entrance) were on their first visit to the location.

Table 25: Number (row %) of all interviewees and the typicalness of their route (Q10), stratified by survey location. Grey shading reflects the largest value in each row, with darker shading highlighting the larger row value.

Survey location	Route length				First vist	Total
	Typical visit	Much longer than normal	Much shorter than normal	Not sure/no typical visit		
1 – Budby South Forest RSPB Reserve Car Park	39 (68.5%)	0 (0.0%)	5 (8.8%)	4 (7.1%)	8 (14.1%)	57 (100%)
2 – Sherwood Forest NNR Main Entrance	48 (50.6%)	1 (1.1%)	11 (11.6%)	8 (8.5%)	26 (27.4%)	95 (100%)
Total	**87 (57.3%)**	**1 (0.7%)**	**16 (10.6%)**	**12 (7.9%)**	**34 (22.4%)**	**152 (100%)**

5.51 A range of factors influenced the interviewees' choice of routes (see Figure 10). Previous knowledge/experience of the area was the most commonly given response within the predetermined categories (20.9% of responses), followed by visiting a particular feature or viewpoint (15.2%), the activity undertaken (14.6%), the presence of a marked trail (10.8%), and "other" (10.8%). The remaining factors each comprised <10% of responses each. The non-predetermined 'other' category included varying of typical routes/wandering, exploring new areas, and staying within the "recommended" naturist area.

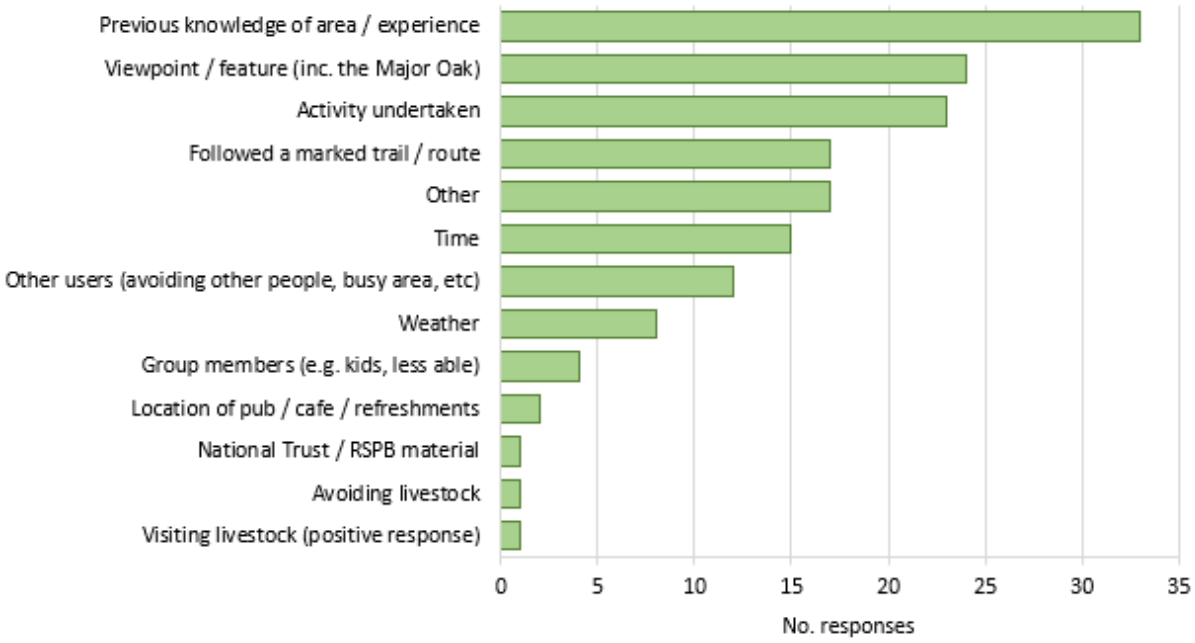


Figure 10: Factors influencing choice of route (Q11). Note that interviewees could give multiple responses.

5.52 A total of 142 visitor routes were mapped. Table 26 provides summary route length data for both survey locations, with the data provided separately for full routes (i.e. those that extended outside of the Sherwood Forest NNR/Budby South Forest RSPB Reserve study area boundary) and clipped to within the study area only. Mean full routes were similar for both survey locations (4.6km and 4.3km for Survey Point 1 (Budby South Forest RSPB Reserve Car Park) and Survey Point 2 (Sherwood Forest NNR Main Entrance), respectively), whereas mean clipped routes differed between locations. The mean clipped route at Survey Point 2 was 3.0km, whilst that at Survey Point 1 was 4.1km.

5.53 The median and 75th percentile values for both of the survey locations exhibited a similar pattern, with a maximum 75th percentile of clipped routes (5.1km) recorded at Survey Location 2 (Sherwood Forest NNR Main Entrance). Overall, the data indicates that the majority of visitors to the study area undertake routes between 3.2km and 4.9km in length within the study area boundary.

Table 26: Summary statistics of interviewee route length (full extent and clipped to the survey area boundary) for each of the survey locations. Clipped extents are highlighted tan. N is the sample size (number of interviewees) and Q3 is the 75th percentile.

Survey location	Route extent	N	Length (km)				
			Mean (+ 1SE)	Min	Median	Q3	Maximum
1 – Budby South Forest RSPB Reserve Car Park	Full	53	4.6 (+0.3)	1.3	4.5	6.0	8.5
	Clipped	53	4.1 (+0.2)	1.2	4.2	5.1	6.9
2 – Sherwood Forest NNR Main Entrance	Full	89	4.3 (+0.4)	1.4	3.3	5.4	17.6
	Clipped	89	3.0 (+0.2)	1.1	2.3	4.3	7.3
Total	**Full**	**142**	**4.4 (+0.3)**	**1.3**	**3.7**	**5.5**	**17.6**
	Clipped	**142**	**3.4 (+0.2)**	**1.1**	**3.2**	**4.9**	**7.3**

5.54 Amongst the three most frequently recorded main activity types, bird/wildlife watchers exhibited the longest mean routes within the study area (4.4km: see Table 27), with dog walkers the second longest (3.4km), and walkers the third (3.1km).

Table 27: Summary statistics of interviewee route length (clipped to the survey area boundary) , stratified by main activity. N is the sample size (number of interviewees) and Q3 is the 75th percentile.

Activity	N	Length (km)				
		Mean (+ 1SE)	Min	Median	Q3	Maximum
Walking	67	3.1 (+0.2)	1.2	3.1	4.5	7.3
Dog walking	51	3.4 (+0.3)	1.1	3.9	5.0	6.9
Bird / Wildlife watching	8	4.4 (+0.6)	2.8	4.2	5.9	6.6
Jogging / Power walking / Running	5	3.9 (+0.9)	1.9	4.9	5.4	5.6
Cycling / Mountain biking	2	5.0 (+0.1)	4.9	N/A	N/A	5.0
Picnic	2	3.8 (+2.1)	1.7	N/A	N/A	5.9
Commercial dog walking	1	2.7	N/A	N/A	N/A	2.7
Outing with family	1	4.0	N/A	N/A	N/A	4.0
Other	5	3.2 (+1.0)	1.3	1.9	5.5	6.1
Total	**142**	**3.4 (+0.2)**	**1.1**	**3.2**	**4.9**	**7.3**

5.55 The routes recorded are shown in Maps 12a to d, clipped to the study area, with route density indicated through the use of a heat map (with colour intensity congruous with route density). The maps highlight the areas with the highest level of use and broadly indicate where the largest volume of interviewee footfall occurred. Map 12a depicts route densities for all mapped interviewees (142) across both survey periods, with Maps 12b to 12d depicting the route densities for walkers, dog walkers, and bird/wildlife watchers in isolation, respectively.

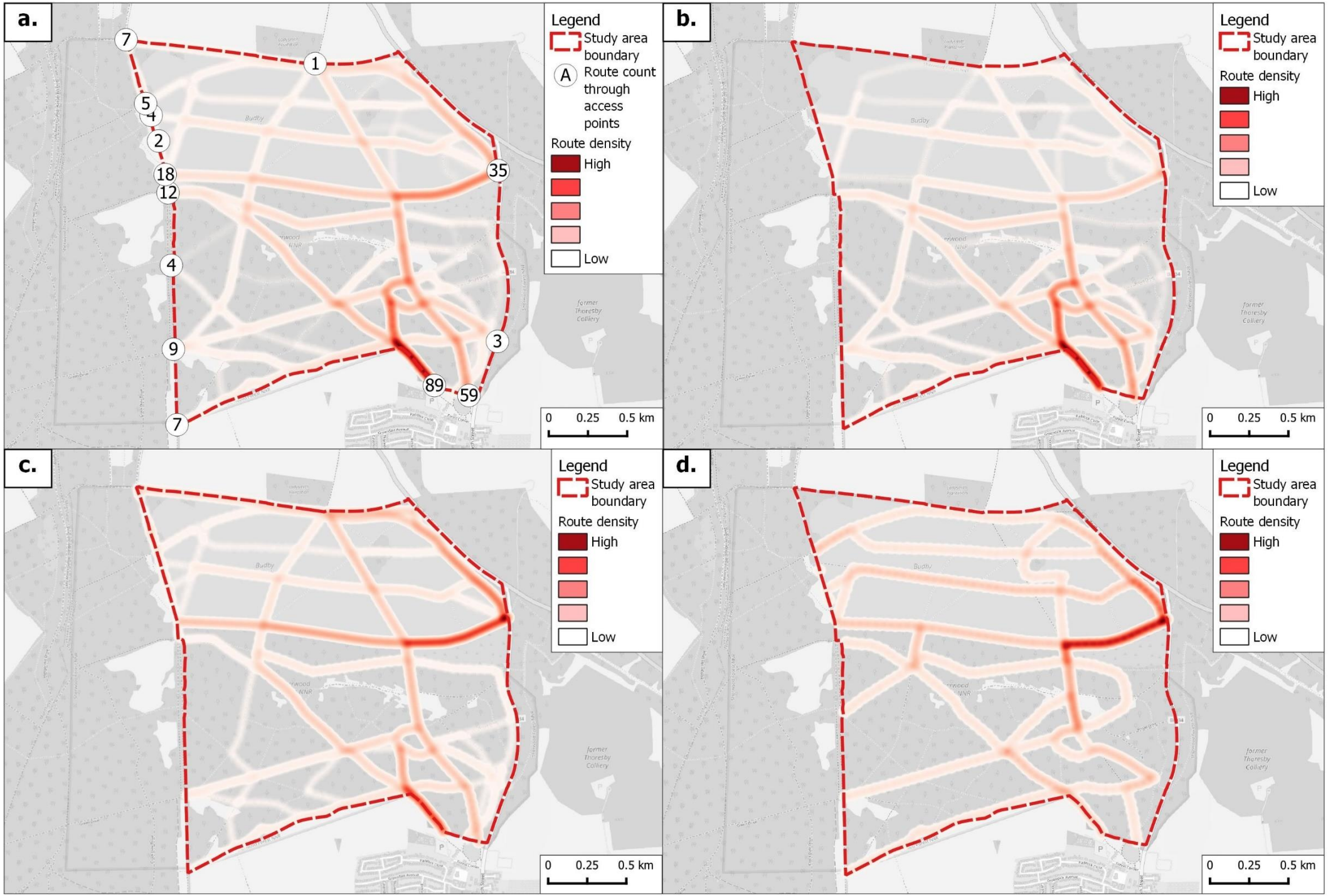
5.56 Interviewee footfall was most concentrated along the entrance track heading northwest from the Visitor Centre into Sherwood Forest (see Map 12a), along the main east-west/northwest-southeast access routes radiating from the Budby South Forest RSPB Car Park, and on trails in the vicinity of the Major Oak. Trails/routes in the western half of the study area show a lower route density, and there is limited evidence of site users going 'off piste'.

5.57 Route counts through access points along the study area boundary are shown on Map 12a, and it can be seen that the main entrance to Sherwood Forest NNR, in proximity to the Visitor Centre and car park, is by far the busiest access point. Nevertheless, the access point adjacent to the Budby South Forest RSPB Reserve car park (on the eastern border of the study area) is also heavily used. Access along the northern and western perimeter of the

study area is more diffuse, although relatively large numbers of visitors appear to access/egress the site via western end of the main east-west footpath forming the border between Sherwood Forest and Budby South Forest RSPB Reserve.

5.58 The route density of walkers (see Map 12b) mirrors the overall route density map, although access routes from the RSPB car park appear to be less frequently used. Dog walker density (see Map 12c) again mirrors the overall route density map although routes leading from the RSPB car park are evidently favoured. A preference for circular routes is also potentially indicated by the concentration of routes along the main east-west, north-south, and peripheral trails running across the study area. Finally, although based on a much smaller sample, bird/wildlife watcher route density (see Map 12d) is very much focussed upon the main trail network, with an obviously higher route density in proximity to the RSPB car park and across the majority of the heathland area comprising the northern half of Sherwood Forest NNR.

Map 12: Route densities for: (a) all interviewees; (b) walkers only; (c) dog walkers only, and; (d) bird / wildlife watchers only



Comments/views on recreation and site management (Q21, 28 &29)

5.59 Suggestions from interviewees (Q21) concerning potential improvements to management of other sites frequented by the interviewees primarily centred upon better/more parking provision and parking fees, the provision/maintenance of dog waste and litter bins, improved access and path maintenance, entry fees, provision of better signage, and improved facilities (toilets and café in particular).

5.60 The last part of the questionnaire included free text boxes for the surveyors to log any changes interviewees would like to see regarding how the study area is managed for recreation and people (Q28). The subsequent question asked for any further comments or feedback about the interviewee's visit (Q29). Responses to both questions are summarised in Figure 11, with full responses provided in Appendix 3.

Figure 11: Word cloud giving free text responses to Q28 and Q29. Graphic created using the [Wordclouds](#) app.

5.61 The majority of feedback was positive with many people enjoying the wildness and open spaces present, the friendly management team, and the presence of a large area of accessible greenspace on their doorstep. Nevertheless, there was also a small cohort of local people who were not happy at all with RSPB management of the site or with the relocation/contents of the new Visitor Centre. Other issues identified included parking provision and fees, potholes, nudists, and horse dung, as well as conflicts between different user groups and the site managers (dog walkers and RSPB/birdwatchers in particular).

5.62 Furthermore, there were requests for:

- More waste bins to be deployed;
- The fixing of potholes;
- Earlier opening times;
- Reductions/changes to parking fees (including making it free for local people);
- Provision of additional parking areas, and stopping people parking on local roads;
- Increased access across the site for dog walkers;
- Provision of better signage;
- Improved access and facilities for disabled people;
- Cleaning up after horses;
- More information about Robin Hood in the Visitor Centre;
- More benches; and,
- Increased liaison between the RSPB and the local community.

6. Assessment of recreation impacts

6.1 In this section we synthesise the findings from the Woodlark and Nightjar surveys, habitats and recreation impact walkover, and visitor interviews to identify how recreation may be impacting the relevant interest features of Birklands & Bilhaugh SAC/Sherwood Forest NNR. It is important to note that the interest features may however also be impacted by other factors, such as climate change, atmospheric pollution, and natural processes, and in some cases these may interact with any identified recreation impacts.

Visitor origins and use of the site

6.2 Sherwood Forest NNR, and its constituent components of Birklands & Bilhaugh SAC/SSSI and Budby South Forest RSPB Reserve, clearly comprises a destination site within the region, primarily attracting visitors on a day trip from home. Nevertheless, the site shows an interesting dichotomy, with Sherwood Forest/the SAC attracting visitors from much further afield than the RSPB Reserve to the north (which was primarily used by more local residents).

6.3 The majority of site users drive to the locality, although a quarter of both walkers and dog walkers arrive on foot. The larger proportion of visitors spend between half an hour and 2 hours on site, with more than half of dog walkers spending less than one hour there. People who live closer to the site tend to visit more frequently than those that live further afield, and dog walkers, in particular, generally originate from locations within the surrounding 9km.

6.4 Most site users either visit equally across the year or show a preference for the summer months. A significant proportion of site users (comprising approximately a third of interviewees) indicated that 75% or more of their visits for the activity they were undertaking took place within the National Nature Reserve boundary. The key reasons for site choice include proximity to home address, the presence of the Major Oak and the cultural importance of Robin Hood, and familiarity with the site, although site users also access websites and use online maps to plan their visits.

6.5 Visitors undertook a range of activities. Nevertheless, walkers and dog walkers comprise by far the most frequent users, comprising 84% of visitors. It can therefore be argued that the larger proportion of recreation impacts

observed on site are likely to be driven by these activities specifically. Although small in comparison, the site is also visited by a relatively large number of bird/wildlife watchers (comprising more than 5% of visitors).

6.6 These two most frequent user types show differences in the routes that they use, with walkers largely concentrated in the vicinity of the main entrance to the NNR and the Major Oak, whilst dog walkers predominantly access Budby South Forest RSPB Reserve or enter via the NNR main entrance prior to spreading across Sherwood Forest/the SAC. The routes used by site users are nevertheless mostly reflective of previous experience, the presence of the Major Oak/viewpoints, the activity being undertaken and the time available to undertake it, and the presence of a marked trail.

6.7 Access via the NNR site boundary is focussed upon three main access points, comprising the NNR main entrance near the Visitor Centre, and the access points at either end of the main east-west track delineating Sherwood Forest/the SAC from the RSPB Reserve. Nevertheless, lower levels of diffuse access also occur around the site (and along the western site boundary in particular).

6.8 The majority of site users have limited knowledge of the site's value for biodiversity, with few respondents identifying woodland or veteran trees as being susceptive to the impacts of recreation, in particular, during the interview surveys. Nevertheless, the presence of breeding birds was still identified by a relatively large proportion of interviewees, with the presence of Nightjar and rare invertebrates (perhaps surprisingly) also identified by a sizeable minority. Furthermore, more than half of site users indicate that they would use areas of alternative greenspace for their activity if it were provided, with 20% suggesting potential use.

Impacts upon qualifying features and other sensitive receptors

Habitats

6.9 Map 13 overlays all visitor routes upon the SAC qualifying habitats present and identified as being susceptible (and accessible) to recreation impacts during the walkover survey, with the intensity of the route line analogous with intensity of use. Within the SAC the greatest intensity of route use is focussed around the NNR Main entrance and in the vicinity of the Major Oak, with other well-used routes radiating north-west across the SAC and along its northern boundary.

6.10 A network of routes also radiates across Budby South Forest RSPB Reserve, outside the SAC boundary, although these are mostly located upon clearly defined tracks and paths between fenced enclosures. Nevertheless, the presence of several desire lines, livestock paths, and disused/temporary tracks indicate that lower levels of more diffuse access may already be occurring there. The latter routes are also likely to become more heavily used should visitor pressure increase.

6.11 Trampling and compaction of ground flora and soils, alongside damage to tree roots, are therefore important impacts throughout the woodland areas of the SAC. Several of the main routes within the SAC, including those in proximity to the NNR main entrance and the Major Oak, are completely denuded of vegetation and greatly widened, and desire lines/cut-throughs were noted across fenced boundaries. Conversely, trampling within the RSPB Reserve was localised and may be increasing the diversity of the sward in places.

6.12 Enrichment from dog faeces and urine is another key impact. The effects of enrichment are compounded in certain localities, especially alongside the heavily used routes within the SAC identified above, the effects of extreme footfall (leading to the total removal of ground flora in places). Enrichment is also prevalent along path edges within the RSPB Reserve.

6.13 A major issue for the SAC is damage caused to veteran trees, including that arising from the building of dens in proximity to them. The presence of dens potentially increases the level of footfall around nearby veterans, causing damage to exposed roots and potentially to the trees themselves. Any damage to veteran trees could also ultimately impact upon fungal communities identified in the SSSI citation, whilst removal of deadwood could also have knock on effects upon the SSSI's important saproxylic invertebrate community.

Woodlark and Nightjar

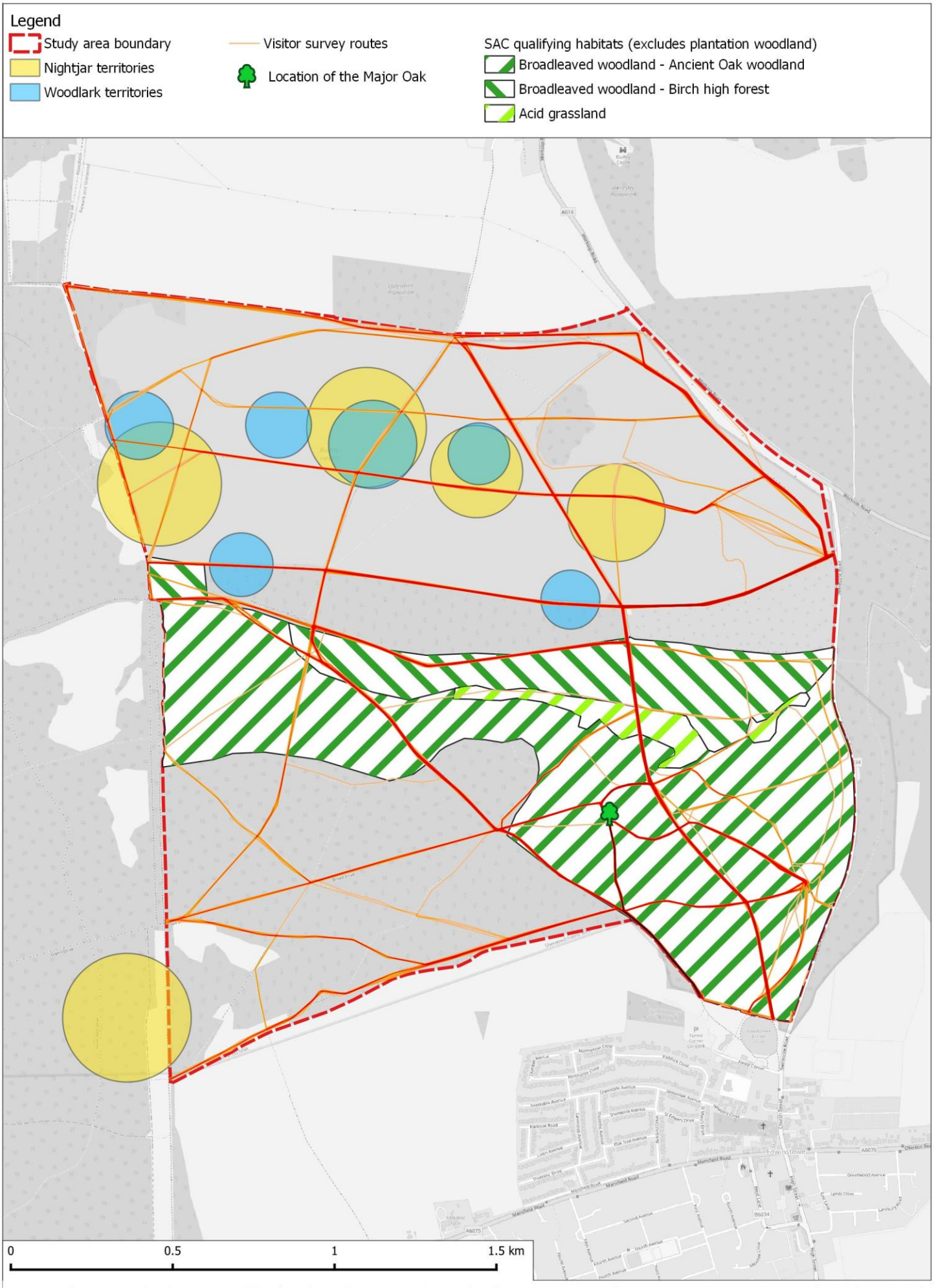
6.14 Nightjar and Woodlark are also ground-nesting species and impacts from recreation have been widely reported for these species (Lowe et al., 2014; Mallord et al., 2007; Murison, 2002). Although much of the site is enclosed within grazing units, Nightjar appear to currently favour less heavily utilised areas of Budby South Forest RSPB Reserve, away from the most frequently used tracks (see Map 13). The presence of a Nightjar territory on the extreme south-western boundary of the SAC, away from heavily used routes, is also

noteworthy. This may be due to disturbance arising from people and dogs on nearby tracks and paths. It is also considered likely that a proportion of dog walkers using the site will allow their dogs to roam freely (and potentially within fenced off areas), with such behaviour commonly witnessed within the SAC during site visits. The RSPB Reserve is also Open Access, and it is possible for visitors to access the majority of enclosures within it via gates or styles, if they wish. As such, there is potential for any increase in footfall within these areas to have a negative impact upon the Nightjars present.

6.15 Woodlark are more widely distributed across the RSPB Reserve (see Map 13), although there are indications that they possibly avoid the busier eastern third of the site. The presence of 4 to 6 pairs of Woodlark, and 4 to 5 territorial Nightjar, within the NNR boundary indicate that the locality potentially supports a significant proportion of the populations associated with Sherwood Forest ppSPA[7].

[7] Advice Note to Local Planning Authorities regarding the consideration of likely effects on the breeding population of nightjar and woodlark in the Sherwood Forest region

Map 13: Overlay of visitor routes upon qualifying SAC habitats and Woodlark and Nightjar territories



Modelling visitor rates and potential future changes

Increases in residential housing

6.16 Map 14 provides the location of all residential allocations within the GIS shapefiles provided by Bassetlaw and Newark and Sherwood District Councils. It also depicts the incremental 500m buffer surrounding Sherwood Forest NNR used to extract postcode information to inform our understanding of levels of housing change. The number of existing residential postcodes, the number of proposed allocation dwellings, and the percentage increase between them within each distance band are provided in Appendix 4. Figure 12 summarises the data graphically, stratified by Local Authority.

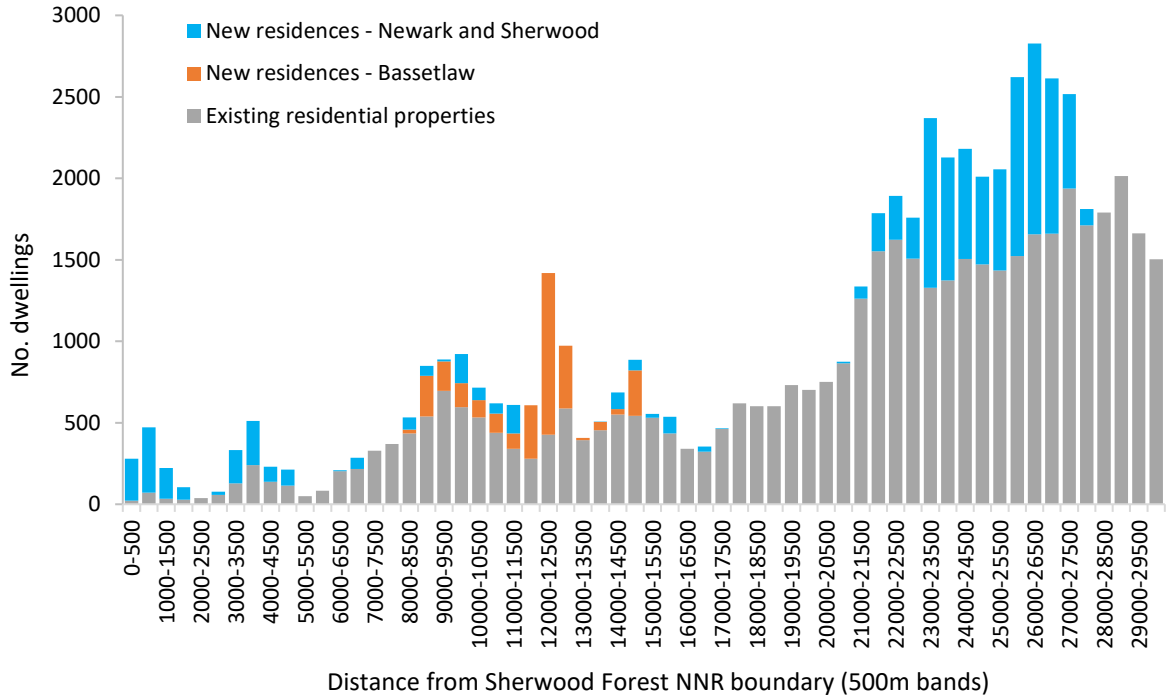
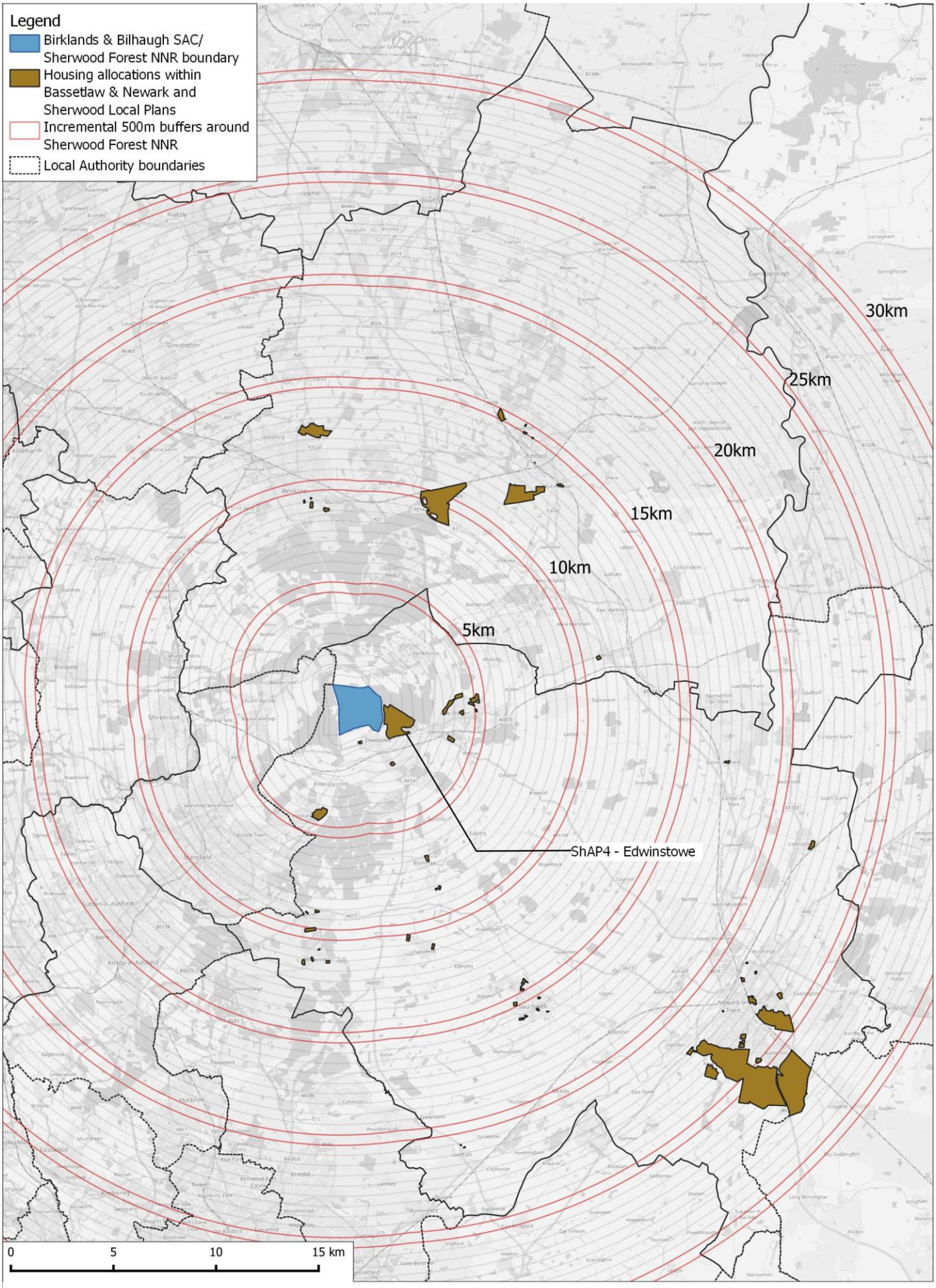


Figure 12: Levels of current and future (new) housing in proximity to the Sherwood Forest NNR boundary (using 2022 national postcode data).

6.17 New housing detailed in the Bassetlaw Local Plan is located between 8km and 15km from the NNR boundary, whereas >8% of the new housing identified in the Newark and Sherwood Local Plan (comprising 922 dwellings) is located within 2km of the NNR boundary. 800 of the latter are located

within the ShAP4 – Edwinstowe allocation, situated adjacent to the NNR boundary.

Map 14: Birklands & Bilhaugh SAC/Sherwood Forest NNR in relation to housing allocations detailed within the Bassetlaw & Newark and Sherwood Local Plans, overlaid by incremental 500m buffer (30km extent)



Current visit rates in relation to distance

6.18 Those living closer to the SAC will be expected to visit more frequently than those living further away. In order to understand this pattern in detail, we used the visitor survey data to calculate the number of interviewees from different distance buffers (plotted around each survey point, at 500m intervals) and the number of existing residential properties within the same buffers. Residential properties were extracted from postcode data.

6.19 We calculated the number of interviewees per dwelling for each buffer and survey point, which is essentially the visit rate, and then plotted this visit rate against distance from the survey point. Separate plots were produced for those arriving on foot and those arriving by car, using the data for those on a short visit directly from home only.

6.20 There are hardly any houses in close proximity to the Budby South Forest survey point, with no properties within 500m and only 4 within 1,500m. By contrast, at the Sherwood Forest NNR Main Entrance survey point there are 16 dwellings within 500m, 64 within 500m-1km, and 29 within 1km-1.5km. Not surprisingly there was only one interviewee who was on a short visit directly from home and arrived at the Budby South Forest survey point on foot, compared to 28 interviewees at the Sherwood Forest NNR Main Entrance.

6.21 The data from the two survey points are shown separately in Figure 13, with the trend line fitted by eye, and reflecting that – at least in the first 1,500m – the lack of interviewees on foot at the Budby South Forest survey point is a result of the lack of houses at the relevant distances. The parameters used to define the curve are very similar to those used for the Clumber Park SSSI on foot data (see Saunders et al., 2022), providing further confidence in the approach.

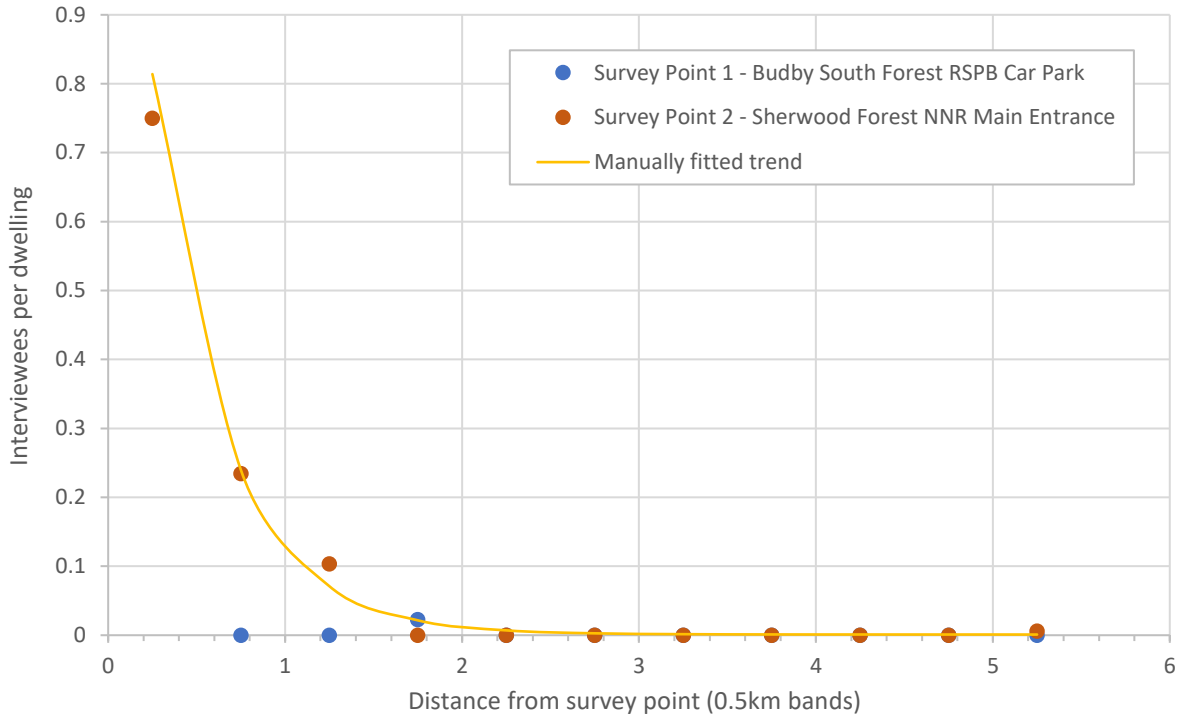


Figure 13: 'Visit rate' (interviewees per dwelling) in relation to distance from the survey point for visitors on foot only. Points show mean value for each 1km band. Trend line fitted by eye. Y=1.5e—2.45x + 0.001.

6.22 A similar plot, derived from the data on those visitors arriving to the site by car, is shown in Figure 14. Here the plot shows the mean visit rate for the two survey points, and we have grouped the data into 1km bands to reduce the variability where there are bands with low levels of housing. In the initial 0-1km band there were just 2 houses at the Budby South Forest survey point and 80 houses at the Sherwood Forest Main Entrance survey point. Furthermore, there were no visitors who arrived by car and gave a postcode within this band at the Budby South Forest survey point and 2 interviewees at the Sherwood Forest NNR Main Entrance. The initial point (i.e. dot furthest to the left) is therefore skewed by the lack of data from Budby South Forest and there is therefore some uncertainty around visit rates by car at the closer distances.

6.23 We have fitted a curve assuming visit rates decline with distance such that the highest rates are adjacent to the site, but it may be that at the closer distances people do not necessarily get in their car and as such a different shaped curve may be more appropriate. Given the lack of local housing at

Budby South Forest the data are limited to inform the shape in the first 1-2km.

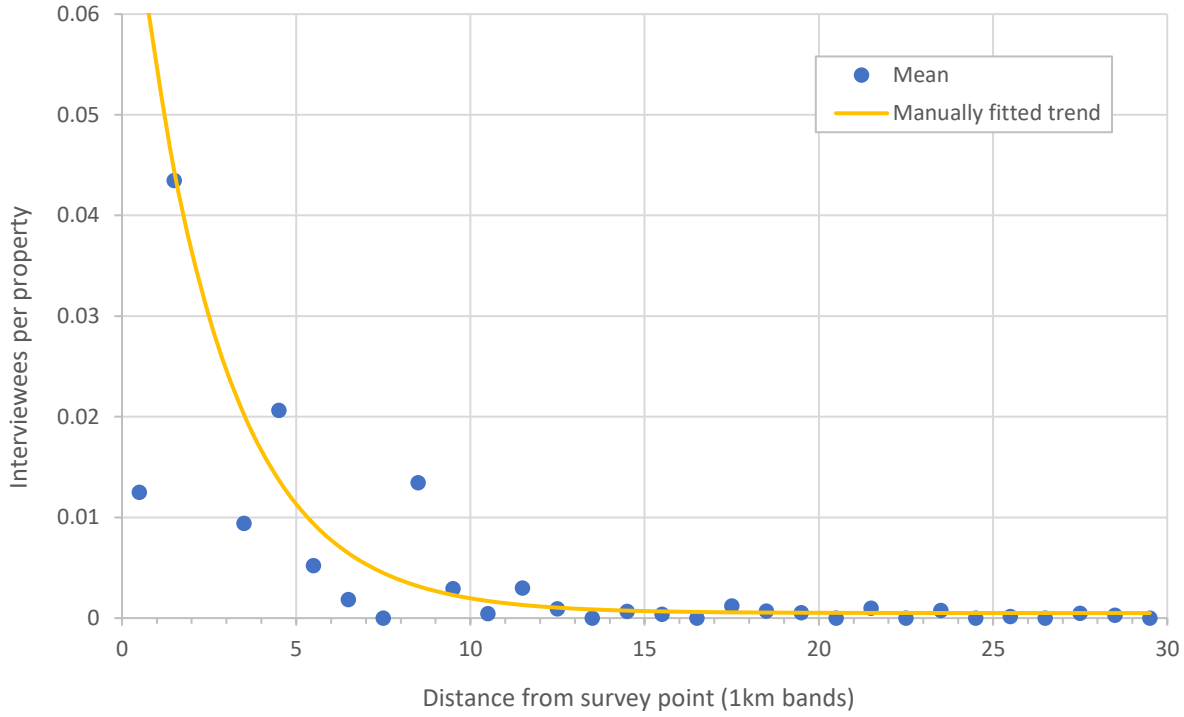


Figure 14: Visit rate' (interviewees per dwelling) in relation to distance from the survey point for visitors arriving by car. Points show mean value for each 1km band. Trend line fitted by eye and with reference to the r^2 value, using data for the distance bands above 2km. Y=0.08e—0.4x + 0.0005 for data, r^2= 0.60.

Predictions of changes in access as a result of plan-led growth

6.24 The plotted curves were used to predict the change in access likely as a result of the potential new housing growth in both Bassetlaw and Newark and Sherwood, as described above. From them we can estimate a visit rate per property at a given distance for those visiting on foot and by car. The predications therefore relate to how many interviewees might be expected, were the survey repeated in the future, taking into account the cumulative levels of development. As the interviews were with a random sample of visitors, it is reasonable to assume that this level of change would be the overall change in access that might be expected.

6.25 We have assumed no mitigation in place that would deflect access, essentially envisaging residents in any new development would have similar access patterns/visit the SAC in the same way as current local residents. The

predictions also relate to those arriving either on foot or by car directly from home on a day visit. We have not made any predictions for those arriving by bike (who comprised too small a sample to derive any predictions for) and those on holiday. We have therefore simply assumed for these groups the number of interviewees in the future would be the same as currently. For foot access we did not extend the predictions beyond 6km from the site and for car visits we used buffers out to 30km.

6.26 Predictions of change are summarised in Table 28 and suggest that there would be a very marked increase in visitor use of 250% compared to the current use (i.e. at the time of survey) as a result of the increase in dwellings from the allocations in the Bassetlaw and Newark and Sherwood Local Plans. This figure is approximate but gives an indication of the potential scale of change that might be reasonably expected at the SAC in the future, as a result of the changes in local housing proposed.

Table 28: Predictions of increased access as a result of different housing scenarios. Predictions relate to the number of people arriving on foot and by car.

Total current interviewees (this survey)	152
Current interviewees by car from home	95
Current interviewees on foot from home	34
Other interviewees (arriving by bike or holiday makers)	23
% increase in car visitors post development	202
% increase foot visitors post development	555
Predicted future interviewees	532.6
Overall % increase in access	250

6.27 The very high rate of change is linked to the very marked increases in housing proposed in close proximity to the site (e.g. ShAP 4 – Edwinstowe). It should be noted however that extensive mitigation, in the form of habitat enhancement and the provision of green infrastructure (e.g. at the old Thoresby Colliery site), has already been instituted for that allocation, with recreational access management to the NNR identified as a condition in its planning permission. The location of the large Bassetlaw Garden Village allocation, which will ultimately consist of 500 dwellings, on the edge of the zone of influence will also require specific consideration during any strategic mitigation planning.

Identifying a recreational zone of influence

6.28 A zone of influence identifies where future housing might be reasonably expected to result in increased recreation use and trigger a need for further assessment and mitigation. It has become a standard practice to define zones of influence using visitor survey information, including postcode data and the distance within which 75% of visitors originate (see Liley, et al., 2021 for review and discussion).

6.29 The survey results indicate that Sherwood Forest NNR/Birklands & Bilhaugh SAC are predominantly accessed by visitors within the local region and are particularly used by the local dog walking community. We have therefore filtered the postcode data to derive a zone using the data relevant to those types of visitor that are likely to pose a risk in terms of recreational impact.

6.30 The visitor data show that walkers and dog walkers account for >84% of interviewees/site users and we have focussed on these activities and only those visiting from home (i.e. excluding holidaymakers) from the postcode data. Furthermore, we have filtered the data to only include those who visit more frequently (at least once a month). This gives a sample of 67 postcodes in total (see Table 29).

Table 29: Summary statistics for the straight-line distances between the home postcode of all walkers and dog walkers carrying out a day visit from home (and who visit at least once a month) and their respective interview location. N is the sample size (number of valid postcodes) and Q3 is the 75th percentile.

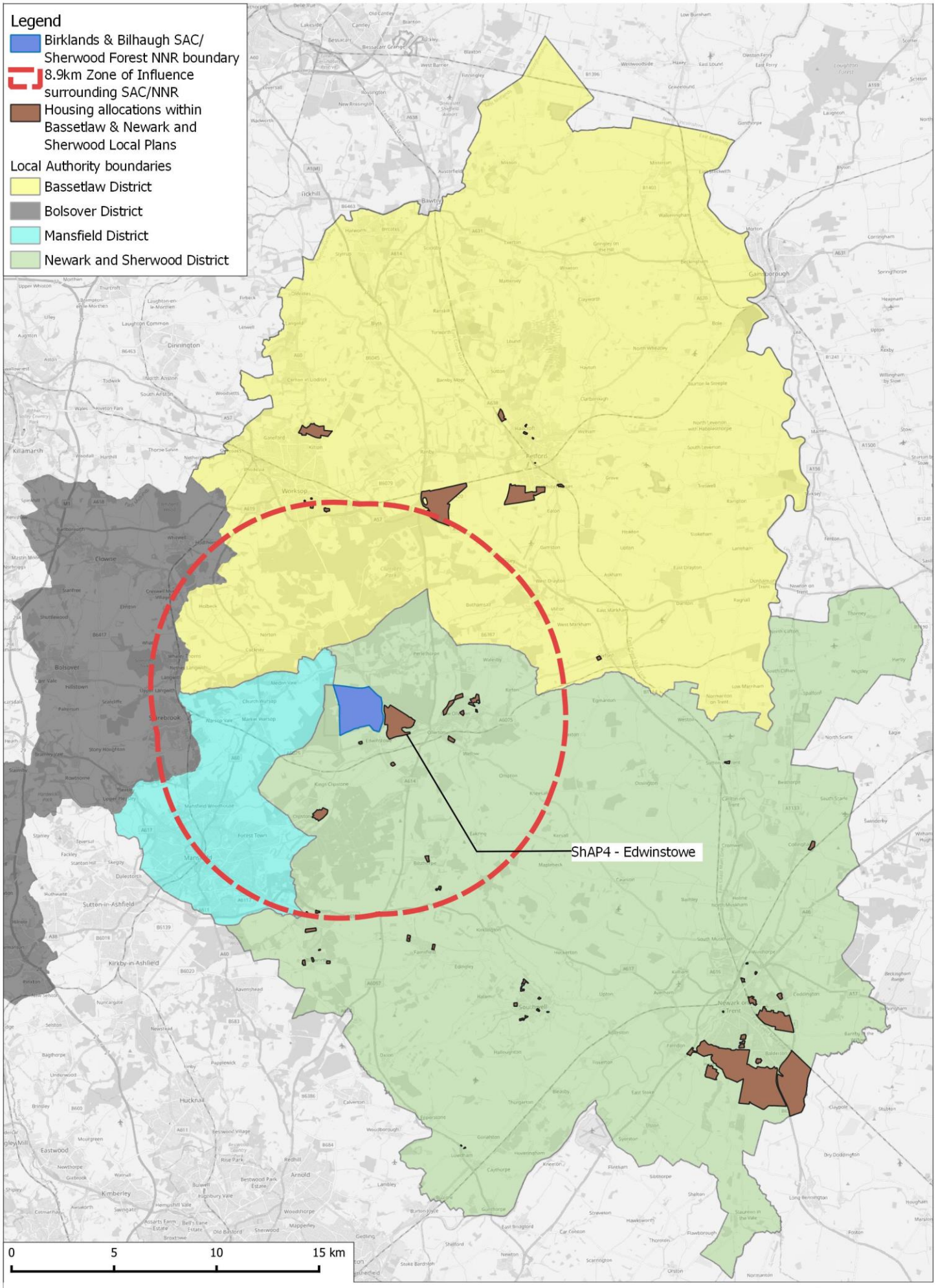
Activity	N	Length (km)				
		Mean (+ 1SE)	Min	Median	Q3	Maximum
Walking	24	7.7 (+2.2)	0.5	1.1	17.6	30.2
Dog walking	43	4.5 (+0.7)	0.3	3.1	8.8	12.9
Total	**67**	**5.7 (+0.9)**	**0.3**	**2.8**	**8.9**	**30.2**

6.31 It is important to note that those on their first visit to the site on the date of the interview have been excluded from the calculation. This does not mean, however, that either less frequent visitors, or those visiting whilst on holiday, do not potentially have negative recreational impacts upon the site. The zone simply identifies the area in which housing change is potentially likely to result in increased recreational use.

6.32 Using the parameters detailed above gives a distance of 8.9km (see Map 15). Within this zone there will be a differential effect relating to distance, such that new development closer to the SAC/NNR is likely to result in proportionally greater impact. The 8.9km, as mapped, includes portions of both Bassetlaw District and the Newark and Sherwood District Council area. It also incorporates sections of both Bolsover and Mansfield District Council areas.

6.33 The zone of influence is directly applicable to the data collected during the 2021 survey period. Nevertheless, there are possible covid effects to consider and it should therefore be revisited at regular intervals, for example once every five years or perhaps in line with the Local Plan review period. This would ensure the robustness of the zone of influence in the post-pandemic period and inform the framework of any subsequent strategic mitigation.

Map 15: Birklands & Bilhaugh SAC/Sherwood Forest NNR recreational Zone of Influence in relation to Local Authority boundaries and housing allocations detailed within the Bassetlaw & Newark and Sherwood Local Plans



7. Mitigation

7.1 Birklands & Bilhaugh SAC/Sherwood Forest NNR is clearly vulnerable to recreation impacts which extend to a range of habitat features and species interest, including ground nesting birds. Increased recreational use, including that associated with new developments and recreational demand, will bring risks and further pressure unless carefully managed. In this section we consider how these issues are addressed in other parts of the England and what measures might be relevant for the SAC/NNR.

7.2 Our approach includes targeted mitigation for Woodlark and Nightjar, which are mobile species and can occur outside the SAC/NNR boundary. The proposed mitigation will ensure that the populations present will be protected and maintained, ensuring that reasonable and proportionate steps have been taken in order to avoid or minimise adverse effects upon them from development in the Sherwood Forest area.

Protection afforded to European sites

7.3 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 2019[8]) take account of the UKs departure from the EU. The term 'European site' remains in use.

7.4 Regulation 105 *et seq* addresses the assessment of local plans and recent Government Guidance on the interpretation and application of the Regulations is available[9] .

7.5 'European sites' are the cornerstone of UK nature conservation policy. Each forms part of a 'national network' of sites that are afforded the highest degree of protection in domestic policy and law. They comprise Special Protection Areas (SPA) classified under the 1979 Birds Directive and Special

[8] 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.

[9] 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 4 March 2021)

Areas of Conservation (SAC) designated under the 1992 Habitats Directive. As a matter of policy, potential SPAs (pSPAs), possible SACs (pSACs) and those providing formal compensation for losses to European sites, are also given the same protection[10].

Mitigation approaches in other parts of England

7.6 In other parts of the UK, strategic approaches to mitigation have been established where multiple local authorities have worked together to establish a series of avoidance and mitigation measures carefully designed to resolve the in-combination impacts associated with recreation from local development. Examples include European sites such as the Thames Basin Heaths, the Dorset Heaths, the Solent, Epping Forest, Burnham Beeches, South-east Devon, North Kent and Cannock Chase. Sites such as the Thames Basin Heaths and Dorset Heaths hold Nightjar and Woodlark – as occur within Birklands & Bilhaugh SAC/Sherwood Forest NNR.

7.7 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, interpretation, changes to infrastructure, codes of conduct, and various engagement approaches. At many sites there is a presumption against development in close proximity to the site boundary, in recognition of the high recreation use associated with such development, other risks (such as urban effects) and the difficulties in providing mitigation. Such zones extend to 400m (Thames Basin Heaths, Cannock Chase, Dorset Heaths) and 500m (Burnham Beeches).

7.8 The schemes work to deliver a package of mitigation that is funded through developer contributions, enabling development by ensuring risks are identified and addressed up front and the costs are clearly defined. Costs

[10] For the avoidance of doubt, the list of statutory European sites also comprises: A site submitted by the UK to the European Commission (EC) before Exit Day (a candidate SAC or cSAC) as eligible for selection as a Site of Community Importance (SCI) but not yet entered on the ECs list of SCI, until such time as the Appropriate Authority has designated the site or it has notified the statutory nature conservation body that it does not intend to designate the site. After Exit Day, no further cSACs will be submitted to the EU. Statutory European sites also include SCI included on a list of such sites by the European Commission from cSACs submitted by the UK before the UK left the EU, until such time as the UK designates the site when it will become a fully designated SAC.

vary according to the measures in place. On the Solent costs range from £337 for a single-bedroom dwelling to £880 for a 5-bedroom dwelling[11]. On the Dorset Heaths, BCP Council charge £324 per dwelling (adjusted according to occupancy) for SAMM.

7.9 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 and 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.

7.10 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 the visitor survey to inform management

7.11 The access on the site appears to currently be at a moderate level overall, but with a clear split between hotspots in the vicinity of main access points and car parks and more diffuse access elsewhere. These hotspots differ for the two main user groups and therefore interventions for certain activity types will be more relevant in some areas compared to others – dog walkers accounted for >50% of interviewees at the RSPB Reserve survey point, whilst walkers comprised nearly 60% of interviewees at the NNR main entrance.

7.12 Approximately a fifth of interviewees were first-time visitors, with the majority of these recorded at the Sherwood Forest survey location (where most holidaymakers were also noted). 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. Road signage and to a lesser extent information used to plan the visit will be key for first time visitors.

7.13 The majority of site users arrived by car and engagement activity should therefore be focussed within car parks and other parking locations, or at

[11] See https://birdaware.org/solent/wp-content/uploads/sites/2/2021/10/Solent_Recreation_Mitigation_Strategy.pdf for background and cost calculations

pinch point access locations (such as at the NNR main entrance). This may nevertheless miss the approximate quarter of users accessing the site on foot however, and it may be useful to carry out roving engagement at other pedestrian access points around the periphery of the SSSI.

7.14 The Major Oak is clearly a key honeypot locality, and the RSPB car park is important for dog walkers in particular, whilst other parts of the site appear to receive much lower levels of access. It is likely that these areas are used by different user groups, and engagement is likely to be more challenging with those visitors in the quieter/more remote areas where they may be harder to intercept.

7.15 The fencing of enclosures within the RSPB Reserve is apparently working to channel footfall and orientate access across the site in a way which minimises (human) footfall upon sensitive areas. However, given the higher level of visitors to Sherwood Forest/the SAC, and the honeypot nature of the Major Oak, it is recommended that visitors continue to be aggregated in time and space at that locality, with access focussed upon the main paths within areas of less vulnerable/valuable habitat (such as plantation woodland areas).

Suggested mitigation approaches for Birklands & Bilhaugh SAC/Sherwood Forest NNR

7.16 The proposed changes in housing mean a very marked uplift in local housing and potentially a major increase in local recreational use. In line with other mitigation approaches around the country, mitigation could consist of both SAMM (Strategic Access Management and Monitoring) and SANG (Suitable Alternative Natural Greenspace)/infrastructure projects away from the SAC/NNR. These two approaches would dovetail and complement each other.

7.17 We set out some initial suggestions of relevant mitigation approaches below, recognising that any such mitigation would need to be carefully planned (based on a clear project programme and reasonable timescales), tailored to the site, and agreed with stakeholders, in particular the RSPB, and would be dependent on the involvement and support of the latter organisation. The achievement of SAMM will potentially require significant expenditure and changes to existing on-site management and will therefore be dependent upon ongoing collaboration between the relevant Local Authority/Authorities

and the RSPB. In Appendix 5 we set out some initial ideas for SAMM measures, with indicative costs.

7.18 Furthermore, Birklands & Bilhaugh SAC/Sherwood Forest NNR is located very near (approx. 4km at its closest point) to Clumber Park SSSI (itself subject to an allied Recreation Impact Assessment (Saunders et al., 2022)). Given this proximity, and the similarity in many of the SAMM measures identified as having potential application at each of the two sites, it would be sensible to deliver a single mitigation package for both. Such a holistic approach would result in financial savings due to economies of scale, promote synergy in the measures adopted at each site, and potentially assist in mitigating any deflection of visitors between them.

SAMM (Strategic Access Management and Monitoring)

7.19 SAMM would comprise measures within the SAC/NNR to address recreation impacts and make them more resilient to increased recreation. SAMM could comprise:

- Management of paths to limit desire lines and focus use on particular paths that are appropriately managed;
- Fencing of key areas of ecological importance;
- Increased staff presence and wardening resource;
- Additional resources for signage and interpretation relating to visitor behaviour and sensitive features (such as ground nesting birds);
- Education & awareness raising initiatives with visitors around where to go, the need to pick-up after their dog, dogs off lead etc;
- Wider engagement with the local community on site management (via e.g. public forums);
- Measures to address contamination (particularly dog fouling); and,
- Monitoring.

7.20 Damage caused to veteran tree roots and surrounding vegetation via excessive trampling and path widening/desire lines is particularly evident. Paths can be assessed in detail and managed through surfacing, edging or closing off (e.g. through the use of brash and dead hedging). Any interventions need to take into account the relevant features of the site, the ground conditions and level of use. Examples can be found in SAMM measures proposed for Epping Forest SAC[12]. A dynamic path management

[12] Land Use Consultants - Epping Forest SAC Mitigation Report (pages 27-30)

system may be relevant, based on regular monitoring of path condition so that interventions can be targeted based on the monitoring data. Such an approach has been used by the National Trust at Hatfield Forest with paths classified as red, amber or green and these shown clearly on maps and interpretation around the site. The 'red' paths are closed to visitors, allowing them to recover.

7.21 Fencing could also be used to protect specific sensitive areas from recreation impacts. Such areas could comprise (for example) higher value areas within the NNR boundary, buffers surrounding veteran trees suffering the effects of soil compaction, or important localities on site for breeding Woodlark or Nightjar (outside of already enclosed areas).

7.22 Dedicated staff would be key in delivering and implementing any mitigation and providing an on-the ground wardening presence. 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 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.

7.23 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. 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.

7.24 The ranger post would provide an on-site presence, but this would need to be accompanied by a range of other measures and resources to raise awareness and communicate to visitors. This would include signage, interpretation, and digital communication, and positive messaging to follow the Countryside Code[13].

7.25 Dog fouling is a particular contamination issue. While the heightened ranger presence would help address this, further measures could include provision

[13] The Countryside Code

of additional dog bins and resources to cover the removal of dog waste. It should be noted that as well as costs associated with installation, the institution of additional dog waste bins will likely involve significant costs in respect to ongoing management and waste collection.

7.26 Long-term visitor monitoring would also be important to pick-up emerging trends, such as changes in access, and to ensure that 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. Visitor monitoring is important to pick up such changes and ensure mitigation is targeted appropriately and understand the effect of pandemic and other social factors that might be influencing visitor use.

7.27 Monitoring data has been mentioned in different contexts and is important to underpin the mitigation. Monitoring should include path condition, habitat, birds and visitors as well as recording interventions and management. Such monitoring will allow the impact of any enacted mitigation programme to be assessed in relation to the site's important/sensitive wildlife features. It is recommended that targeted bird and habitat surveys, is carried out on at least a five-yearly basis.

7.28 The visitor survey identified the fact that many local visitors feel disenfranchised from the site and are unaware or unsure about the reasoning behind certain aspects of site management. There is also an apparently limited understanding of the biodiversity value of the site, alongside a more prevalent valuing of Sherwood Forest's cultural significance. The instigation of a forum with which to directly liaise with the local community could therefore form part of the SAMM package, allowing site managers to start an ongoing conversation with local stakeholders concerning site access and management plans. Increasing local participation in the site, for example through volunteering would be another avenue to engage with the local community.

7.29 Measures relating to parking and travel could also help influence the distribution of visitors around the site in the long-term, although it is

recognised that the SAC/NNR car park has already been relocated very recently as part of ongoing restoration work within the site.

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

7.30 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. 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 routes to encourage use away from the SAC/NNR. 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. The production of "framework for SANG designation" has been identified by the RSPB as a potential useful tool for all partners.

7.31 These SANG/infrastructure projects dovetail with SAMM in that they provide additional space for recreation and realistic alternatives to Birklands & Bilhaugh SAC/Sherwood Forest NNR. With SAMM in place, visitors would become more aware of their impacts and access better managed, and some use would be deflected away from the SAC/NNR entirely. Over time the emphasis for recreation use would shift to the sites enhanced for recreation – such as SANG – rather than the protected site.

7.32 The visitor survey results indicated that a SANG would be relatively popular, with more than half of interviewees suggesting that they would use such a site. For dog walkers, this was >60%. A new alternative site with a café, good walking routes, and areas of open water would be popular (based on responses to the questionnaire) and such features could be incorporated within the new site's detailed design.

7.33 Dog walkers and walkers comprised 84% of all interviewees, with frequently visiting dog walkers (i.e. those that visit at least once a week) comprising 26%, and frequently visiting walkers comprising 14% overall. All other activity types visited less frequently, with 23% of interviewees (across all activity types) on their first visit to the site on the day of the interview. This indicates

that a SANG specifically targeting dog walkers (and to a lesser extent walkers) has potential to prove a successful mitigation tool.

7.34 Any route on site would need to be between 3km and 4km in length to mirror the typical (median) route length of dog walkers and walkers at Sherwood Forest NNR currently. These route lengths, alongside the visit frequency data detailed above, indicate that any SANG will need to be relatively large to prove attractive to dog walkers and accommodate a potentially high footfall of local users.

7.35 Frequent day visitors (across all activity types) to Sherwood Forest NNR travelled a median straight-line distance of 9km from their home address, with dog walkers travelling 3.5km. 70% of interviewees accessed the site by car/van, with the mean straight-line distance travelled by visitors accessing the NNR by motorised transport being approximately 12km. A novel SANG would therefore need to include parking provision and would be most likely to attract frequent dog walkers if located within 3.5km of existing urban/residential areas, and within 12km of Sherwood Forest NNR. The location of such a site to the east of the NNR, in closer proximity to the large ShAP4 - Edwinstowe allocation detailed in the Newark and Sherwood Local Plan, would also be more likely to draw a larger proportion of novel visitors resulting from the allocations away from the NNR.

7.36 Finally, although visitors often selected the SAC/NNR because it is close to home, the site also incorporates local attractions (such as the Major Oak) and is a known tourist/"day out" destination (as evidenced by the proportion of interviewees on their first visit to the locality). As such, it may therefore be difficult to emulate some of the attractant criteria found on site elsewhere, making SANG provision less useful in mitigating pressure from tourist visitors.

Context and limitations

7.37 The visitor survey results provide a snapshot of visitor use at a time that restrictions relating to Covid were being relaxed but when the pandemic would still have been affecting people's decisions regarding travel and where to go.

7.38 It is widely recognised that the pandemic has had a marked effect on how people use local greenspaces (Burnett et al., 2021; Natural England and Kantar Public, 2021; Randler et al., 2020). Outdoor space – during the pandemic – has become the safe place and default location for many for

exercise and for socialising, and there is a continued and growing importance of urban green spaces in particular as spaces to connect with nature and each other (Natural England and Kantar Public, 2021).

7.39 Looking to the future it is not clear how patterns of use will further change following the pandemic and climate change is also likely to be a driver of change in recreational use (Coombes and Jones, 2010; McEvoy et al., 2008). Long term monitoring will therefore be important to pick up emerging trends and the drivers behind those trends.

8. Conclusion and next steps

Conclusion

Increases in use

8.1 In the absence of mitigation that would deflect access, and assuming that residents in any new development will mirror current local resident behaviour, we predict that there would be a very marked increase in visitor use of Birklands & Bilhaugh SAC/Sherwood Forest NNR of 250% compared to the current level, as a result of the increase in dwellings from the allocations in the Bassetlaw and Newark and Sherwood Local Plans.

Recreation zone of influence

8.2 A recreation zone of influence of 8.9km radius has been calculated for the Birklands & Bilhaugh SAC/Sherwood Forest NNR study area. Within this zone there will however be a differential effect relating to distance, such that new development closer to the SAC/NNR will likely result in proportionally greater impact.

8.3 The zone of influence is directly applicable to the data collected during the 2021 survey period. Nevertheless, there are possible covid effects to consider and it should therefore be revisited at regular intervals, for example once every five years or perhaps in line with the Local Plan review period.

Mitigation

8.4 Mitigation could consist of both SAMM and SANG/infrastructure projects away from the SAC/NNR. These two approaches would dovetail and complement each other.

8.5 SAMM would comprise measures within the SAC/NNR to address recreation impacts and make them more resilient to increased recreation. These could comprise:

- Management of paths to limit desire lines and focus use on particular paths that are appropriately managed;
- Fencing of key areas of ecological importance;
- Increased staff presence and wardening resource;

- Additional resources for signage and interpretation relating to visitor behaviour and sensitive features (such as ground nesting birds);
- Education & awareness raising initiatives with visitors around where to go, the need to pick-up after their dog, dogs off lead etc;
- Wider engagement with the local community on site management (via e.g. public forums);
- Measures to address contamination (particularly dog fouling); and,
- Monitoring.

8.6 Please refer to Paragraphs 7.20 to 7.29 for more detailed information on these suggested prescriptions.

8.7 The visitor survey results indicated that a SANG would be relatively popular, although it would be less useful in mitigating pressure from tourist visitors compared to local residents. Dog walkers and walkers comprised 84% of all interviewees, indicating that a SANG specifically targeting dog walkers (and to a lesser extent walkers) has potential to prove a successful mitigation tool. A novel SANG would be most likely to attract frequent dog walkers if located within 3.5km of existing urban/residential areas, and within 12km of Sherwood Forest NNR.

8.8 Detailed SANG design should potentially include provision of the following features, based upon visitor survey responses/routes:

- Parking;
- A café;
- Good walking routes;
- Areas of open water; and,
- Routes between 3km and 4km in length to mirror the typical (median) route length of dog walkers and walkers at Sherwood Forest NNR currently.

8.9 Please refer to Paragraphs 7.32 to 7.36 for more detailed information.

8.10 Birklands & Bilhaugh SAC/Sherwood Forest NNR is located very near (approx. 4km at its closest point) to Clumber Park SSSI. Given this proximity, and the similarity in many of the SAMM measures identified as having potential application at each of the two sites, it would therefore be sensible to deliver a single mitigation package for both. Such a holistic approach would result in financial savings due to economies of scale, promote synergy in the measures adopted at each site, and potentially assist in mitigating any deflection of visitors between them.

Next steps

8.11 Any next steps will be dependent upon buy in from neighbouring local authorities and relevant site managers/organisations. They could however include additional analyses of the impacts of specific housing allocations within all of the districts outlined within Map 15.

8.12 In order for the suggested SAMM/SANG mitigation detailed within this report to be carried forward strategically however, it is recommended that a Recreational Disturbance Avoidance Mitigation Strategy (RAMS) is developed. This will require input from all the local authorities detailed in Paragraph 6.32 and Map 15, in addition to Natural England, the National Trust, RSPB, and Nottinghamshire County Council.

9. References

Allinson, E., 2018. The role of suitable alternative natural greenspace in protecting high value wildlife sites (PhD). Southampton.

Burger, J., Leonard, J., 2000. Conflict resolution in coastal waters: the case of personal watercraft. Marine Policy 24, 61–67. https://doi.org/10.1016/S0308-597X(99)00013-5

Burnett, H., Olsen, J.R., Nicholls, N., Mitchell, R., 2021. Change in time spent visiting and experiences of green space following restrictions on movement during the COVID-19 pandemic: a nationally representative cross-sectional study of UK adults. BMJ Open 11, e044067. https://doi.org/10.1136/bmjopen-2020-044067

Coombes, E.G., Jones, A.P., 2010. Assessing the impact of climate change on visitor behaviour and habitat use at the coast: A UK case study. Global Environmental Change 20, 303–313. https://doi.org/10.1016/j.gloenvcha.2009.12.004

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 20–22.

Lowe, A., Rogers, A., Durrant, K.L., 2014. Effect of human disturbance on long-term habitat use and breeding success of the European Nightjar, Caprimulgus europaeus. Avian Conservation and Ecology 9.

Mallord, J., Dolman, P., Brown, A., Sutherland, W., 2007. Linking recreational disturbance to population size in a ground-nesting passerine. Journal of Applied Ecology 44, 185–195. https://doi.org/doi:10.1111/j.1365-2664.2006.01242.x

McEvoy, D., Cavan, G., Handley, J., McMorrow, J., Lindley, S., 2008. Changes to Climate and Visitor Behaviour: Implications for Vulnerable Landscapes in the North West Region of England. Journal of Sustainable Tourism 16, 101. https://doi.org/10.2167/jost676.0

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

Murison, G., 2002. The impact of human disturbance on the breeding success of nightjar Caprimulgus europaeus on heathlands in south Dorset, England. English Nature, Peterborough.

Natural England, Kantar Public, 2021. Impact of Covid-19 on engagement with green and natural spaces (Natural England Report No. PANS003). The People and Nature Survey for England.

Randler, C., Tryjanowski, P., Jokimäki, J., Kaisanlahti-Jokimäki, M.-L., Staller, N., 2020. SARS-CoV2 (COVID-19) Pandemic Lockdown Influences Nature-Based Recreational Activity: The Case of Birders. International Journal of Environmental Research and Public Health 17, 7310. https://doi.org/10.3390/ijerph17197310

Saunders, P., Lake, S., Liley, D., 2022. Clumber Park SSSI Recreation Impact Assessment - a report prepared for Bassetlaw District Council in conjunction with Newark and Sherwood District Council.

Saunders, P., Liley, D., 2021. Clumber Park SSSI & Birklands and Bilhaugh SAC/Sherwood Forest NNR – review of available historic ecological and recreation data.

Saunders, P., Liley, D., 2021. Clumber Park SSSI & Birklands and Bilhaugh SAC/Sherwood Forest NNR – ecology and recreation baseline report. Footprint Ecology/Bassetlaw District Council.

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: Sutherland, W.J., Dicks, L.V., Okendon, N., Smith, R.K. (Eds.), What Works in Conservation 2017. Open Book Publishers, Cambridge.

Appendix 1: Interview survey questionnaire

Good morning / afternoon. I am conducting a survey on behalf of Bassetlaw District Council and partners who are interested in gathering the views of people who are visiting greenspaces in the area. Can you spare me a few minutes please?

Q1 Firstly...

- ◯ **Are you on a short visit and have travelled directly from your home today** *... tick if yes, if no then ask next*
- ◯ **Are you staying away from home with friends or family** *... if no*
- ◯ **Are you staying away from home, for example in a second home, mobile home or on holiday**
- ◯ *If none of the above* **How would you describe your visit today?**

Further details

Q2 **What is the main activity you are undertaking today?** *Single response only. Do not prompt. Follow with any further activities in the next question*

- ◯ Dog walking
- ◯ Commercial dog walking
- ◯ Walking
- ◯ Jogging / Power walking / Running
- ◯ Cycling / Mountain biking
- ◯ Meeting up with friends
- ◯ Outing with family
- ◯ Bird / Wildlife watching
- ◯ Fishing
- ◯ Photography
- ◯ Picnic
- ◯ Horse riding
- ◯ Other fitness / sports
- ◯ Other, please detail:

Further details:

Q3 **Are there any other activities you or other members in your group are undertaking today?** *Tick as many other activities as the interviewee gives*

	Other (multiple responses ok here)
Dog walking	☐
Commercial dog walking	☐
Walking	☐
Jogging / Power walking / Running	☐
Cycling / Mountain biking	☐
Meeting up with friends	☐
Outing with family	☐
Bird / Wildlife watching	☐
Fishing	☐
Photography	☐
Picnic	☐
Horse riding	☐
Other fitness / sports	☐
Other, please detail:	☐

Further details:

Q4 **What mode of transport did you use to reach the site today?** *Multiple responses possible, to record all transport used (e.g. car then bike)*

- ☐ Car / van
- ☐ On foot
- ☐ Bicycle
- ☐ Bus
- ☐ Train
- ☐ Other, please detail

Further details:

Q5 **How long have you spent / will you spend at this site today?** *Single response only. Tick closest.*

- ◯ Less than 30 minutes
- ◯ Between 30 minutes and 1 hour
- ◯ 1-2 hours
- ◯ 2-3 hours
- ◯ 3-4 hours
- ◯ 4 hours +

Further details:

Q6 **Has the coronavirus pandemic changed how often you visit this site?** *Await answer and If yes follow with* **Have your visits increased or decreased?** *Do not prompt. Single response only.*

- ◯ No, visiting the same as before
- ◯ Don't know
- ◯ Yes, visiting more
- ◯ Yes, visiting less

Further details:

Q7 **Before the pandemic, roughly how often would you have visited this site?** *Tick closest answer, single response only. Use example frequency or estimate of visits per year. Do not prompt.*

- ◯ More than once a day (365+ visits a year)
- ◯ Daily (300-365 visits)
- ◯ Most days (180-300 visits)
- ◯ 1 to 3 times a week (40-180 visits)
- ◯ 2 to 3 times per month (15-40 visits)
- ◯ Once a month (6-15 visits)
- ◯ Less than once a month (2-5 visits)
- ◯ Don't know
- ◯ First visit
- ◯ Other, please detail

Further details:

Q8 **Normally, do you tend to visit this site more at a particular time of year for [***insert their given activity***]?** *Multiple answers ok.*

- ☐ Spring (Mar-May)
- ☐ Summer (Jun-Aug)
- ☐ Autumn (Sept-Nov)
- ☐ Winter (Dec-Feb)
- ☐ Equally all year
- ☐ Don't know
- ☐ First visit

Further details:

Q9 **Why did you choose to visit this specific location today, rather than another local site?** *Tick all responses given. Do not prompt, tick closest answers. Use text box for answers that cannot be categorised and for further information.*

Don't know / others in party chose	○
Close to home	○
No need to use car	○
Quick & easy travel route	○
National Trust / RSPB membership	○
Good / easy parking	○
Particular facilities	○
Refreshments / cafe / pub	○
Choice of routes	○
Well marked routes	○
Slope / terrain	○
Feels safe here	○
Quiet, with no traffic noise	○
Not many people	○
Habit / familiarity / previous experience	○
Scenery / variety of views	○
Rural feel / wild landscape	○
Openess / wide open spaces	○
Visiting the Major Oak	○
Heritage features	○
Good for dog / dog enjoys it	○
Ability to let dog off lead	○
Closest place to take dog	○
Closest place to let dog safely off lead	○
Appropriate place for activity	○
Suitability of area in given weather conditions	○
Particular wildlife interest (e.g. birds, bluebells and other woodland plants)	○
For a change / variety	○
Covid considerations (avoiding others, busy areas etc.)	○
Other, please detail	○

Further details:

Now I'd like to ask you about your route today. Looking at the area shown on this map, can you show me where you started your visit today, the finish point, and your route please. *Probe to ensure route is accurately documented and prompt for parking if needed. Use **P** to indicate where the visitor parked, **E** to indicate the start point and **X** to indicate the exit. If walking from home/holiday accomodation etc., then start the route from the nearest road. Mark the route with a line, using a solid line for the actual route and a dotted line for the expected or remaining route, and use a directional **arrow** on the route.*

Q10 **Is / was your route today the typical length when you visit here for [***insert given activity***]?** *Tick closest answer, do not prompt. Single response only.*

- ◯ Yes, normal
- ◯ Much longer than normal
- ◯ Much shorter than normal
- ◯ Not sure / no typical visit
- ◯ First visit

Q11 **What, if anything, determined your route today?** *Tick closest answers. Multiple responses ok. If interviewee struggles, prompt with: "***What influenced where you went today?***"*

- ☐ Weather
- ☐ Daylight
- ☐ Time
- ☐ Other users (avoiding other people, busy area etc)
- ☐ Group members (e.g. kids, less able)
- ☐ National Trust / RSPB material
- ☐ Avoiding muddy tracks / paths
- ☐ Followed a marked trail / route
- ☐ Avoiding livestock
- ☐ Visiting livestock (positive response)
- ☐ Previous knowledge of area / experience
- ☐ Activity undertaken (e.g. presence of dog or needing to stick to cycle trails - *add details*)
- ☐ Location of pub / cafe / refreshments
- ☐ Passing public toilets
- ☐ Viewpoint / feature (inc. the Major Oak)
- ☐ Other, please detail

Further details:

Q12 Are you a member of the National Trust or RSPB?

- ☐ Both National Trust and RSPB membership
- ☐ National Trust membership only
- ☐ RSPB membership only
- ☐ Neither
- ☐ Not sure / Dont know

Further details:

I'd now like to ask about information you used to plan your visit here today.

Q13 Ask the following in turn, note order randomised.

	Yes	No	Don't know / Unsure
Did you use any websites when planning your visit today?	○	○	○
Did you use any social media when planning your visit today?	○	○	○
Did you use a smartphone app when planning your visit today?	○	○	○
Did you use any maps (online or paper) when planning your visit today?	○	○	○
Did you use any leaflets when planning your visit today?	○	○	○
Did you follow any recommendations from friends or family your visit today?	○	○	○

Q14 **You indicated that you used websites to plan your visit today, which websites did you use?** [Routed from above Q] Use further details to record particular feeds, channels or content.

Q15 **You indicated that you used social media to plan your visit today, which social media platform and accounts, posts or feeds did you use?**[Routed from above Q] Use further details to record particular accounts, posts, feeds or content.

Q16 **You indicated that you used a smartphone app to plan your visit today, which app did you use?** [Routed from above Q] Use further details to record particular app and if neeed any channels or specific content.

Further details (record any other details):

I would now like to ask about other local sites that you visit for [*their given activity*].

Q17 **What proportion of your weekly visits for [***their given activity***] take place here, compared to other sites. Can you give a rough percentage?** *Do not prompt.*

- ◯ All take place here
- ◯ 75% or more
- ◯ 50-74%
- ◯ 25-49%
- ◯ less than 25%
- ◯ Not sure / don't know / first visit

Please could you tell me the name of up to 3 other sites that you also visit for [*their given activity***]? Please list them starting with the one you visit most frequently.** *Record names as carefully as possible. Ask for spelling if necessary.*

Q18 Name of Site 1 *(most frequently visited)*

Q19 Name of Site 2

Q20 Name of Site 3

Q21 **Have you any suggestions as to how any of the sites you have mentioned could be improved to make them better for people to visit?**

Q22 **If a new Country Park, or other area of greenspace, was created for [*interviewee's given activity*] locally do you think you would be likely to use it?** *Do not prompt, tick closest answer.*

- ◯ Not sure / Don't know / Can't tell
- ◯ Yes
- ◯ Maybe
- ◯ No

Further details:

Q23 **If a new site were created, such as a Country Park, or other area of greenspace, what features do you think it should include to make it work for [*interviewee's given activity*]?** *Do not prompt. Tick any options as relevant.*

- ☐ Cafe
- ☐ Visitor centre
- ☐ Toilets
- ☐ Sufficient parking
- ☐ Free parking
- ☐ Extensive / good walking routes
- ☐ Dedicated cycling routes
- ☐ Bike hire
- ☐ Dedicated horse riding routes
- ☐ Off-lead areas for dogs
- ☐ Play facilities for children
- ☐ Good views / scenery
- ☐ Woodland
- ☐ Open water
- ☐ Other (give details)

Further details:

Q24 **Are you aware of any rare and / or sensitive habitats or species found on the site? If so, can you name them?** *Do not prompt. Tick any options as relevant.*

- [ ] None / not sure
- [ ] Breeding birds
- [ ] Woodlark
- [ ] Nightjar
- [ ] Veteran / ancient trees (incl Major Oak)
- [ ] Heathland
- [ ] Woodland
- [ ] Wetland
- [ ] Flowering plants
- [ ] Rare insects / invertebrates
- [ ] Adder
- [ ] Other (give details)

Further details:

Q25 **What is your full home postcode?** *This is an important piece of information, please make every effort to record correctly.*

Q26 *If visitor is unable or refuses to give postcode:* **What is the name of the town or village where you live?**

Q27 *If visitor is on holiday ask:* **Which town / village / campsite are you staying in?**

Q28 Are there any changes you would like to see here with regards to how this area is managed for access?

Q29 **Finally, do you have any further comments or general feedback about your visit?**

That is the end. Thank you very much indeed for your time.

Q30 **TO BE COMPLETED AFTER INTERVIEW FINISHED.**

Surveyor initials	
Survey location code	
Map Reference Number	
Sex of respondent	
Total number in interviewed group	
Total males in group	
Total females in group	
Total minors (under 18) in group	
Total 18 - 45 year olds in group	
Total 45 - 65 year olds in group	
Total 65+ year olds in group	
Total number of dogs	
Number of dogs seen off lead in group	

Q31 **Surveyor comments**. *Note anything that may be relevant to the survey, including any changes to the survey entry that are necessary, eg typos / mistakes / changes to answers / additional information.*

Appendix 2: Habitat and recreation impact target notes

The following tables provide detailed target notes on the habitats and recreation impacts recorded during the walkover survey. They should be referred to in conjunction with Map 6 in the main body of the report.

Table A2.1: Habitat survey target notes.

Waypoint	Habitat	Notes
117	Woodland	Secondary multi-stemmed birch over grassy ground flora with occasional brambles; pine in canopy, very occasional oak. Opens into heathy/grassy area with Common Bent, Sweet Vernal-grass, Annual Meadow-grass, open grown oak and young birch regeneration with occasional mature Scots Pine and occasional Broom and European Gorse
118	Heath	Heathy sward with degenerate and mature Heather, Sheep's Fescue, Heath Bedstraw, Sheep's Sorrel.
121	Grassland	Rank mesotrophic sward with Hogweed, Cock's-foot, Cow Parsley along access from layby
122	Various	Bridleway runs outside of grazing unit. Birch regeneration in the corner gives way to mature Oaks that line the boundary with a grassy understory and younger heather than elsewhere
125	Plantation	Mature oak and pine plantation with birch regeneration and a patchy grassy ground flora
126	Other	Rushy hollow marked as pond on map
129	Heath	Scrapes support Yorkshire Fog, Sweet Vernal-grass, a little Heather, Heath Bedstraw, Pill Sedge, Mat Grass and Soft Rush
130a	Heath	Lush, grassy bank of scrape. Wet track with rushes, Mat Grass and Creeping Bent in valley bottom
131	Plantation	Oak and pine plantation with much regenerating birch over Bracken, quite open with little understorey. Wavy Hair-grass along MoD boundary
134	Plantation	Dense birch with occasional pine, Holly. Heath more brackeny. Yorkshire Fog, Wavy Hair-grass, Heath Bedstraw, *Rhytidiadelphus squarrosus*

156	Woodland	Oak with young birch, both young and mature oaks over bracken and bramble
161	Woodland	Dense secondary birch to south with occasional hulks
164	Woodland	Oak over Bracken with secondary birch, Hawthorn
165	Woodland	Dense secondary birch with some oak and holly. Grassy margins with Creeping Softgrass, no nettles
166	Woodland	Veterans surrounded by young birch (some clearance around veterans), bracken dominated clearings with birch regeneration
169	Woodland	veteran oaks among oak plantation
170	Woodland	Planted oaks along western boundary, more birch to east, becoming more open with some open-grown trees
173	Woodland	Open with some sapling Beech and much young oak, some veterans
176	Woodland	Very open, with patches of young, planted, oaks

Table A2.2: Recreational impacts recorded during walkover survey at Birklands and Bilhough SAC.

Waypoint	Impact severity	Impact type	Notes
117	Light	Damage	Bare path about 1m wide leading through kissing gate into woods
118	Light	Damage	Path crosses main track - partly bare but with low growing annual or rosette species such as Buckhorn's Plantain, Sheep's Sorrel, Parsley Piert, Squirrel's-tail Fescue, Common Cat's-ear, also Heath Grass and Sweet Vernal-grass and Pill Sedge in less trampled areas

Waypoint	Impact severity	Impact type	Notes
119	Light	Damage	Path 4m wide where meets with track from road. Ruts are bare but the sides have regenerated with Bird's-foot, Green Field Speedwell, *Pseudoscleroposium purum*, *Polytrichum juniperum*, Little Mouse-ear, Silver Hair-gass. Slightly wetter areas support rushes and more mesotrophic vegetation includes Self-heal, Dandelion, Ragwort.
120		Other	Occasional very well-defined livestock paths leading off the main track are possibly used by people (difficult to tell due to recent rain).
121	Moderate	Damage	Narrow, compacted bare path with Broad-leaved Plantain etc. through tall, mesotrophic sward near road gate.
122	Light	Damage	3 desire lines to pond, barely impacted
123	Moderate	Damage	Eutrophic edges to bridleway with Broad-leaved Plantain, Perennial Ryegrass, Annual Meadow-grass, Dandelion, White Clover etc. Joins gravelled track with similar, taller grassy margins with occasional Creeping Thistle
124	Light	Damage	Track supports Heather in the centre with Procumbent Pearlwort, Buckshorn Plantain, Bird's-foot etc, little sign of eutrophication
125	Light	Damage	Sunken track through woodland with lightly trampled path through litter. Second sunken track nearby has no sign of use
127	Light	Damage	Central track is fenced out of grazing unit - pebbly with grassy, heathery margins with occasional Common Knapweed, Nettles, Ribwort Plantain. Grassy edges maybe a combination of eutrophication, compression and past surfacing

Waypoint	Impact severity	Impact type	Notes
128	Light	Damage	Path junction with access through fences into grazing compartments - wide grassy area with Perennial Ryegrass around gates, also Pineappleweed, plantains, Annual Meadow-grass and some bare patches
130	Light	Damage	Path 3m wide, bare (scraped), no contamination with dog faeces evident, little change to heath vegetation on verge
131	Light	Damage	Little-used grassy track through plantation
132	Light	Damage	Path through heath comprises a grassy sward with trampled areas supporting Annual Meadow-grass, Buck's-horn Plantain etc.
133	Light	Damage	Crossroads, grassy edges with bare patches
134	Light	Damage	Grassy tracks with little recreational pressure evident
135	Light	Damage	A few livestock paths and tracks used for site management, but little recreational pressure evident - slightly shorter vegetation on paths or bracken litter compacted.
136	Light	Damage	Path meets bridleway- expanded area of short grassland around junction
137	Light	Damage	Southern end of fenced footpath - gravelled with more mesotrophic/disturbed verges, including Mugwort, Dandelion, Bracken, Broad-leaved Dock, Creeping Buttercups, Nettle. Grassy path leads through kissing gate into compartment
138	Light	Damage	Crossroads with fenced bridleway and path - path into compartment bare and trampled around wheel ruts
139			Track double width where ruts are wet, with some bare areas

Waypoint	Impact severity	Impact type	Notes
140		Other	Livestock path could be used as desire line
141	Light	Damage	Occasional desire lines near layby, slight indication of eutrophication from dog faeces
142	Light	Damage	Wide path protected by surfacing, eutrophic border of Nettle, Cleavers, Wood Avens
143	Moderate	Damage	Desire line leading to heavily trampled area overlooking field/visitor centre, desire lines every few metres into woods
144	Moderate	Damage	Trampling and compaction around all mature oaks near path
145	Moderate	Damage	Small path leading back to visitor centre
146	Moderate	Damage	Desire line to veteran tree blocked by fallen trunk, path Nettle-lined
147	Moderate	Damage	Veteran tree fenced off. Compaction at fence
148	Moderate	Damage	Trampling around and desire lines too all veterans near path that are not fenced off, with compaction and loss of vegetation/species change (Broad-leaved Plantain, Burdock, Ryegrass) Knee-high fences appear to be only partly effective.
149	Moderate	Damage	Another example of a desire line to fenced-off hulk. Main path 1m wide with grassy marginal strip with Nettle, Cock's-foot, Ryegrass, Cow Parsley, Wood Avens, Broad-leaved Plantain
150	Moderate	Damage	Some trees are engulfed by the path, trampled on all sides with exposed roots
151	Severe	Damage	Severe compaction around trees. Desire lines have been fenced off and filled with brash
152	Severe	Damage	Path expansion to 5m wide, no vegetation (fencing confining trampling)
153	Moderate	Damage	Bikes using path despite no cycling signs

Waypoint	Impact severity	Impact type	Notes
153		Other	Some path edges have been cut - this is likely to encourage visitors to walk on the shorter vegetation to avoid people/mud and to explore off the paths
154	Severe	Damage	Area around the Major Oak heavily impacted by trampling (including vehicles) and by management as an amenity area (including benches, ice cream van etc.). Secondary birch woodland immediately adjacent (partly roped off but open) is also heavily impacted by trampling, dens etc. with no understorey
155	Moderate	Damage	Path expands where not surfaced/fenced, bike tracks.
156	Moderate	Damage	Unfenced bridleway crosses Purple Trail - path limited to +/- 1m, modified verges. Desire lines appear where fencing stops
157	Moderate	Damage	Surfaced track is fenced both sides, verges modified by strimming in addition to eutrophication/disturbance
158	Light	Damage	Official den-building area (trampling, removal of deadwood), currently closed.
159	Severe	Damage	Heavily trampled route from VC to Major Oak, no vegetation or litter, expanding where not fenced
159	Moderate	Damage	Desire lines into woodland (ignoring fence).
160	Moderate	Damage	Exposed, abraded, roots on all climbable trees
161	Moderate	Damage	Smaller (1-2m) path heading towards Budby South Forest, trampled and compacted around sign, edge vegetation not impacted, but some desire lines to characterful veterans
162	Moderate	Damage	Open area under mature oaks is compacted but with leaf litter still present, with some dens

Waypoint	Impact severity	Impact type	Notes
163	Moderate	Damage	Double bike jumps constructed parallel with path (at right angles to the Bilberry Path)
164	Moderate	Damage	1.5m path into the grazing unit (Greenwood Trail)
165	Moderate	Damage	Main path 1-2m, modified verge. Singletrack path into Forestry area has grassy margin including Wood Brome
166	Moderate	Damage	Poached path used by horse riders, 3m wide, widening where walkers avoid mud. Grassy margins of Creeping Softgrass, but no nettles etc. Desire lines to hulks
167	Moderate	Damage	Bike tracks on path (path bare with a little litter, grassy margins)
168	Light	Damage	Paths 1m wide, grassy margins, lower impact
169	Moderate	Damage	Some trampling at path corners/short cuts but limited impact, no dens, some desire lines to veteran among oak plantation (retain litter)
170	Moderate	Damage	Desire lines (despite brash/chestnut paling) back to bridleway
171	Light	Damage	Desire lines continue just inside grazing compartment fence
172	Light	Damage	Surfaced track, modified edges with Dandelion, Broad-leaved Dock, White Clover, Creeping Softgrass
173	Light	Damage	Crossroads on Edwinstowe Path.
174	Light	Damage	Well established desire line into grazing compartment
175	Moderate	Damage	Unsurfaced path frequently widens to 3m, exposing roots
176	Light	Damage	Scuffing around low branches of veteran.
177	Light	Damage	Narrow trodden path. Dog faeces

Waypoint	Impact severity	Impact type	Notes
178	Severe	Damage	Wide path around back on Major Oak reaches low fencing on either side, broadens out where fence is absent/at stiles
178	Severe	Damage	
178	Moderate	Damage	Tree climbed on (despite sign) (fenced into path)
179	Light	Damage	Trampling due to picnic benchs
180	Moderate	Damage	Bike paths and dismantled jump just of main path
182	Moderate	Damage	Heavily impacted corner with Cow Parsley, Nettle, Deadnettle, Hogweed, Cock's-foot (due to historic management)
183	Light	Damage	Well-worn, narrow desire lines into glade
184	Light	Damage	Wide surfaced path, much less used than around Major Oak. Grassy edges remain intact
185	Light	Damage	Little used track with Creeping Buttercup, Cock's-foot, Cow Parsley, Creeping Softgrass, Dandelion, Timothy Grass, Red Campion, Perennial Ryegrass etc.

Appendix 3: Full responses to Qs 28 and 29

The following table provides the full, combined, list of responses to Qs 28 and 29 (concerning changes to site access, management, and general feedback). They are provided in alphabetical order, as transcribed by the surveyor, with no attempt made to clarify language, grammar, etc.

Comments
Access is more difficult for dog walkers
All fine - visiting with disabled son in wheelchair
All good
All good
All good like - it the way it is
All lovely
Always enjoy the area
Always improving, good signage
Always quite tidy. Lucky to have it on doorstep
Apprehensive about changes, but now feels it's better from a nature perspective - before there were more visitors. Good rustic fencing, better balance for environment. Position of car park better for village businesses. Positive about changes- aware not everyone is
Awesome
Beautiful site. Overzealous ticketing with parking. Like unspoilt areas
Been coming for many years. All the work carried out during COVID to make it safe to visit is good
Better disabled access. Move the zebra crossing to somewhere safer
Better food at the cafe
Better parking
Better parking, fix potholes, bays
Better paths in muddy spots - mostly ok but two specific spots. Locally there's an issue with car parks - locals have problems for shops and cemetery. Pricing doesn't seem fair
Better signage for cycle routes, especially towards Clumber Park
Bins
Came to Budby for a change from local Shirebrook Parks as we do 3 dog walks a day. Really enjoy the site with its wildness and open spaces
Car park open early morning, later than 5pm. No signage showing what time car park opens. General lack of accessible parking
Changes not well managed; the fair stopped for a year and disappointed people - access not well managed during COVID (parking, bins) - feel the Visitor Centre should be more of an attraction for tourists and be interactive
Clean up horse muck

Comments
Clear horse mess. Hard to socially distance on paths. Love it like this, but different views on new Visitor Centre
Didn't need the new Visitor Centre - out of place in the landscape
Doesn't like the RSPB and changes that they've made, including moving the car park, the new Visitors Centre, and chopping down trees
Drinking water fountain
Early AM is ok- not enough cricket parking
Fantastic greenspace with helpful staff
Fencing too high for deer and other mammals - can't move around, need better access
Fill in potholes. Like the site. There should be more green spaces to encourage people to exercise and kids to get in touch with nature
Fill in potholes
Fill in potholes in carpark
Fill in potholes to improve car parking
Fill potholes in car park
Fill potholes in car park
Fill potholes
Free parking for local residents who walk their dogs here
Free parking for local residents, car parks open earlier/longer, car park on the right side of the road. Recent changes to management by RSPB seem aimed at squeezing money out of locals
Free parking for locals- all else fine
Getting too busy, local village can't cope with all the traffic. Needs more information about Robin Hood
Good morning out
Good paths in main park- gets overgrown on edge of forest
Good paths, well maintained. Didn't like new Visitor Centre- feels like cafe and shop to raise money. Not enough information about history and wildlife
Google maps - Googling Sherwood Forest doesn't work!
Great for families: kids loved the Robin Hood festival
Hard to find main car park from sat nav
Horse manure on paths shouldn't be there- bye law should be changed. Riders accompanied so staff could collect it
I like that there's lots of leaves
Initially concerned about new Visitor Centre and crossing but seems to work well
It's all good
It's been a lovely day
It's been a pleasant afternoon
It's been good, no signage from car park to Visitor Centre and didn't know disabled parking available
It's good

Comments
It's good
It's great
It's nice
It's nice- very quiet
It's quite good, make sure there's disabled access
It's spread out and feels peaceful
It's vastly improved, extra toilets on route are good for kids and elderly
It's very clean
Just delighted to have this on the doorstep
Just likes it and thinks it's lovely. Likes the quiet
Just love it here
Just think we're lucky to have it on doorstep
Keep visitors concentrated in certain areas
Less restrictive parking
Lift is shut? COVID is the reason
Like access to paddocks for dog walking
Like it as it is; maybe better parking
Like the site. Paths or grassy areas.
Likes it because it's very quiet and free parking. Very beautiful
Likes wildness and informal visits, no planning, free parking, etc
Litter bins away from the centre
Longer opening for disabled car park
Lots of parking - they've done a good job
Love it
Love it. Downside is ticks on dogs
Lovely as it is, a bit more parking
Lovely place needs preserving. RSPB should consult with residents and parish council re: any further developments
Lovely site
Lovely site, favourite place
Managed well - appreciate it's a working forest
More bins, benches
More car park space
More control of dogs
More cycle paths signs
More dog bins
More interactive things for kids- liked old walk through

Comments
More level parking
More parking
More seating/benches, a pub!
More signage, more interpretation boards about rare habitats and species
More signs about dogs and leads, more sign boards about dogs/wildlife
More signs on footpaths
Naturists are intimidating and spoil enjoyment of the site, particularly as a lone female walker
Need information about Robin Hood, nothing at the Visitor Centre. Would be good to have more benches between the Visitor Centre and the Major Oak, make things easier for older people
Need to clean up horse poo: dogs eat it, kids play with it, unhygienic
Nice area, scenic
Nice now that the Visitor Centre is finished
Nice walk
No motorbikes
Not 100% sure about the nudists. Think it bothers other women and would feel uncomfortable if was on my own and I saw a lone man. Some cover themselves when they see people, but not all do
Nothing to do in the new Visitor Centre, just a motorway service station
Occasional parking issues
Old centre was much better, more fit for purpose, not appropriate for funerals to go past now. Parking on wrong side of road crossing is lethal and in wrong place - cars don't slow down. Busses having to turn is impractical
Old Visitor Centre was in woods, with medieval buildings and a good atmosphere. New one doesn't offer as much. Riding school diverted to here, as couldn't use former field route, and has caused pressure on paths
Old Visitor Centre was lovely; new one is ugly and has nothing about Robin Hood
One of our family favourites
Parking is restrictive at Visitor Centre, so uses Budby. Feels discouraged as a local dog walker: pushed out for birdwatchers
Pathways better maintained - RSPB not as good as Notts CC. Better disabled access and parking. No posters warning of ticks, despite their prevalence.
People parking on local residential streets to avoid car park fees are an inconvenience
Play area is good
Pond near Visitor Centre needs clearing and is dangerous. Visitor Centre useless and built for financial gain
Pond or open water for wildlife
Prefer quiet, less people
Really like the site
Really like the site and area, sometimes use other parking spot to north of site
Really well run

Comments
Remove the access gates or have them open longer, especially to the cemetery. Free parking/access for local residents
Replace pond liner
RSPB doing a great job
RSPB doing well- new Visitor Centre successful and good for local business
RSPB have put local people's backs up by making changes to access/restrictions
Saw a swarm of bees near cricket pitch
Short on parking, but too much would spoil it
Signage for car park is very poor
Signs for where naturists can get dressed or be naked
Smoother paths for push chairs
Stop people parking on local roads and cemetery car park to avoid paying. More bins between Visitor Centre and Major Oak. Dog waste bins
The crossing from RSPB car park to Sherwood Visitor Centre is not ideal- cars don't stop. There needs to be better communication between the RSPB and local residents regarding works and changes to site. As a local resident she feels a strong connection to the site with many dog walks and feels worried it is being taken away and being made more of a bird sanctuary
There's been changes - waymarks are good
Think RSPB are doing a good job
Thoroughly enjoyed our visit
Too many fences and restrictions
Too many wide trails
Too much horse dung
Trail easy to follow
Treasure trail for kids to learn about the trees
Very enjoyable, needs signage about litter- particularly cigarette butts
Very happy
Very lucky to have this locally
Very pleasant
Very well managed
Visitor Centre doesn't depict anything about Robin Hood, which is what people come here to see. Need something to keep kids interested
Visitor Centre has no Robin Hood and looks scruffy. Need undercover seating
Was a shame that RSPB extended bird nesting season proscriptions
We're lucky to have somewhere so beautiful. Like the changes, but won't pay cafe prices
We've had a nice afternoon
Well managed, good signs, clean. Thought car park would be near Visitor Centre. All good, just needs to carry on being maintained like this

Appendix 4: Increases in housing

The table below details the estimated percentage change in dwelling number resulting from the relevant combined residential allocations detailed in the Bassetlaw and Newark and Sherwood Local Plans.

Distance from NNR boundary (m)	No. existing households	No. proposed new households	% increase
0 to 500	23	256	1113
500 to 1000	72	400	556
1000 to 1500	33	190	576
1500 to 2000	28	76	271
2000 to 2500	38	0	0
2500 to 3000	57	20	35
3000 to 3500	128	204	159
3500 to 4000	241	270	112
4000 to 4500	138	93	67
4500 to 5000	114	98	86
5000 to 5500	49	0	0
5500 to 6000	83	0	0
6000 to 6500	202	6	3
6500 to 7000	216	69	32
7000 to 7500	329	0	0
7500 to 8000	370	0	0
8000 to 8500	434	99	23
8500 to 9000	538	311	58
9000 to 9500	696	193	28
9500 to 10000	595	327	55
10000 to 10500	533	182	34
10500 to 11000	439	180	41
11000 to 11500	340	270	79
11500 to 12000	280	328	117
12000 to 12500	427	992	232
12500 to 13000	587	386	66
13000 to 13500	393	15	4
13500 to 14000	454	53	12
14000 to 14500	551	136	25
14500 to 15000	543	344	63
15000 to 15500	530	25	5
15500 to 16000	434	103	24
16000 to 16500	341	0	0
16500 to 17000	322	33	10
17000 to 17500	462	4	1
17500 to 18000	620	0	0

Distance from NNR boundary (m)	No. existing households	No. proposed new households	% increase
18000 to 18500	602	0	0
18500 to 19000	601	0	0
19000 to 19500	732	0	0
19500 to 20000	701	0	0
20000 to 20500	751	0	0
20500 to 21000	864	10	1
21000 to 21500	1262	74	6
21500 to 22000	1552	234	15
22000 to 22500	1624	268	17
22500 to 23000	1508	250	17
23000 to 23500	1328	1041	78
23500 to 24000	1374	754	55
24000 to 24500	1505	677	45
24500 to 25000	1471	540	37
25000 to 25500	1435	621	43
25500 to 26000	1523	1098	72
26000 to 26500	1657	1171	71
26500 to 27000	1660	954	57
27000 to 27500	1937	580	30
27500 to 28000	1712	100	6
28000 to 28500	1790	0	0
28500 to 29000	2014	0	0
29000 to 29500	1663	0	0
29500 to 30000	1504	0	0

Appendix 5: SAMM mitigation suggestions and indicative costs

The table below sets out some suggestions of SAMM mitigation measures and costs that could form the basis of a mitigation strategy. These are suggestions only and a detailed package of measures would need to be established through close working with the RSPB (who manage the site). Costs are indicative (and approximate) only, based upon our experience and mitigation approaches at other sites, and individual measures would need ground truthing and further work to specify locations and details. For measures that would need to be established on an annual basis we have set out the relevant length of timing, extending to a maximum of 75 years. This timescale may need revision and assumes mitigation might be expected in-perpetuity (80 years) and that there may be some delay in the mitigation being implemented, with not all measures coming forward at once. The pale blue shading highlights those measures that should be implemented first and have priority in the short term.

Type of measure	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification
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.
Staff	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. Scope for community engagement too

Type of measure	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification
Paths and path infrastructure	Path maintenance, improvements etc.		£25,000	75	£1,875,000	2m wide path with self-binding gravel surface and wooden edging likely to be around £45-50 per m; general path repairs and maintenance could be around £8-10 per m. Budget therefore flexible and available to pay for path improvements/repair as necessary and informed by monitoring	Works to reduce desire lines, increase resilience of path network and protect trees.
Fencing	Annual budget to provide fencing as required		£5,000	75	£375,000	Estimated cost to provide for range of fencing options (rope and stakes, hurdles etc) as appropriate to restrict access or keep people to paths/away from sensitive trees. Could extend to dead hedging	Fencing to contain access and restrict visitors where need to close off desire lines etc.
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.
Signs & Interpretation	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
Signs & Interpretation	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.

Type of measure	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification
Signs & Interpretation	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.
Education & awareness raising	Awareness raising strategy	£12,000			£12,000	Estimate of consultancy costs to cover production of shared comms strategy, to include messaging, 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 the site and ultimately lead to more engagement from public and responsible access. Need to influence behaviour so approach needs to be carefully thought out.
Education & awareness raising	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.
Addressing contamination	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

Type of measure	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification
Monitoring	Monitoring strategy	£8,000			£8,000	Strategy to set out visitor survey and monitoring approaches, establishing clear protocols and links to management, ensuring cost effective mitigation delivery targeted as necessary	Monitoring important to inform and underpin mitigation. Important that functions as early warning to pick up issues and feedback to inform implementation.
Monitoring	Visitor interviews		£2,000	75	£150,000	Estimated cost for face-face interviews with visitors at stratified sample of locations. Surveys repeated at regular intervals (not necessarily annually) and in pulses as relevant to inform plan review etc.	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.
Monitoring	Visitor numbers and activities		£2,000	20	£40,000	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 and visitor flows.	Regular monitoring to identify the spatial use of different areas and monitor change
Monitoring	Path condition		£2,000	75	£150,000	Estimated cost for annual path monitoring - simple and basic system set up in monitoring strategy to allow annual monitoring	Will inform where interventions required and messaging to visitors

Type of measure	Measure	Capital/ one-off Cost	Annual Cost	No. years to budget for annual cost	Total Cost	Notes on how cost calculated	Justification
Monitoring	Ecological (birds and habitat)		£1,500	75	£112,500	Annual sum available for targeted monitoring. Bird and habitat monitoring potentially repeated at 5-year intervals in systematic way as per mitigation strategy (i.e. if 5 year intervals then £7,500 available every 5 years).	Informs trends of birds and habitat issues. Supplements existing monitoring including site condition monitoring.