



Brown Moss Countryside Heritage Site, Shropshire

Visitor Survey Report and Management Plan

Consultation Draft
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EXECUTIVE SUMMARY

Shropshire Council is undertaking a Local Plan Partial Review that will include consideration of housing allocations in Shropshire over the next 20 years. A Habitats Regulations Assessment (HRA) is being carried out for each stage of the Partial Review, to determine whether the Plan is likely to generate any significant adverse effects on European Protected Sites, including Ramsar sites.

Brown Moss Countryside Heritage Site is designated as a Special Area of Conservation (SAC), and a Ramsar site, and is also a Site of Special Scientific Interest (SSSI) and Local Nature Reserve. It is situated close to the settlement of Whitchurch, a market town which is likely to see an increase in housing allocations of around 1700 dwellings (31%). Brown Moss is designated as a Ramsar site for its wetland habitats and associated plant and invertebrate communities, and as an SAC for its population of Floating Water-plantain *Luronium natans*.

An Initial HRA Screening Report (Shropshire Council, 2017) has identified that the Plan has the potential to adversely affect the conservation status of the Ramsar and SAC qualifying features at Brown Moss through increased recreational pressure. Shropshire Council has therefore commissioned EPR Ltd to undertake a comprehensive visitor survey at Brown Moss, to assess the baseline levels of recreational pressure, analyse patterns of visitor access and behaviour, and identify any particular areas where recreational activity may come into conflict with sensitive habitats. This research will inform the next stage of the HRA, as well as production of a targeted Visitor Management Plan for the site.

Face-to-face visitor questionnaire surveys using a standard methodology were carried out at Brown Moss in August and September 2017. In total 61 groups were interviewed during the survey. Initial analysis suggests that baseline recreational pressure is relatively low, at around 3 people per hour (averaged across the year) and 16,060 people per year. Dog walking was the most commonly cited reason for visiting (75.4%), and the majority of dog walkers said their dog(s) were let off the lead (70.2%). Just over a quarter of dog-owning groups (25.5%) said their dogs strayed off the main paths, but only four (8.5%) said their dogs went into the water.

An indicative visitor catchment area of 3.4 km from Brown Moss is proposed, within which developments involving a net increase in housing in Shropshire may contribute to an increase in recreation pressure at the site.

EPR considers that although any increase in visitor pressure is likely to be small, the sensitivity of the site means that the possibility of significant adverse effects in combination with other pressures upon the site's structure, function and integrity cannot be ruled out. Suitable on and off-site impact avoidance measures are therefore suggested. These will be discussed with key stakeholders, including the site rangers and Natural England prior to the finalisation of this report.

Brown Moss Countryside Heritage Site, Shropshire

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1. INTRODUCTION

Background and Planning Context

- 1.1 Brown Moss Countryside Heritage Site is located around 2 km to the south-east of the town of Whitchurch in Shropshire, and is a component site within the Midland Meres and Mosses Phase 1 Ramsar site. Ramsar sites are wetlands of international importance, designated under the Ramsar Convention of 1971. The Meres and Mosses were selected for their range of natural or near-natural wetland habitats, and associated rare plant and invertebrate assemblages. Brown Moss is also designated as an SAC for its population of Floating Water-plantain *Luronium natans*.
- 1.2 Shropshire Council is undertaking a Local Plan Partial Review that will include consideration of housing allocations in Shropshire over the next 20 years. Whitchurch and the surrounding areas are likely to see an increase in housing allocations of around 1,710 dwellings during the plan period 2016-2036. The resultant increase in the number of residents in the Whitchurch area is therefore likely to elevate visitation levels to Brown Moss.
- 1.3 In accordance with the provisions of the Conservation of Habitats and Species Regulations 2010 (as amended), a Habitats Regulation Assessment (HRA) must be carried out for any plan or project which could affect a European Protected Site such as an SAC. The National Planning Policy Framework 2012 requires that Ramsar sites are accorded the same level of protection and so these sites are also subject to HRA. The purpose of the HRA is to ensure that the Plan will not adversely affect the conservation status of any international site.
- 1.4 An Initial Screening Report under the Habitats Regulations has been carried out for the Issues and Strategic Options stage of the Local Plan Partial Review (Shropshire Council, January 2017). This report found that recreational impacts would be a key issue for development in the Whitchurch area, due to potential effects on Brown Moss. A Visitor Impact Baseline Survey (Castle, 2015) also flagged up potential recreational effects, such as trampling and erosion of habitats by people and dogs.
- 1.5 In order to build an evidence base for the next stage of the HRA, it is necessary to gather data on baseline levels of recreational pressure exerted on Brown Moss, analyse patterns of visitor access and behaviour, and identify any particular areas where recreational activity may come into conflict with sensitive habitats. EPR was therefore commissioned by Shropshire Council to carry out a comprehensive suite of visitor surveys at Brown Moss in August and September 2017. This report sets out the results of these surveys.
- 1.6 The results indicate that recreational activity is likely to contribute to a significant adverse effect upon the features for which Brown Moss was designated as a Ramsar site.

- 1.7 The evidence collected from visitors and conversations with the site rangers and Natural England officers has therefore been used to inform draft on-site mitigation measures. These will be discussed with the key stakeholders prior to the finalisation of this report.

Aims and Objectives of the Survey

- 1.8 The aims and objectives of the visitor survey are as follows:

Gather robust baseline information on levels and patterns of recreation at Brown Moss;

Identify potential areas of conflict with the features for which the site was designated, allowing targeted and evidence-based mitigation measures to be designed;

Draw up a 'wish list' of features that visitors are looking for when they visit countryside sites for recreation, to assist with the design of alternative open spaces;

Identify a core visitor catchment area for Brown Moss within which future development proposals may contribute to an increase in recreational pressure; and

Generate a comprehensive dataset that can be compared with surveys in future years, and/or similar studies at other sites, to enable monitoring of the baseline position.

Structure of this Report

- 1.9 **Section 2** of this report looks at Brown Moss in more detail, including the reasons for its designation and current condition. This Section also provides an overview of available information on the ecology and requirements of the habitats and plant and invertebrate communities associated with the SAC and Ramsar designations.
- 1.10 **Section 3** describes the methodology used for the visitor survey. **Section 4** then presents the results, using graphs and maps to illustrate key findings and drawing on data from previous surveys where relevant. **Section 5** discusses the implications of the results with reference to comparable studies and projected future visitation levels, and considers whether an increase in housing numbers is likely to give rise to a significant adverse effect upon the site's conservation status. Finally, initial recommendations for appropriate impact avoidance and mitigation measures are set out in **Section 6**, including draft mitigation measures and a programme to monitor progress towards measurable targets.

2. BROWN MOSS

Description of the Site

- 2.1 Brown Moss is an open access site of around 32 ha, owned and managed by Shropshire Council as a Countryside Heritage Site. It is located around 2 km to the south-east of the town of Whitchurch. The site comprises a series of pools and bogs, plus areas of dwarf shrub heathland, acid grassland, secondary woodland and scrub. The hydrology of Brown Moss is complex and the pools vary in depth, pH value and nutrient status. In years of low rainfall they often dry up. One of the pools, Pool 9, is a floating quaking bog known as 'Schwingmoor'. The site has been grazed by cattle since late 2016 to assist with scrub control.
- 2.2 A lane runs through the eastern edge of the site. A free car park with space for around 15 vehicles is available, along with a secondary car park for around 5 vehicles in the woodland to the east of the lane. Several informal laybys are also present along the lane with space for around 3 cars each.
- 2.3 A network of unsurfaced paths and tracks, along with bridges and sections of boardwalk, allow access to much of the site, although the focus is Pool 6, the largest pool and also the closest to the main car park (see **Map 2**). Many of the paths have established along desire lines. Brown Moss is registered Common Land with part of the Shropshire Way footpath passing through the site.
- 2.4 Site furniture includes a small number of benches and picnic tables, seats, waymarkers, and information boards about the site and its flora and fauna. A dog waste bin is located in the main car park and at the northern entrance to the site. Fencing and cattle grids were installed in 2013 to allow the re-establishment of grazing. Several privately-owned houses overlook / back onto the site. There are no toilets or refreshment facilities.
- 2.5 Brown Moss does not have a permanent ranger/warden presence, but is part of a wider portfolio of sites managed by the Council's Outdoor Recreation Team. It is managed under a Higher Level Environmental Stewardship Scheme. The current visitor management plan is dated 2014-2018; key points from this plan are discussed further below under Qualifying Features.

Designations

Brown Moss SAC

- 2.6 Brown Moss was designated as an SAC in 2005 as it supports Floating Water-plantain, a species which is listed on Annex II of the EU Habitats Directive 92/43/EEC. Species listed on Annex II are considered to be most in need of conservation at a European level.
- 2.7 The Conservation Objectives for Brown Moss SAC are as follows (Natural England, 2014):

'Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

The extent and distribution of the habitats of qualifying species;
 The structure and function of the habitats of qualifying species;
 The supporting processes on which the habitats of qualifying species rely;
 The populations of qualifying species; and
 The distribution of qualifying species within the site.'

- 2.8 Floating Water-plantain is listed as Near-Threatened on the England Red List (Stroh et al., 2014) and is also Nationally Scarce in Britain (JNCC, 2016).

Midland Meres and Mosses Phase 1 Ramsar Site

- 2.9 As shown on **Map 1**, Brown Moss is one of 16 component sites within the Midland Meres and Mosses Phase 1 Ramsar site, designated in 1994. The Meres and Mosses are characterised as areas of lowland open water ('meres') and peatland ('mosses'), formed in natural glacial depressions. The majority of the meres are naturally nutrient rich, while the mosses are nutrient poor and acidic.
- 2.10 The network of sites qualifies under Ramsar Criterion 1 for its diverse range of wetland habitats from open water to raised bog, and Criterion 2 for its rare plant and invertebrate assemblages, including five nationally scarce plant species, three endangered insects and five other British Red Data Book species of invertebrates. The Ramsar Information Sheet does not refer to Brown Moss specifically, but does mention that the Schwingmoor bogs (of which one is present at Brown Moss) are of particular importance.

Brown Moss SSSI

- 2.11 Brown Moss was first notified as an SSSI in 1953, and re-notified in 1984 under the Wildlife and Countryside Act 1981 (as amended). The citation notes that the site 'is of special importance for the marsh, swamp and fen communities associated with the pools (...) which fluctuate considerably, and apparently independently'. Uncommon species mentioned as occurring in these communities include Orange Foxtail *Alopecurus aequalis*, Lesser Water-plantain *Baldellia ranunculoides*, Floating Scirpus *Eleogiton fluitans*, Small Bur-reed *Sparganium minimum*, Marsh St. John's Wort *Hypericum elodes* and the rare liverwort *Riccia canaliculata*.
- 2.12 The quaking bog (Schwingmoor) is also mentioned in the SSSI citation, as well as 'the areas of heathland and acid grassland [between the pools], with extensive tracts of birch and oak woodland', which 'add considerably to the value of the site and provide additional habitats for insects and birds'.
- 2.13 The site was also declared as a Local Nature Reserve in 2000.

Qualifying Features

- 2.14 Information on the current condition of the SAC and Ramsar qualifying features is presented below, along with potential factors that could affect their conservation status. A summary of available information on the ecological requirements of these features is also provided. This draws on the following information:

Brown Moss SSSI Condition Assessment (Natural England, 2016);

Brown Moss Management Plan 2014-2018 (Shropshire Council);

Brown Moss Site Improvement Plan (Natural England and Environment Agency, 2014);

Brown Moss & Colemere Visitor Impact Baseline Survey (Gill Castle, 2015) and observations made by author in 2017; and

Various research reports listed under References in **Section 6**.

- 2.15 The 2015 Baseline Survey involved taking baseline monitoring photographs, counting visitor numbers, recording observations of recreational and potentially damaging activities, and creating maps showing access points, paths, desire lines, formal and informal parking, with notes on condition and apparent level of use. A brief assessment was also provided as to whether designated habitats and species were being damaged or threatened as a result of current visitor use, along with suggestions of possible visitor management measures.
- 2.16 In August 2017, Jodie Southgate of EPR visited the site to make observations and take update photographs for comparison with the 2015 survey (see **Appendix 2**).

Condition

- 2.17 Natural England's most recent Condition Assessment (2016) categorised the open pools as '**Unfavourable Recovering**', noting that ongoing management is in place to reduce scrub cover and increase the light entering the pools. Floating Water-plantain was not found during the survey, but a number of other axiophytes (noteworthy species) were noted.
- 2.18 The quaking bog ('Schwingmoor') at Pool 9 (see **Map 2**) and dwarf shrub heathland were both also characterised as '**Unfavourable Recovering**'. Ongoing scrub clearance work is assisting with the recovery of the Schwingmoor. Invasive birch and a loss of valued species over time have contributed to the 'Unfavourable' condition of the heathland, but cattle grazing has now been introduced as of October 2016, and a Higher-Level Stewardship Agreement is in place to assist with management of the site.
- 2.19 The current Management Plan for the site (2014-2018) notes that although some fluctuation in water levels is a normal and important feature of the site, the invasion of scrub along with an apparent long-term reduction in water levels 'has contributed to a reduction of the ecologically important plant and animal communities to be found in the draw zones around the pools'. The Schwingmoor bog 'has seen a gradual encroachment of soft rush and shading from the surrounding trees'.
- 2.20 The Management Plan notes that Floating Water-plantain was last recorded at the site in 2006 and that this species has a complex life history and ecology which may include periods of extended dormancy. Sediment cores extracted in 2016 found two seeds which were not viable. No regular invertebrate surveys have been carried out and 'records of aquatic invertebrates are poor'.

Potential Effects

- 2.21 The 2014-2018 Management Plan, Site Improvement Plan 2014 and the 2015 Baseline Survey identify several factors which could potentially affect the qualifying features of the site:

Recreational Factors

Erosion and trampling of vegetation by people and dogs: the 2015 study found that significant areas of the shore of Pool 6 were subject to erosion;

Dogs swimming in the water: the 2015 study estimated that the margins of around 50% of Pool 6 are 'regularly disturbed by dogs entering the water';

Visitors creating makeshift bridges in wetter woodland areas with logs, affecting the flow of water to the pools;

Litter and vandalism; and

Nutrication through dog faeces – particularly in heath and acid grassland habitats and around Pool 6.

- 2.22 It is noted that recreation is not mentioned as a pressure or threat in the Site Improvement Plan for Brown Moss. However, recreational pressure can have indirect impacts. At Brown Moss there have been instance of conflict between dogs and cattle which resulted in livestock being removed earlier than planned in late 2017, thus affecting the habitat management regime for the site. There has also been local opposition to tree felling carried out as part of necessary management works (M. Cousins, *pers.comm.*)

Other Factors

Non-native invasive species (New Zealand Pygmyweed *Crassula helmsii* is present in Pool 6 and has spread to other parts of the site, and *Azolla filiculoides* has been recorded in Pool 3b in the past);

Scrub invasion of wetland habitats, and associated shading and leaf litter;

Hydrological changes: water levels are thought to be linked to rainfall, while other factors include ditch management and external impacts on water quality. Monitoring photos show that water levels have dropped considerably since 2014 (though the photos were taken at different times of year);

Nutrient loading and eutrophication via the catchment: nitrogen critical loads in Shropshire are estimated to be at over 300% (S. Swales, *pers.comm.*) and Brown Moss is within a Nitrate Vulnerable Zone;

Siltation: Large amounts of phosphorus are released from sediment, which affects macrophyte communities. Birds are thought to be responsible for much of the phosphorus build up. Pool 6 is particularly affected;

Air Pollution: Possible nutrient loading from atmospheric nitrogen deposition;

Erosion and trampling by waterfowl and livestock;

Nutrient loading and eutrophication by waterfowl and livestock; and

Commoner's Rights: if exercised, these could affect the management of the site.

Ecological Requirements

- 2.23 Extensive research and monitoring has been carried out at Brown Moss over a period spanning more than 50 years. A large amount of information is therefore available on the ecological requirements of key species, particularly Floating Water-plantain.

Floating Water-plantain

- 2.24 Floating Water-plantain has two forms: one which grows in deep water, and one in shallow water/exposed mud (the population at Brown Moss appears to be the latter). The species has a complex life history with several discrete reproductive strategies, and usually occurs as dynamic metapopulations which fluctuate in size and from year to year.
- 2.25 The population at Brown Moss was recorded regularly from 1955 to 1987, followed by a period of 12 years during no records were found. The species was thought to be extinct, but was rediscovered in 1999, suggesting that the species may enter periods of dormancy (Lansdown & Wade, 2003). It was last recorded in 2006.
- 2.26 Research indicates that Floating Water-plantain benefits from occasional disturbance and/or drying out as this can prevent competitive species from dominating (JNCC 2005, Willby & Eaton 1993). Indeed, the most recent records from Brown Moss occurred following a period of silt scraping. It is also thought to require clear open water in full sunlight, and grazing and light poaching can help to maintain the open habitats it favours. (Lockton, 2016).
- 2.27 Limiting factors to the survival and productivity of Floating Water-plantain are thought to include competition from other species, excessive disturbance of sediment, lack of connectivity to other sites, and acidification and eutrophication (the latter due to resultant increased competitiveness of other species rather than direct chemical effects (Willby *et al.*, 2003)). Wildfowl are thought to be a major contributor to eutrophication at Brown Moss (Chaichana *et al.*, Leah and Moss 2010).
- 2.28 Test patches for silt scraping and wildfowl exclusion were set up around Pool 6 in 2017 and will be monitored for the next five years to inform future management.

Other Features

- 2.29 The number of axiophytes recorded at Brown Moss over the past 50 years has decreased (Lockton, 2016). The majority of those lost are associated with acid grassland, peat bog and clear water and require open mosaic habitats maintained by grazing (Lockton, 2016).
- 2.30 The invertebrate assemblage at Brown Moss has not been extensively studied, but there are several records of Red Data Book species from recent years. It is assumed that management targeted at the wetland habitats and plant assemblages would also help to maintain the favourable conservations status of the associated invertebrate assemblages.

3. VISITOR SURVEY METHODOLOGY

Background to Methodology

- 3.1 The visitor survey took the form of a standard exit poll questionnaire, which involves structured face-to-face interviews with visitors as they exit through a set of pre-determined access points within the survey area, utilising a standard set of questions. This method has been used in numerous recreation studies on wetland/coastal Natura 2000 sites by EPR and others, and was originally developed from research on recreational impacts on heathland sites (Clarke et al., 2006, Liley et al, 2005).
- 3.2 The methodology set out in this Section was developed in consultation with the project team at Shropshire Council, following advice from Natural England.
- 3.3 As set out below, survey effort and timings were consistent with similar studies, to allow comparison of results. The questions themselves were also based on those used in other studies, adapted slightly where appropriate to reflect the aims and objectives of this particular survey, and to ensure consistency with previous survey data gathered in 2014 and 2015. The questionnaire is described further below and reproduced in full in **Appendix 1**.
- 3.4 As shown on **Map 2**, the following access points (APs) were chosen for the survey in consultation with Shaun Burkey, Country Parks & Sites Officer for the Council:

AP1 Main Car Park: Considered to be the location with the highest visitor traffic

AP2 (August Surveys) Shropshire Way: Located at the gate where the Shropshire Way exits the site onto the lane which passes to the east of the site. Informal parking spaces nearby.

AP2 (September Surveys) Southern Footpath Junction: Located at the junction of several footpaths at the south-western corner of the largest pool.

- 3.5 AP2 was moved for the September surveys, as visitor traffic at the original access point was found to be exceptionally low in August, with only 7 visitors observed over 32 hours. It was agreed that although the alternative AP2 was not an 'access point' as such, it was located at a junction between several footpaths and as such there was a greater likelihood of completing interviews here.

Survey Effort and Timing

- 3.6 In accordance with the standard used by other visitor surveys, each access point was surveyed for 32 hours in total, split up into four survey days cover a weekend and a weekday in both August 2017 and September 2017. The surveys were carried out on the following dates:

Saturday 26 August 2017

Thursday 31 August 2017

Sunday 24 September 2017

Wednesday 27 September 2017

- 3.7 On each survey day, interviews were carried out in the following two-hour sessions:

07.00 to 09.00

10.00 to 12.00

13.00 to 15.00

17.00 to 19.00

- 3.8 The even mixture of mornings/afternoons, weekdays/weekends and term time/school holidays was designed to ensure that a representative mixture of visitation levels and pattern would be captured, and also to reduce the possibility of factors such as unusual weather or local events introducing bias into the results.

Interviews

- 3.9 The face-to-face interviews were conducted by Marketing Means, an independent specialist market research company with experience of carrying out similar exit poll questionnaires using this methodology. Marketing Means engaged local surveyors who are certified members of the Market Research Society and have extensive experience of positively engaging with potential interviewees and gathering robust data from face-to-face interviews.
- 3.10 EPR provided maps, questionnaires and a detailed written briefing, and liaised closely with a representative from Marketing Means throughout the course of the surveys to ensure that the agreed methodology was followed. Jodie Southgate of EPR also visited some of the surveyors to ensure that all was running smoothly.
- 3.11 Surveyors interviewed visitors as they passed through their access point in order to obtain information about their visit. Both access points were surveyed simultaneously, to allow direct comparison of the results at each location. Groups of people were counted as one, with only one person interviewed per group, and children under the age of 16 were not approached if alone. Topics included:

Number of visitors and dogs per group;

Where they had travelled from;

Method of travel;

Reason for their visit;

Why they had chosen this site over others;

When and how often they usually visit;

Whether they let their dogs off the lead (if applicable);

Whether their dogs entered the water, and where (if applicable);

Whether they visit other open spaces in the area; and

Facilities and features they would like to see in open spaces in the area.

- 3.12 Maps were used to aid data collection. Visitors were asked to annotate the route they had taken during their visit on a map of the site, and these were coded so that they could be matched to the corresponding questionnaire.
- 3.13 Metadata recorded for each interview included the time of day, weather conditions, and any constraints or limitations. Surveyors were also provided with a notes sheet on which to record any of the following observations:

People or dogs leaving the footpaths shown on the maps;

People or dogs entering the water;

Any other incidents of note.

Entry/Exit Forms

- 3.14 In addition to interviewing visitors, surveyors kept count of the total number of people and dogs entering and exiting their access point on a separate form, also noting the time of day and whether the person/group was interviewed or not. This information was collected to allow analysis of overall footfall at each access point.

Data Analysis

- 3.15 Most questionnaire responses were multiple-choice; these were coded by Marketing Means and passed to EPR as a Microsoft Excel spreadsheet. Answers to the open-ended questions were typed out by Marketing Means and sorted into categories by EPR. Excel was used for the data analysis. All percentages and figures in the Results section are rounded to one decimal place.
- 3.16 The entry/exit forms were also provided to EPR as an Excel spreadsheet. The higher of the two counts from each access point was then combined to represent overall footfall, as the relatively enclosed nature of the site and opportunity for circular walks means that the majority of groups would have otherwise been counted twice, on both entry and exit.
- 3.17 It is likely that the entry/exit data still includes some double counting, as some groups will have been recorded at both access points. On the other hand, surveyors will have missed some entries/exits while they were busy interviewing other groups, and some groups may not have passed through either access point, so this is offset to some extent. Nevertheless, all entry/exit figures given in the Results section are to be taken as broad estimates only, for comparison with similar studies and any repeat or automated counter studies in the future.
- 3.18 ArcGIS 10.3 software (ESRI UK) was used to aid analysis and presentation of the data collected during the surveys. This included analysis of visitor origins and travel distances (linear distance from point of origin to access point) using a Royal Mail Postcode Dataset for the UK (BHP Data Ltd) and the point distance analysis capability of the ET GeoWizards add-in.
- 3.19 The visitor route maps were each digitised using ArcGIS 10.3 and then analysed using the line density function of the Spatial Analyst extension. This analysis allows production of thematic maps showing the footpaths and roads in the area with the highest levels of visitor use (m/m²) and thus the areas subject to the greatest density of recreational pressure. This can be broken

down by different user groups (such as dog walkers vs non-dog walkers) and used to identify potential areas of conflict with sensitive areas of the site, as discussed in **Sections 4 and 5**.

Limitations

- 3.20 While the questionnaire was designed to be as simple and brief as possible, interviewees may decline to answer some questions, and some may be skipped by the surveyor, for example if the interviewee is in a hurry. This limitation is common to all face-to-face surveys and is not considered to be a problem as long as the overall dataset is large enough. Similarly, the 'routes walked' maps can vary in terms of accuracy, but again, in a large dataset some minor inaccuracies are unlikely to have a significant bearing on the overall results or analysis.

4. VISITOR SURVEY RESULTS

Previous Surveys

- 4.1 Visitor surveys were undertaken by Shropshire Council staff in July, August and September 2014 using a similar (but shorter) questionnaire to the one used during the current survey. 24 interviews were completed. Survey times were very limited, to fit in with staff workloads.
- 4.2 As set out in **Section 2**, a baseline monitoring survey carried out in March 2015 included visitor counts and recording observations of recreational and potentially damaging activities. The results of the 2014 and 2015 surveys are presented for comparison where relevant throughout this Section.
- 4.3 The Brown Moss Management Plan 2014-2018 notes that Countryside Rangers have observed that the most popular reasons for visiting the site appear to be dog walking, exercise, quiet recreation as a family, botanical recording and birdwatching.

2017 Visitor Survey Results

- 4.4 This Section describes the results of the August and September 2017 surveys, and a summary table is presented in **Appendix 3**. Results are presented for both months and both Access Points combined, unless otherwise stated. Results are broken down in detail where appropriate, for example by month, access point or user group, and graphs and maps are used to facilitate presentation of the results. No significant limitations were encountered during the surveys.

Weather

- 4.5 A range of weather conditions were recorded, though the most commonly recorded weather type was 'cloudy' 60.7% of interviews), followed by 'sunshine' (32.8%). Showers were reported for three of the interviews and 'heavy rain' for one interview. Overall, it is considered that this is a representative mix of 'typical' weather for the time of year.

Footfall

- 4.6 In total, 61 groups were interviewed as part of the visitor survey, involving 110 people. As in 2014, the majority of the visitors were over sixteen (85.5%), with 46.4% aged between 25 and 59, and 34.5% over 60. Over three quarters of the groups (77%) had dogs with them.
- 4.7 In addition to conducting interviews, surveyors also recorded 194 people entering the site in 110 groups, an average of 1.8 people per group. The number of dogs recorded with these groups was 142, which represents 1.3 dogs per group. Over 64 hours of survey, these figures equate to 3 people per hour and 2.2 dogs.
- 4.8 Access Point 1, the main car park, saw by far the most footfall, and 86.9% of interviews were conducted here. In August, only one interview was conducted at AP2 and so this was moved to a new location for the September survey, as explained in **Section 2**. Seven interviews were completed at AP2 in September.

- 4.9 Extrapolating the total figures for both Access Points yields an approximate daily visitation rate (based on an average 12 hours of daylight across the year) of 36 people and 26.4 dogs, or 13,140 people and 9,636 dogs per year.
- 4.10 The 2014 survey recorded notably higher footfall with 10 people and 5.4 dogs observed per hour. The 2015 survey recorded an average of 6 people and 1 dog per hour. However, it is likely that these figures include both entries and exits, rather than the higher of the two. Data was also collected over a much shorter time period, 4.6 hours in 2014 and 7 hours in 2015, compared to 64 in 2017. It is noted in the 2015 report that the sample size of both surveys was small and that 'the 2015 survey was mostly during weekdays'.
- 4.11 **Table 4.1** sets out a comparison of the footfall data described above. For 2014 and 2015, visitation rates are adjusted to account for double counting and to allow for direct comparison to the 2017 data. This adjustment has been crudely estimated by dividing the original numbers in two.

Table 4.1. Comparison of footfall data (adjusted; original figures for 2014/15 in brackets)

Survey	Time period	Hourly visitation rates	Daily visitation rates	Annual visitation rates
Visitor survey 2014	4.6 hours	5 (10)	60 (120)	21,900 (43,800)
Visitor survey 2015	7 hours	3 (6)	36 (72)	13,140 (26,280)
Visitor survey 2017	64 hours	3	36	13,140
Average		3.7	44	16,060

- 4.12 As mentioned above and in **Section 3**, these figures are by no means accurate due to the potential for double-counting or under-counting visitors, however they provide a useful comparison between years, and can be used to monitor the baseline position.
- 4.13 The adjusted visitation rates range from between 13,140 and 21,900 visits per year. It is likely that the actual figure is closer to the 2017 result of 13,140, as the survey effort was so much greater.

Visitor Profile

- 4.14 Overall, 50 of the 61 the groups interviewed released a full and accurate home postcode. This revealed that 86% of those groups were local residents with a Shropshire postcode. The majority of groups arrived by motor vehicle (62.3%), followed by 36.1% on foot and one individual by bicycle.
- 4.15 The majority of interviewees (75.4%) stated that the main reason for their visit was dog walking, followed by walking (9.8%). Other reasons cited by one or two groups included birdwatching,

to learn something, photography, and for the children to ride their bikes and feed the ducks (**Figure 4.1**). These results are similar to the 2014 survey.

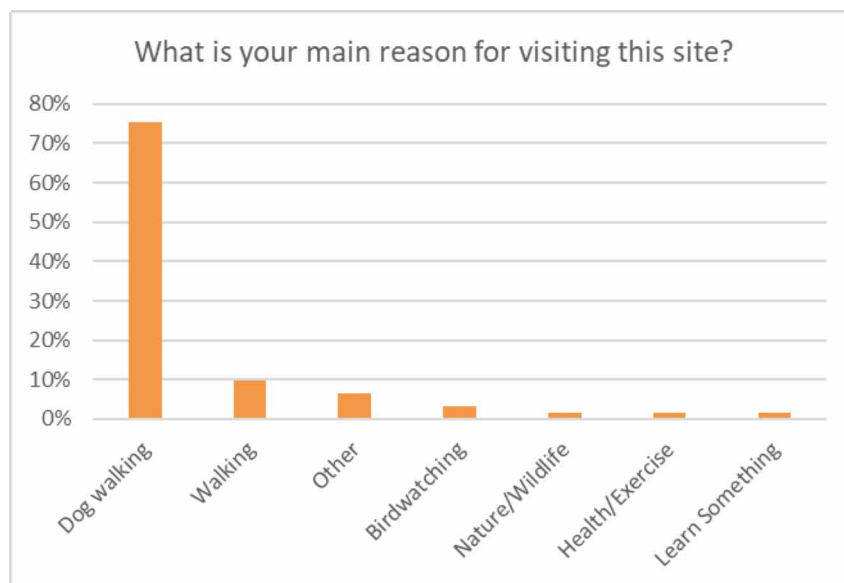


Figure 4.1: Main Reason for Visiting Brown Moss

Visitor Origins & Travel Distances

- 4.16 The 50 accurate postcodes released by interviewees, representing home origins of visitors, were spatially analysed using GIS. Analysis revealed that the majority of visitors came from north Shropshire, particularly the Whitchurch area (**Map 3**).
- 4.17 The average distance travelled to reach the site was 5.7km, with a minimum distance of 429 metres and a maximum distance of 30km. The average distance travelled by car was 6.3km. Those on foot travelled an average of 4.5km, although this reduces to 2.7km when removing the two uppermost figures of 15.8km and 20.3km. Visitors had travelled further on average in September (6.6km) than August (4.6km).

Catchment Analysis

- 4.18 A commonly used method for calculating the indicative visitor catchment for a site is to take an appropriate percentile figure from a cumulative frequency distribution curve. This involves plotting all of the travel distances in order from smallest to largest, and calculating the distance below which, for example, 20% of the distances fall (this would be the 20th percentile).
- 4.19 Recreation studies on European sites in the Thames Basin, the Solent and the Severn Estuary have used the 75th percentile to propose catchment distances for these sites (Liley et al., 2005, Fearnley & Liley, 2013, Southgate and Colebourn, 2016). Using the 75th percentile gives a more representative understanding of predominant travel patterns to a site than a mean value, because it excludes the upper travel distances that can skew the average figure.
- 4.20 This analysis found that 75% of the total numbers of visitors providing postcodes during the survey had travelled from within 7.1 km of Brown Moss. Performing this calculation using only Shropshire postcodes, this distance reduces to 3.4 km.

- 4.21 The indicative catchment for Brown Moss for the purposes of this study is therefore estimated to be around 3.4 km, as 75% of visitors living in Shropshire travel to the site from within this distance. This catchment is shown on **Map 4**.

Temporal Patterns

- 4.22 Most of the groups interviewed (73.8%) said they visited the site all year round. Seven groups (11.5%) were making their first visit to the site.
- 4.23 Interviews were split almost equally between August (49.2%) and September (50.8%), but the entry/exit data recorded a higher number of people in August (116 people entering in 62 groups compared to 78 in 48 groups in September). The number of dogs was similar in both months at 66 and 76 respectively, meaning that the ratio of dogs to groups was notably higher in September.
- 4.24 The total number of under-16s within groups interviewed was slightly higher in September (10 under-16s compared to 6 in August).
- 4.25 A greater proportion of interviews were completed on weekend days (64%). The entry/exit data also recorded more people on the weekend days, with a total of 66 groups/116 people, compared to 44 groups/78 people on the weekdays.
- 4.26 The time of day that people visited varied. Most interviews took place between 10am and 3pm (68.9%). The highest number of entries was recorded during the session between 10am and 12 noon. When asked what time of day they usually visit, the most commonly cited answers were 'between 9am and 12 noon' (27.9%) and 'it varies' (21.3%) (**Figure 4.2**).

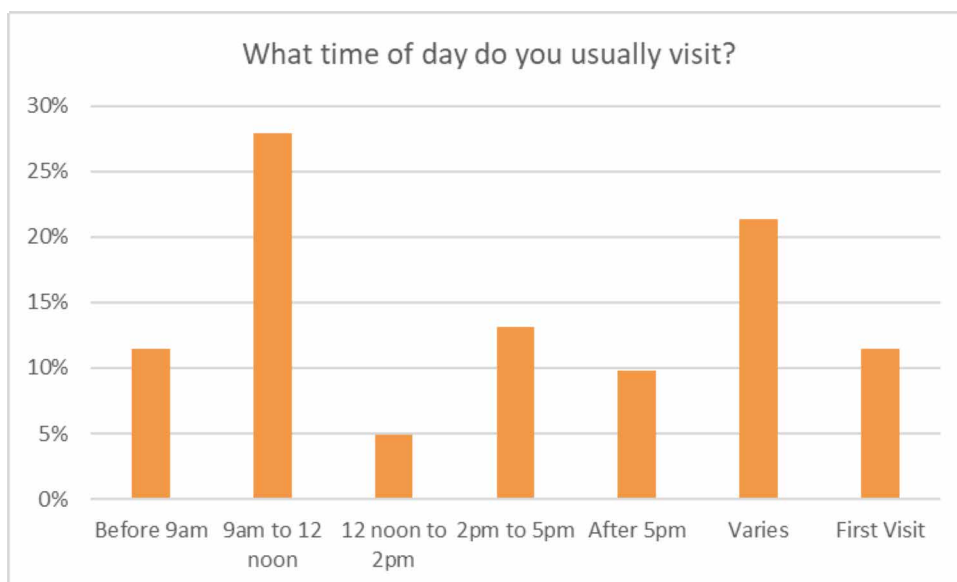


Figure 4.2: Time of day that people usually visit Brown Moss

- 4.27 Over a quarter (26.2%) of groups said they visited daily or almost daily, and the second most popular responses were 'two or three times a week' and 'occasionally' (both 18%). (**Figure 4.3**). Just over half of the groups with a dog (55.3%) said that they visited either two or three times a week or daily.

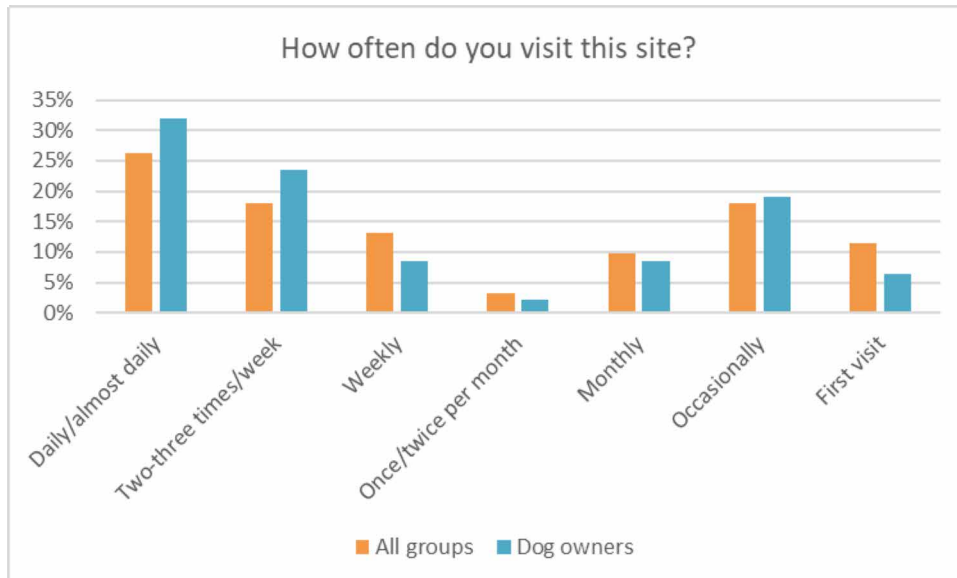


Figure 4.3: Frequency of visits to Brown Moss

Reasons for Choosing Brown Moss

- 4.28 When asked why they liked to visit Brown Moss in particular, the most popular responses were: 'it's close to where I live' (39.3%), 'enjoy the look/feel of this site' (27.9%), 'enjoy the wild/natural feel of this site' (21.3%), 'peace and quiet' (19.7%), and 'wildlife/birdwatching'. In total 18% of groups cited being able to let the dog off the lead, this rises to 23.4% when only including those groups with a dog. Interviewees were allowed to choose multiple options (**Figure 4.4**).



Figure 4.4: Reasons for visiting Brown Moss

- 4.29 Nine groups (14.8%) also cited other reasons for choosing Brown Moss. These included:

- No main roads
- Recommendation

Saw the brown sign
Dog friendly
Dog waste bins provided
Meet people I know
Trees provide shelter from rain.

Comments on Brown Moss

- 4.30 Visitors were asked whether there were any changes they would like to see at Brown Moss, or comments they wished to make. The most popular response was 'nothing' (16 groups, or 26.2%), with comments including that 'it's lovely and unspoilt', 'as natural as it can be' and 'we and the dog are happy'.
- 4.31 Otherwise, the most common comment was that they had noticed/were unhappy that water levels had dropped (10 groups) or that they disliked the cattle (9 groups), with two groups commenting that they were unsure in particular about the combination of small children and dogs with cattle (conversely, six groups said that they liked the cattle). Other suggestions included rectifying damage to tracks and site furniture by cattle and vehicles (8 groups), more dog waste bins (6 groups), more benches (4 groups), more picnic tables (3 groups), and preventing the site from becoming too overgrown (3 each). Two groups suggested that it would be good to have more activities for children, such as a nature trail.

Routes Walked

Recreational Pressure

- 4.32 The routes that people had taken during their visit were digitised and analysed using GIS software to create thematic maps showing comparative levels of path use within the site, thus indicating the areas subject to the highest levels of recreational pressure (**Map 5**).
- 4.33 This map shows that visitors chose a wide variety of routes both on and off the formal footpaths around Brown Moss, including several desire lines along the western edge of Pool 6, between Pools 7 and 9, and in the open area south of Pool 4. The most heavily used routes included the loop around Pool 6, the loop from the main car park to Pool 2, and the path leading from Pool 2 south to Pools 7 and 8.

Distances Walked

- 4.34 The GIS analysis shows that on average, groups walked 1.3km during their visit, with a minimum distance of 126 metres and a maximum of 4.4km. Groups with dogs walked slightly further on average than those without, at 1.3km and 1.0km respectively. Groups in September walked slightly further than groups in August (1.4km and 1.1km respectively).

Visitor Behaviour

- 4.35 The majority of visits lasted for less than one hour (75.4%) and almost a third were less than half an hour (31.1%).

- 4.36 In total, the majority of groups with dogs (70.2%) said that they let them off the lead. Just over a quarter of groups (25.5%) said that their had dogs left the paths, and four groups (8.5%) said that their dogs went in the water. Only nine groups (14.8%) said that they themselves left the paths, and nobody had entered the water. **Map 6** shows the locations where groups said their dogs entered the water; these are all along the eastern side of Pool 6.
- 4.37 Of the dog-owning groups, the majority (66%) said they had used a dog waste bin during their visit, and 34% said they did not. This does not necessarily mean that they did not clear up after their dog, as it is possible that they took their waste home or that their dog did not defecate.

Alternative Sites

- 4.38 43 of the groups interviewed (70.5%) said that they regularly visited other open spaces for the same purpose as their visit that day. These groups were asked to name their top three alternative sites. Those cited by more than one group were:

Cole Mere (12)

Prees Heath Nature Reserve (10)

Bickerton (5)

The Mere at Ellesmere (4)

The canals (4)

Corbet Woods (3)

Grinshill (3)

Wixall (2)

Attingham Park (2)

Dearnford Lakes (2)

Tyrley Locks (2)

- 4.39 The majority of groups said that they visited these sites occasionally (32.6%) or monthly (25.6%). The reasons interviewees gave for choosing these sites were generally similar to those for visiting Brown Moss. The most popular response was 'it's close to home' (41.9%), followed by 'ability to let the dog off the lead' (25.6%). 41.9% of groups gave an alternative reason, including 'for a change/variety' (the third most popular reason, cited by 20.9% of groups), 'easy parking', 'for the play area' and 'for the ducks and park'.
- 4.40 With reference to Stiperstones and Fenn's, Wixall and Bettisfield Mosses in particular, 15 of the groups (34.9%) said they visited Fenn's, four said they visited Stiperstones (9.3%), and 25 (58.1%) said they did not visit either site.

What Visitors Look for in Open Spaces

- 4.41 The last question of the survey was designed to find out what visitors look for in the places they choose to visit for recreation, to assist with the planning and design of alternative open spaces. Groups were asked about the facilities and features they would like to see if existing open

spaces in Shropshire were improved, or new ones created. The following suggestions were made by more than one group:

- Dog friendly, dogs off leads (19)
- Dog waste bins (9)
- Parking (8)
- Play areas or nature trails for kids (7)
- Toilets (7)
- Café or refreshments (6)
- Keep it peaceful and natural, traditional management (6)
- Accessible (4)
- Variety of paths (4)
- Woodland areas (4)
- Views of water (4)
- Safe and secure (3)
- Well maintained (3)
- Open space (3)
- Rubbish bins (2)
- Safe cycle routes, no traffic, bike racks (2)
- Wildlife to see (2)

Observations and Notes

- 4.42 As described in **Section 3**, surveyors were asked to make a note of any people or dogs in the water, or other influences of note that they observed at their access points.
- 4.43 Surveyors noted that one group attempted to shoo the cows away. Two groups mentioned to surveyors that they had observed antisocial behaviour in the car park. In September, the surveyor reported to the site ranger that the cows were unsettled and had behaved aggressively people in two separate incidents.

5. LIKELY SIGNIFICANT EFFECT

Introduction

- 5.1 This Section considers the results of the visitor survey work in the context of the Habitats Regulations 2017; i.e. whether increased visitor pressure is likely to give rise to a significant adverse effect on the features for which Brown Moss is designated as an SAC and Ramsar site.
- 5.2 Key findings from the visitor surveys are also drawn out, to assist with the design of impact avoidance measures and a consultation draft Visitor Management Plan.

Relative Footfall

- 5.3 Compared to larger European sites, footfall and visitor pressure at Brown Moss is relatively low at around 16,000 per year (500 per hectare per year). For example, Cannock Chase SAC is estimated to attract around 1.27 million visitors per year (1,024/ha/year), the Thames Basin Heaths 7.5 million (842/ha/year) and the Dorset Heaths 5 million visits annually (680/ha/year) (Liley et al., 2009).

Projected Increase in Visitation Rates

- 5.4 The Royal Mail Postcode Dataset (updated March 2018) (BPH, 2018) shows that there are 5,463 existing dwellings within the 3.4km catchment for Brown Moss. This equates to around 12,565 residents¹ and 1,988 dogs².
- 5.5 The Shropshire Local Plan Review Consultation on Preferred Scale and Distribution of Development Document (October 2017) allocates 1,510 dwellings for the Whitchurch area, which falls within the 3.4km catchment. Additionally, some housing will be built in smaller settlements called 'hubs and clusters'. It is not possible to accurately predict how many of these will fall within the 3.4km catchment, or how many dwellings there will be. However, a rough figure of 200 has been taken from estimations set out in the Site Allocations and Management of Development (SAMDev) Plan 2015.
- 5.6 In total, therefore, around 1,710 new dwellings can be expected to be built within the 3.4km catchment for Brown Moss during the plan period 2016 – 2036. This represents approximately 3,933 new residents and 622 dogs, an increase of around 31%.
- 5.7 Not all of the new residents will visit Brown Moss, and it is not possible to calculate the likely increase in visitation rates using the results of the on-site visitor data. However, it is reasonable to assume that at least some of them will, at least occasionally. It is therefore likely that the increase in housing numbers within the catchment will, over time, contribute to a modest increase in visits to the site.
- 5.8 An increase in recreational pressure will only become an issue if it generates significant adverse effects upon the structure, function and integrity of the features for which Brown Moss

¹ Based on an average household size of 2.3 people in Shropshire, according to 2011 census data (www.ons.gov.uk)

² According to data from the Pet Food Manufacturers Association (2018), on average 28% of households in the West Midlands own dog, at a rate of 1.3 dogs per dog-owning household.

SAC/Ramsar site was designated. The paragraphs below therefore consider whether an increase in recreational pressure is likely to come into conflict with the features for which the site was designated, thus triggering the need for impact avoidance measures.

Potential Sources of Conflict

5.9 Visitor survey data has shown that visitor pressure at Brown Moss is relatively low. Taken in the context of other threats to the conservation of the site (see **Section 2**), recreational pressure is unlikely to generate significant adverse effects alone. This said, it cannot be ruled out that recreational pressure could lead to significant adverse effects in combination with other factors.

5.10 The key areas in which recreational pressure has the potential to exert the greatest influence are considered to be as follows:

Interference with appropriate habitat management. An increase in visitors and dogs could cause further conflicts with grazing animals, which in a worst-case scenario could lead to them being removed from the site altogether. This would result in scrub encroaching upon the marginal, open habitats favoured by Floating Water-plantain and other axiophytes and greatly reduce the ability of the site to support these species;

Excessive disturbance of sediments in and around Pool 6, where Floating Water-plantain was last recorded in 2006. This area is subject to the greatest pressure (see **Map 5**) and is also the location where dogs entered the water. Although some disturbance is thought to be beneficial to many of the rare plants recorded at Brown Moss by reducing competition, if uncontrolled it can release excessive nutrients into the water and increase turbidity, thus rendering the habitat unsuitable for these species; and

The visitor survey found that the majority of visitors had dogs with them (77%) and the majority of dogs were allowed off leads (70.2%), exacerbating the problems above.

Likely Significant Effects

5.11 Brown Moss is a vulnerable and sensitive site. Although any increase in visitation is likely to be minimal, the site is under pressure from numerous threats to its structure, function and integrity and therefore even a small increase could serve to exacerbate existing issues. As such, it is our view that a likely significant effect cannot be ruled out and the implementation of impact avoidance measures are recommended.

6. IMPACT AVOIDANCE MEASURES

- 6.1 Suitable measures to avoid likely significant effects arising from increased recreational pressure at Brown Moss include the delivery of on-site solutions through a targeted Visitor Management Plan for the site, and monitoring the need for off-site solutions in the form of alternative green space. These suggestions are discussed further below.

Visitor Management Plan

- 6.2 The consultation draft Visitor Management Plan (VMP) aims to reduce the effects of visitor pressure at Brown Moss to a level that does not adversely affect the qualifying features for which the site was designated. The VMP sits alongside and complements the (Habitat) Management Plan for the site. It is set out in three tables in **Appendix 3**:

Brown Moss Visitor Management Plan – Summary

Brown Moss Mitigation Measures

Brown Moss Monitoring Programme

- 6.3 In summary, the VMP is built around the following two themes: Infrastructure Management and Communication and Public Engagement.

Communication and Public Engagement

- 6.4 The results of the visitor survey and research described in **Section 2** demonstrate that effective communication of the conservation importance of Brown Moss, and the habitat management measures in place to maintain this, is vital.
- 6.5 Consistent information should be prepared and disseminated across several media types (on-site signage, noticeboard, interpretation boards, website, leaflets to new residents, social media) regarding the sensitivities of the site, the whereabouts of any livestock, planned habitat management, the location of alternative sites where recreation is to be encouraged, and positive messages for dog walkers regarding keeping them on leads and picking up after them. It is important that messaging focuses on what visitors 'can do' rather than 'can't do', particularly in the case of dog walkers.
- 6.6 Occasional low-key events such as seasonal wildlife walks would also provide an opportunity to reinforce key messages and raise awareness of the nature conservation value of the site. Opportunities should be taken to work with influential organisations such as the Kennel Club on such initiatives.
- 6.7 Volunteers already play a key role in the management of Brown Moss and new residents should be made aware of ways to get involved, for example through information packs for new homeowners.

Infrastructure Management

- 6.8 Well planned and maintained site infrastructure such as footpaths, bridges, boardwalks, fencing and benches can influence visitor behaviour by directing them towards less sensitive parts of the site.
- 6.9 At Brown Moss, desire lines could be closed in order to rationalise the path network, with clearer maps and signage regarding walking routes. Footpaths and bridges should be well maintained to encourage use. Permanent or temporary fencing or screening (natural materials can be used such as brash and dead hedging) can be an effective means of preventing access to sensitive areas, or reducing the likelihood of encounters between people/dogs and livestock.
- 6.10 It is also worth considering the promotion of 'official' swimming and/or 'off-lead' areas for dogs in less sensitive parts of the site.
- 6.11 The infrastructure management measures are illustrated on **Map 7**.

Alternative Green Space

- 6.12 'Suitable Alternative Natural Greenspace' (SANG) is an established impact avoidance measure in areas with high visitor pressure such as the Thames Basin Heaths SPA and Dorset Heathlands SPA. SANG serves to divert a proportion of both new and existing residents away from protected sites, aiming to achieve no net increase in visitation levels.
- 6.13 It is likely that on-site measures alone will be sufficient to avoid adverse effects upon the features for which Brown Moss was designated as a SAC and Ramsar site, however the situation should be monitored and off-site measures considered if necessary. Alternative green space around Brown Moss could take the form of newly created sites (perhaps in conjunction with larger development allocations), improvements to existing sites to enhance their capacity, or improvements to the footpath network. Any existing sites should not be of nature conservation importance or otherwise vulnerable to the effects of recreation.
- 6.14 As described in **Section 4**, the visitor surveys at Brown Moss provide useful insights into the features that visitors look for when choosing an open space for recreation. These include:
- Close to home;
 - Natural look and feel, peaceful;
 - Dog friendly/can let dogs off the lead/dog waste bins;
 - Activities for children; and
 - Provision of benches, toilets, refreshments.
- 6.15 Any alternative site should seek to incorporate all or some of these qualities and should also be free of livestock, as this would be more likely to attract those visitors that are not comfortable with the livestock at Brown Moss. Reference should also be made to Natural England's Guidelines for the Creation of SANGs (NE, 2008) which set out a list of qualities to include when designing effective SANG sites.

7. CONCLUSION

- 7.1 Robust baseline information has been gathered on current levels and patterns of recreation at Brown Moss. This work has found that recreational pressure at Brown Moss is relatively low, and composed predominantly of local people travelling from within 3.4km of the site to walk their dogs off the lead. Visitors particularly valued the site's location, peacefulness and wild/natural character.
- 7.2 Research into the site's qualifying features and ecological requirements indicates that Brown Moss is vulnerable to a range of factors that affect its structure, function and integrity. Although any increase in recreational pressure arising from new development within the 3.4km catchment is likely to be small, this could act in combination with other factors to generate significant adverse effects. In particular, elevated levels of recreation have the potential to interfere with the appropriate management of the site and cause excessive disturbance of sediments.
- 7.3 Impact avoidance measures in the form of on-site visitor management measures and/or off-site alternative greenspace are proposed. The results of the 2017 visitor surveys have been used to inform this work. The surveys carried out in 2017 can also be compared with monitoring surveys in future years, and/or similar studies at other sites.

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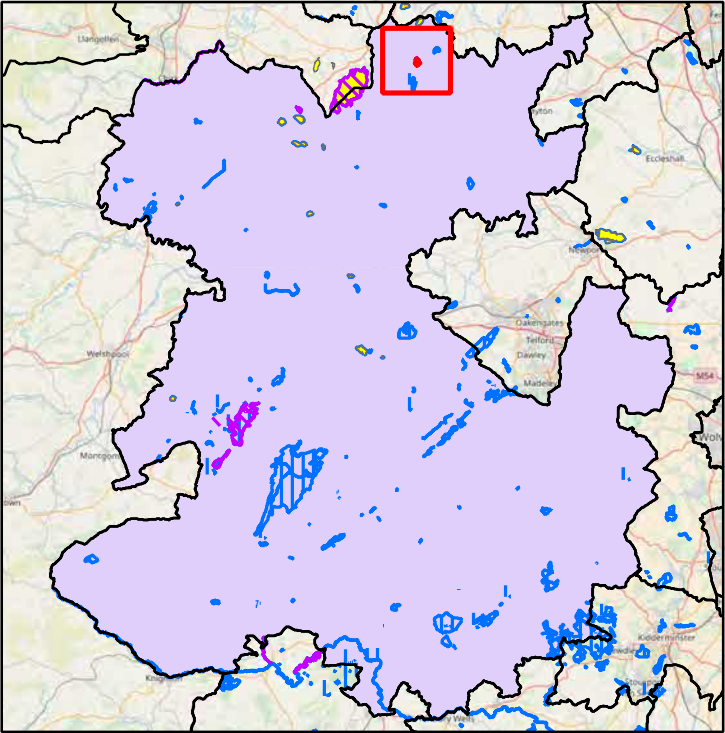
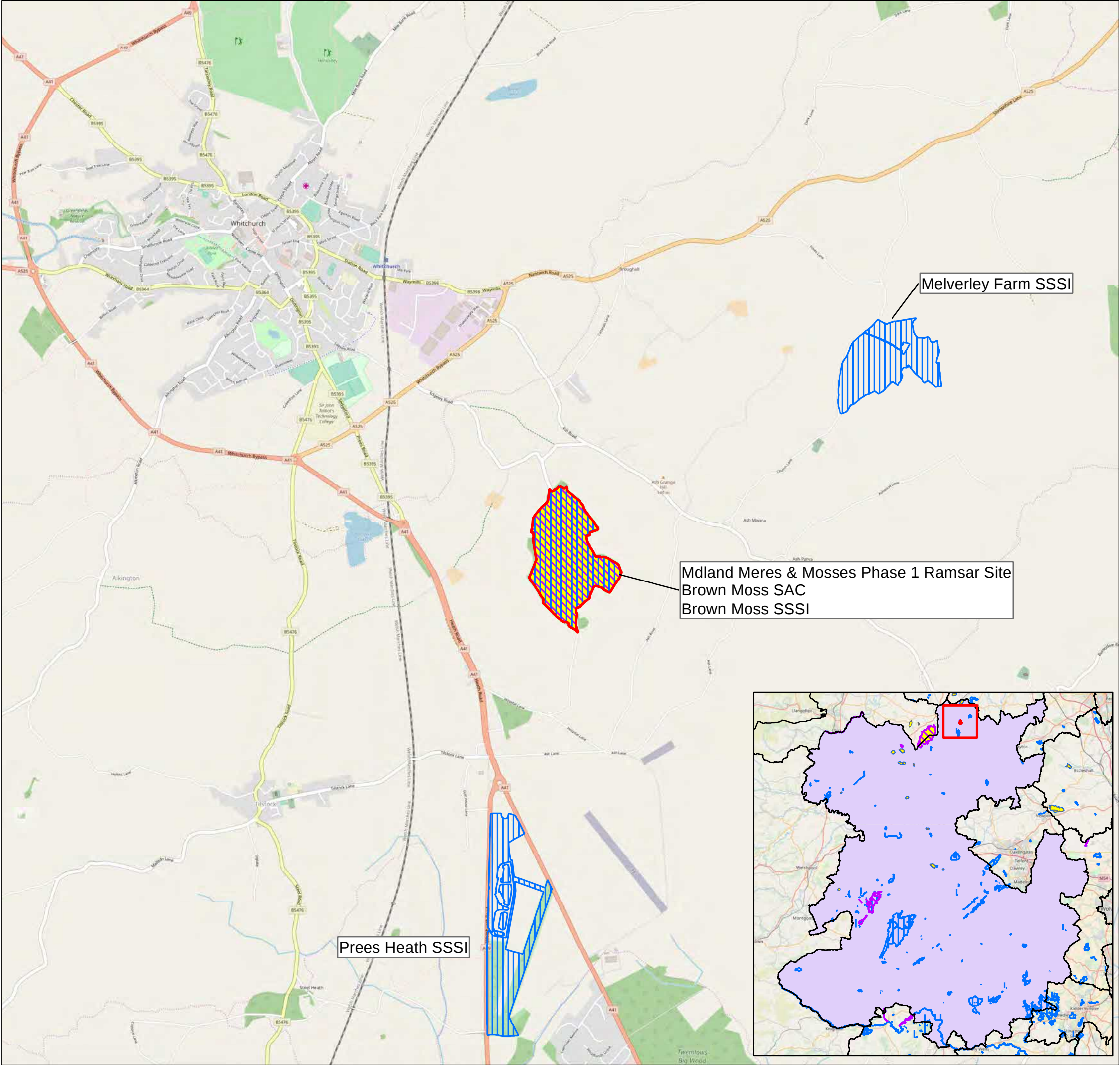
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MAP 1 Site Location & Nature Conservation Designations

- KEY
- Brown Moss Site Boundary
 - Shropshire County Boundary
 - Special Area of Conservation (SAC)
 - Ramsar Site
 - Site of Special Scientific Interest (SSSI)

SCALE: 1:25,000 at A3

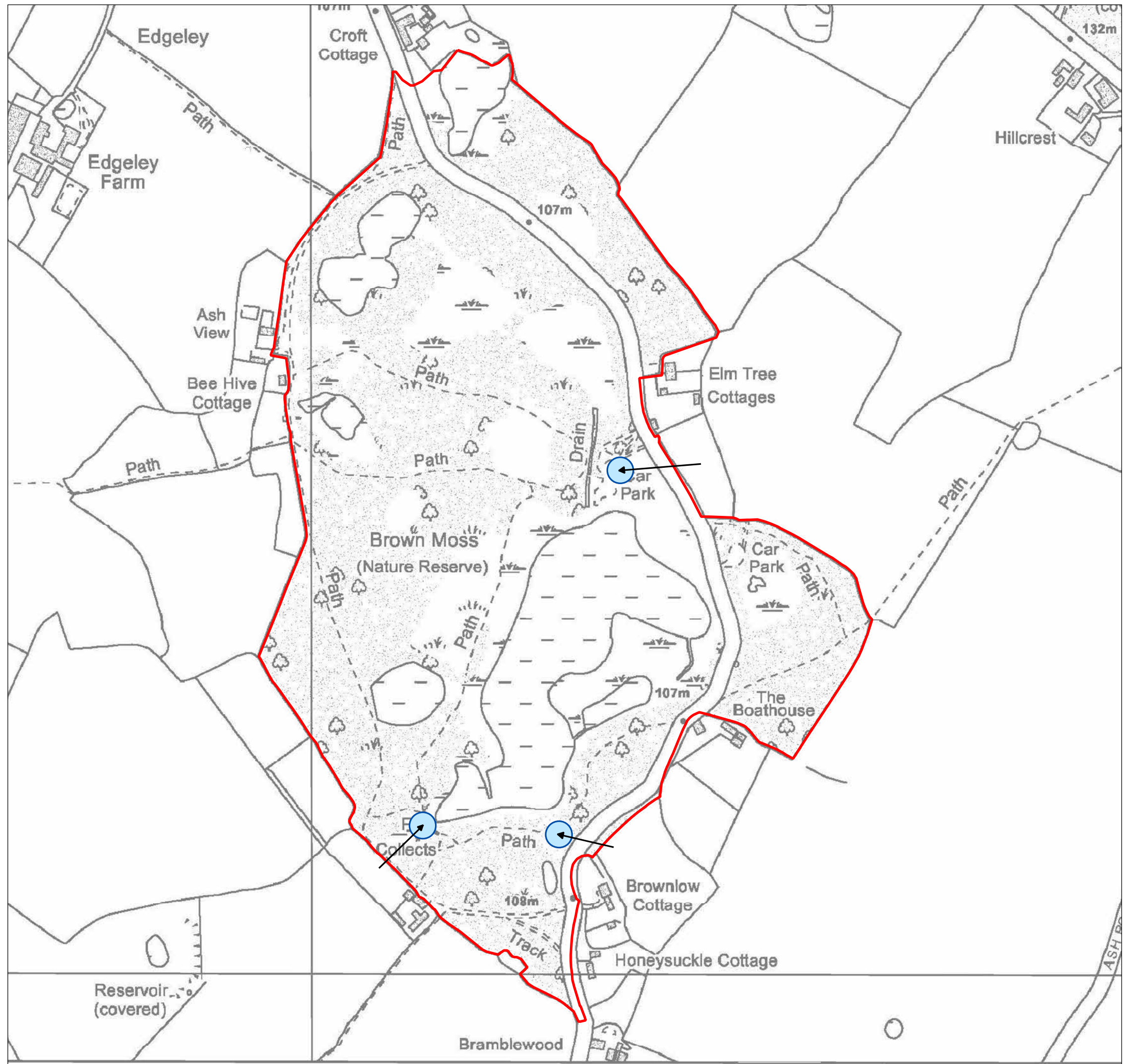
0 0.5 1 1.5 Kilometers



CLIENT: Shropshire Council

PROJECT: Brown Moss Visitor Survey

DATE: May 2018



MAP 2 Site Map and Access Points

KEY

-  Brown Moss Site
-  Access Points

SCALE: 1:3,750 at A3

0 50 100 150 200 Meters



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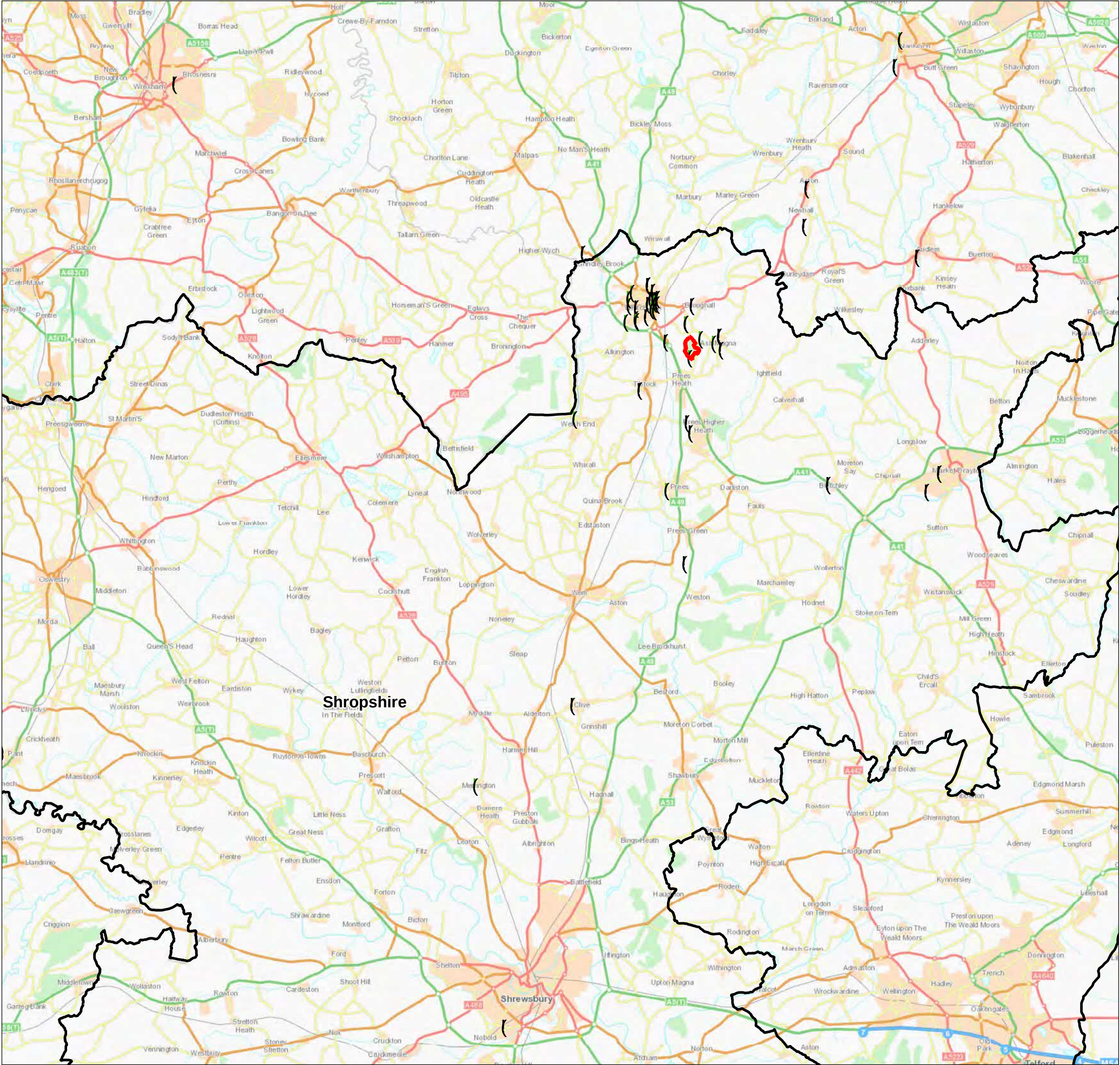
PROJECT: Brown Moss Visitor Survey

DATE: May 2018

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Credits:



MAP 3 Visitor Origins

KEY

Brown Moss Site Boundary

Shropshire Unitary Authority

Method of Travel

Car/van

Walk

SCALE: 1:160,000 at A3

02.557.510 Kilometers

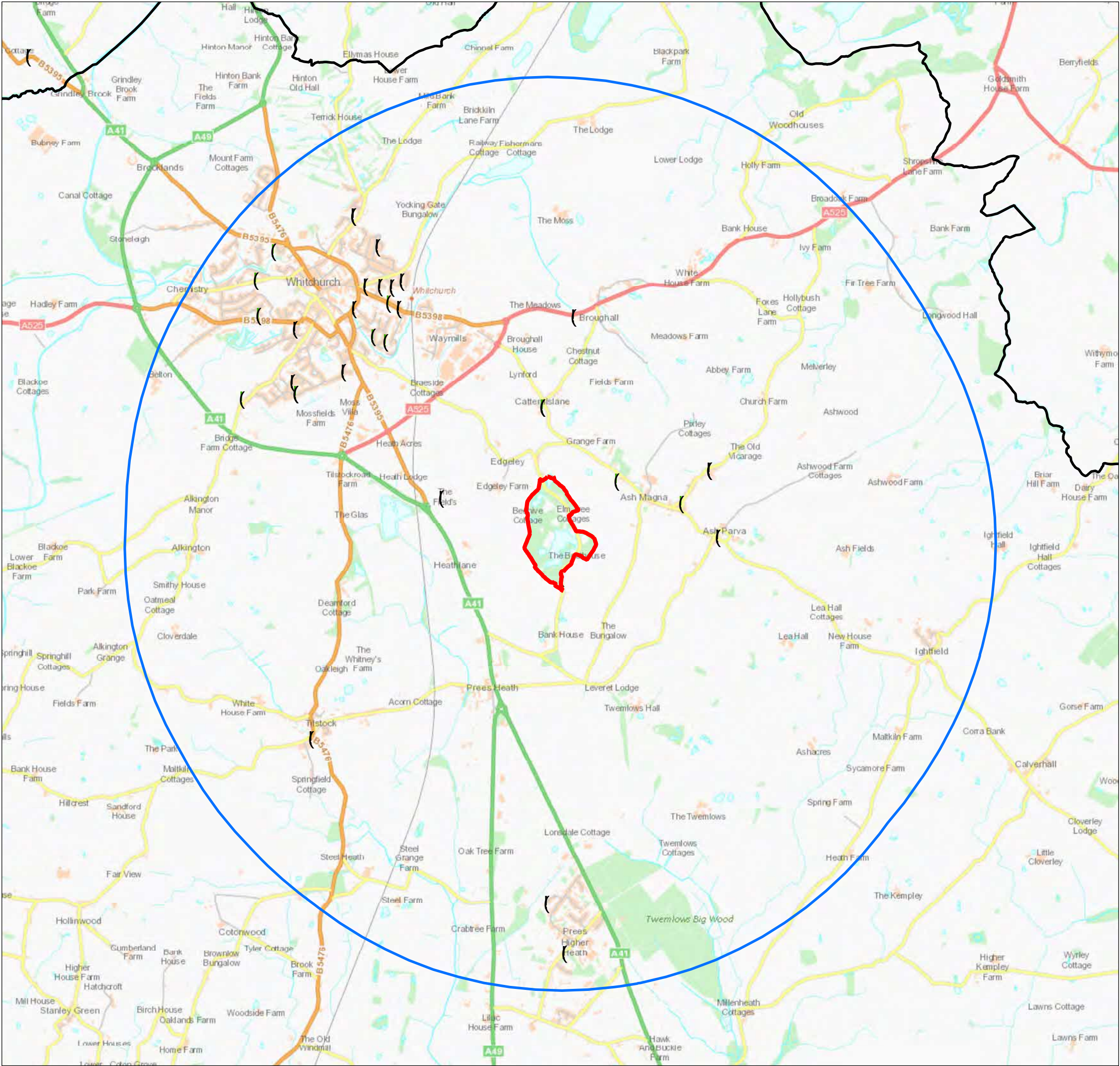


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PROJECT: Brown Moss Visitor Survey

DATE: May 2018



MAP 4 Indicative Visitor Catchment

KEY

-  Brown Moss Site Boundary
-  Shropshire Unitary Authority Boundary
-  Indicative 3.4km catchment

Visitor Origins

-  Car/van
-  Walk

SCALE: 1:32,000 at A3

0 0.5 1 1.5 Kilometers



CLIENT: Shropshire Council

PROJECT: Brown Moss Visitor Survey

DATE: May 2018

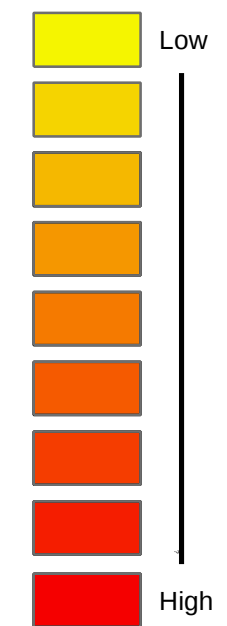


MAP 5 Walking Routes

KEY

-  Brown Moss Site Boundary
-  Routes walked (one group only)

Recreational Pressure



SCALE: 1:3,500 at A3



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CLIENT: Shropshire Council

PROJECT: Brown Moss Visitor Survey

DATE: May 2018

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Credits:



MAP 6 Potential Conflict Areas

KEY

-  Brown Moss Site
-  Location of Dogs Entering
-  Approximate last known locations of Floating Water Plantain

SCALE: 1:3,750 at A3

0 50 100 150 200 Meters



Ecological Planning & Research

CLIENT: Shropshire Council

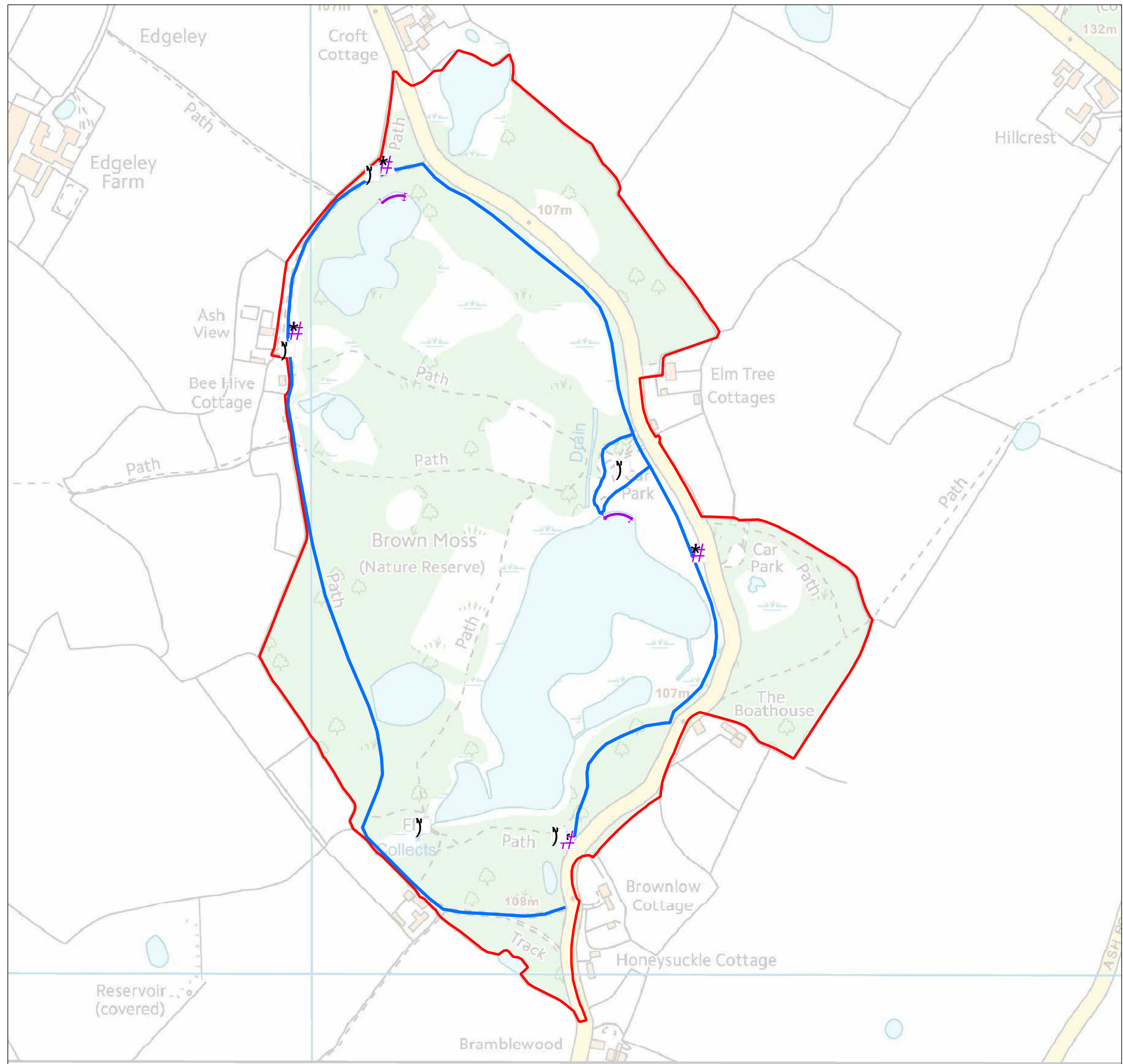
PROJECT: Brown Moss Visitor Survey

DATE: May 2018

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Credits:

P??/??



MAP 7 Visitor Management Plan
Infrastructure Mitigation Measures

KEY

-  Brown Moss Site Boundary
-  Erect large notice boards (update with info on cattle, as necessary)
-  Upgrade path and improve sign posting
-  Dog swim
-  Dog waste bin

SCALE: 1:3,750 at A3

0 50 100 150 200 Meters



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CLIENT: Shropshire Council

PROJECT: Brown Moss Visitor Survey

DATE: June 2018

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Appendix 1

Visitor Questionnaire

BROWN MOSS VISITOR QUESTIONNAIRE

READ OUT: "Hello. I am carrying out a survey on behalf of Shropshire Council to find out about local patterns of recreation and to help the Council manage this site. I would be grateful if you could spare a few minutes to answer some multiple choice questions....."

SITE – DO NOT READ OUT:

Cole Mere ☐
Brown Moss ☐

ACCESS POINT – DO NOT READ OUT:

(1*) ☐
(2*) ☐

*** NOTE: Numbers refer to map location**

Date in August/September 2017 – DO NOT READ OUT:

Sat 26th ☐ Sun 27th ☐
Tues 29th ☐ Weds 30th ☐ Thurs 31st ☐ Fri 1st ☐

Time – DO NOT READ OUT:

07:00-09:00 ☐ 10:00-12:00 ☐ 13:00-15:00 ☐ 17:00-19:00 ☐

Weather conditions - DO NOT READ OUT:

Sunshine ☐ Cloud and showers ☐
Sunshine and showers ☐ Heavy rain ☐
Cloudy ☐ Other (write below) ☐

Q1. How many adults and children are present in your group, including yourself?
[Write number of people in group in each age category]

Number of 0-16 year olds:		Number of 26-59 year olds:		
Number of 16-25 year olds:		Number of 60+ year olds:		

Q2. How many dogs have you taken for this visit? *[If none, mark 0]*

Number =

Q3. How did you get to this site today? *[SINGLE CODE]*

Walk ☐ Bicycle ☐ Other (write below) ☐
Car/van ☐ Motorbike ☐

Q4. Can you give the postcode of where you travelled from to visit this site? [This identifies location to street only]

Postcode:	
No postcode but precise location/road name is:	
Just visiting: location of accommodation is:	

Q5. How long have you lived at this address?

Write number of years:	
Not applicable/just visiting (tick):	

Q6. What was the main reason/s for your visit to this site today? [SINGLE CODE]

Dog walking	☐	Improve health and exercise	☐	For a family activity	☐
Walking	☐	It's my hobby	☐	To learn something	☐
Experience nature/ wildlife	☐	Watersports/ sailing (<i>specify type below</i>)	☐	Other (<i>write below</i>)	☐
Bird watching	☐				

Q7. Why have you chosen this site over others? [MULTI CODE]

Ability to let dog off the lead	☐	Length & variety of tracks/paths available	☐	Proximity to other facilities/features (e.g. car park, toilets, café)	☐
Enjoy the look/feel of this site	☐	It's close to where I live	☐	Social interaction	☐
Enjoy the wild/natural feel of this site	☐	Access to water	☐	Adventure	☐
Wildlife/ birdwatching	☐	Views of water	☐	Other (<i>write below</i>)	☐
Accessibility (car parking) etc.	☐	Peace and quiet	☐		
Feel safe using this site	☐				

Q8. How often do you visit this site? [SINGLE CODE; CHOOSE CLOSEST ANSWER]

Daily/almost daily	☐	Monthly	☐
Two-three times a week	☐	Occasionally	☐
Once weekly	☐	First visit (skip to Q11)	☐
Once or twice a month	☐		

Q9. What time of day do you most often visit? [SINGLE CODE]

Before 9am	☐	Between 12 and 2pm	☐	After 5pm	☐
Between 9am and 12 noon	☐	Between 2 and 5pm	☐	No particular time/varies	☐

Q10. What time of year, if any, do you normally visit? [MULTI CODE]

Winter – (Dec, Jan, Feb)	☐	Summer – (June, July, Aug)	☐	Or...All times of year	☐
Spring – (March, April, May)	☐	Autumn – (Sept, Oct, Nov)	☐		

Q11. How long was your visit? [SINGLE CODE]

Less than 30 mins	☐	30 mins – 1 hour	☐	Over an hour	☐
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Q12. Where did you go during your visit? Draw neat path with arrows on MAP, show specific route walked/travelled, mark START and FINISH and PARKING location

Map Number:	
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Q13. If you have a dog(s), was it let off the lead? [SINGLE CODE]

Yes	☐	No	☐	Don't have dogs	☐	Skip to Q16
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Q14. Did your dog/s venture off any of the footpaths or into the water? [SINGLE CODE]

Yes - just off paths	☐	Yes - just in water	☐	Yes - both	☐
Neither – stayed on paths	☐	Don't know	☐		

Q15. And did you venture off any footpaths or into the water? [SINGLE CODE]

Yes - off paths	☐	Yes - in water	☐	Yes - both	☐
Neither – stayed on paths	☐	Don't know	☐		

Q16. If you or your dog(s) went into the water, can you show us where? Show location(s) with a cross X on MAP used for Q12

Map Number:	
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Q17. If you have a dog(s), did you use a dog bin on this visit? [SINGLE CODE]

Yes	☐	No	☐	Didn't know there were dog bins	☐
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Q18. Are there any changes you would like to see to this site, or comments you wish to make?

Q19. [COLEMERE ONLY] If a small parking charge was introduced to help fund the management of this site, would this discourage you from visiting? [SINGLE CODE]

Yes ☐ No ☐ Maybe ☐ Don't know ☐

Q20. Do you visit any other open spaces in Shropshire for the same recreational purpose? [SINGLE CODE]

Yes ☐ Go To Q21 No ☐ Go To Q24 Don't know ☐ Go To Q24

Q21. IF Yes TO Q20: Please could you tell us the name of the main alternative sites (max 3) you visit, with a description of their location?

1.....

2.....

3.....

Q21a. Do you ever visit Stiperstones or Fenn's Wixall & Bettisfield Mosses Nature Reserves? [SINGLE CODE]

Yes - Stiperstones ☐ Yes – Fenn's, Wixall & Bettisfield ☐
Yes - both ☐ No ☐

Q22. How often do you tend to visit these sites? (if varies, state for main alternative site)?

[SINGLE CODE]

Daily ☐ Every other week ☐ Occasionally ☐
Two-three times a week ☐ Monthly ☐ First Visit ☐
Once weekly ☐

Q23. What are your reasons for choosing this alternative site? [MULTI CODE]

☐ Ability to let dog off the lead ☐ Length & variety of tracks / paths available ☐ Proximity to other facilities / features (e.g. car park, toilets, café) ☐

Enjoy the look and feel of this site	☐	It's close to where I live	☐	Social interaction	☐
Enjoy the wild/natural feel of this site	☐	Access to water	☐	Adventure	☐
Wildlife / birdwatching	☐	Views of water	☐		
Accessibility (car parking) etc.	☐	Peace and quiet	☐	Other (<i>write below</i>)	☐
Feel safe using this site	☐				

Q24. If existing open spaces in Shropshire could be improved, or new ones created, which features/facilities would encourage you to visit them more?

READ OUT: That completes the interview. To check that all of the interviews that I do are genuine, our office staff will call back about 10% of the people that we interview. You will not be contacted for any other reason as a result of taking part. Please could you confirm:

(i) Your name: _____

(ii) Contact telephone number: _____

THANK AND CLOSE.

INTERVIEWER DECLARATION: I declare that I have carried out the interview with the named person, face-to-face, in accordance with the Market Research Society Code of Conduct.

INTERVIEWER INITIALS: _____

SIGNATURE: _____

Appendix 2

Summary Table

Entry/exit data	
Number of access points	2
Hours of survey	64
Groups/people recorded on entry/exit	110 / 194
Dogs recorded on entry/exit	142
Ratio of dogs to groups	1.3
Projected hourly / daily / annual visitation rates	3 / 36 / 13,140
Interview data	
Groups/people interviewed	61 / 110
Groups with at least one dog	77%
Age range	Under 16 (14.5%) 17-25 (4.5%) 26-59 (46.4%) Over 60 (34.5%)
Method of travel	Car/van (62.3%) On foot (36.1%)
Main reason for visit	Dog walking (75.4%) Walking (9.8%) Other (6.6%)
Reasons for choosing this site over others (top five)	Close to where I live (39.3%) Enjoy look/feel (27.9%) Enjoy wild/natural feel (21.3%) Peace and quiet (19.7%) Wildlife/birdwatching (18%)
Visitor Origins	
Average distance travelled by car/on foot	Car: 6.3km Foot: 4.5km
Core catchment:	3.4km (75 th percentile; Shropshire residents only)
Temporal Patterns	
Visit all year round	73.8 %
Weekday/weekend interviews	Weekday (36%) Weekend (64%)
Typical time of visit	9am to 12 noon (27.9%)) It varies (21.3%) 2pm to 5pm (13.1%)
Visitation frequency (all groups)	Daily/almost daily (26.2%)Occasionally (18%) Two/three times per week (18%)
Visitation frequency (dog walkers)	Daily/almost daily (31.9%) Two/three times per week (23.4%)

	Occasionally (19.1%)
Visitor Behaviour	
Average length of route walked	With dogs: 1.3km Without dogs: 1km
Length of visit	> 30 minutes (75.4%) > 1 hour (24.6%)
Dogs off lead	70.2%
Dogs in water/off path	8.5% / 25.5%
People in water/off path	0% / 14.8%
Comments/Alternative sites	
Visit alternative sites	70.5%
Top three alternative sites	Cole Mere Prees Heath Bickerton
Comments/changes to this site (top five)	Nothing Water levels have dropped Dislike cattle Fix damaged paths, bridges etc More dog waste bins
Wish list for existing/new open space (top ten)	Dog friendly, off leads Nothing Dog waste bins Parking Play areas/nature trails Café/refreshments Toilets Keep it natural/unspoilt Accessible Variety of paths

Appendix 3

Consultation Draft Visitor Management Plan

Brown Moss Visitor Management Plan – Summary

SAC/Ramsar Qualifying Feature	Conservation Objectives (2014)	Condition in 2016	Predicted impact of increased recreational demand	Mitigation Measures	Measurable targets (within Local Plan period)
Pools, with a rich flora and invertebrate fauna Particularly Floating Water-plantain	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: •The extent and distribution of the habitats of qualifying species; •The structure and function of the habitats of qualifying species; •The supporting processes on which the habitats of qualifying species rely; •The populations of qualifying species; and •The distribution of qualifying species within the site	Unfavourable recovering	Increased turbidity and erosion around Pool 6 caused by dog and human activity in and near the water. Increased eutrophication caused by increased dog fouling.	Create and maintain dog swimming areas well away from areas of high value – near the car park Erect permanent large notice boards: Explaining why site is special; Welcoming people and dogs, but explaining need to avoid certain areas; Explaining need for management. Recruit and train volunteers to 'police' dog restrictions at the site and explain management activities, with an emphasis on positive messaging. Publicise issues through website/newspapers/social media/guided walks. Upgrade and maintain paths through vulnerable areas to very high standard, including clear signage and screening off 'desire lines'. Provide dog waste bins with 'poo bags' at either end of vulnerable area.	No increase in number of dogs swimming in Pool 6. No increase in erosion around Pool 6.
Schwingmoor bog and dwarf shrub heath		Unfavourable, recovering	Increased interference with appropriate management	Erect notice boards, as above. Provide accurate information on cattle for visitors Train volunteers, as above. Publicise issues, as above.	No increase in interference with appropriate management.

Brown Moss Visitor Mitigation Measures

Mitigation Measure	Priority	Cost (total over 5 years)	To be implemented by:
Erect large notice boards	1		
Provide accurate information on cattle	2		
Train volunteers	3		
Create dog swims	4		
Publicity	5		
Upgrade paths, including new signs	6		
Provide dog waste bins	7		
Maintain dog swims	8		
Maintain paths and signs	9		
Empty and maintain dog waste bins	10		
Support volunteers	11		

Brown Moss Monitoring Programme

Measurable Target	Baseline	Repeat Survey frequency and timing	To be implemented by:	Cost
No increase in number of dogs swimming in sensitive areas.	Survey prior to implementation of mitigation measures (to be deduced from current survey info?) - yes, we have info on numbers and locations	Once, to inform next Local Plan review		
No increase in erosion around Pool 6.	Survey prior to implementation of mitigation measures	Once, to inform next Local Plan review		
No increase in interference with appropriate management of vegetation.	Ask rangers and volunteers	Once, to inform next Local Plan review		
No increase in trampling or fouling in Yell Field	Ask rangers and volunteers	Once, to inform next Local Plan review		