

A417 Missing Link
TR010056

6.5 Habitats Regulations Assessment:
Statement to Inform Appropriate
Assessment

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A417 Missing Link

Development Consent Order 202[x]

**6.5 Habitats Regulations Assessment:
Statement to Inform Appropriate Assessment**

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Executive Summary

This report provides a Statement to Inform Appropriate Assessment (SIAA) in relation to the potential impacts of the A417 Missing Link (the scheme) upon Cotswold Beechwoods Special Area of Conservation (SAC) arising from changes in recreational pressure. This SIAA is the second stage of the Habitats Regulations Assessment for the scheme. It relates to the only European site protected by the Conservation of Habitats and Species Regulations 2017 for which likely significant effects (LSE) from the scheme were not dismissed at the screening stage (i.e. the first stage) of the HRA. A separate Screening Report has been prepared (Document Reference 6.5).

The Cotswold Way crossing, proposed as part of the scheme, will reconnect walking routes along the Cotswold Way National Trail that is severed by the Existing A417. This improvement in connectivity between areas to the south and to the north of the scheme (particularly Crickley Hill Country Park) could potentially result in increased recreational pressure upon the SAC because it is linked to the scheme by the National Trail long-distance footpath. In addition, reduced congestion on the A417 as a result of the scheme could result in more visitors visiting the SAC via vehicle, which could also increase visitor pressure. Increased visitor pressure could potentially damage the qualifying habitats of the SAC and affect the integrity of the site.

Likely changes to recreational pressure on the SAC have been assessed utilising data from published visitor studies from the SAC and Crickley Hill Country Park. This assessment has also considered the impact on visitor behaviour of the changes to public rights of way that form part of the scheme, particularly the provision of the new recreational route along part of the detrunked A417 (Air Balloon Way).

This SIAA concludes that the provision of the Air Balloon Way, associated additional car parking and other improvements to connected public rights of way will serve to meet the needs of the majority of existing and future visitors, and will divert/ concentrate visitors away from the SAC. An increase in recreational pressure that would reduce the qualifying habitat features of the SAC is not considered to occur as a result of the scheme.

Although integral measures within the scheme will divert visitor pressure away from the SAC, it is acknowledged that there is uncertainty to their efficacy and it would therefore not be robust to draw a conclusion of no adverse effect on integrity based on those measures. Therefore, additional precautionary mitigation will be provided in the form of measures to control recreational use of the SAC to address this uncertainty.

The SIAA concludes that there will be no significant adverse effect upon the integrity of the SAC as a result of the scheme, either alone or in combination with other plans or projects.

1 Introduction

1.1 Purpose of this document

- 1.1.1 This report provides a Statement to Inform Appropriate Assessment (SIAA) in relation to the impacts of the A417 Missing Link (the scheme) upon the Cotswold Beechwoods Special Area of Conservation (the SAC), arising from changes in recreational pressure. This SIAA is the second stage of the Habitats Regulations Assessment of the scheme. It relates to the only European site protected by the *Conservation of Habitats and Species Regulations 2017* (known as the Habitats Regulations 2017) for which likely significant effects (LSE) from the scheme were not dismissed at the screening stage (i.e. the first stage) of the HRA. This report follows the guidance within the Design Manual for Roads and Bridges (DMRB) *LA 115 Habitats Regulations assessment*¹, The Planning Inspectorate (PINS) *Advice Note 10 Habitats Regulations Assessment*², and *Guidance: Habitats regulations assessments: protecting a European site*³.
- 1.1.2 All ecologists working on this scheme are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow its code of professional conduct (CIEEM, 2019)⁴ when undertaking ecological work.
- 1.1.3 The SIAA technical reviewer is a Chartered Ecologist (CEcol) and Full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). They have a First-Class BSc (Hons) degree in Zoology from the University of Sheffield (2004). They have worked as a professional ecologist since 2005, with particular focus on the assessment and mitigation of the ecological impacts of development across a wide range of sectors. Full details of relevant project experience are provided in ES Appendix 1.2 Competent expert evidence (Document Reference 6.4).

1.2 Legislative context

- 1.2.1 The Habitats Regulations 2017 set out the stages of assessment which must be undertaken to determine if a development project could significantly harm the designated features of a European site. European sites comprise of SACs and Special Protection Areas (SPAs). *Guidance: Habitats regulations assessments: protecting a European site* states that proposed SACs, potential SPAs, areas secured as sites compensating for damage to a European site, and wetlands of international importance designated under the Ramsar Convention (Ramsar sites) are afforded the same protection as European sites in terms of the assessment required of any proposals that may affect them.
- 1.2.2 Regulation 63 of the Habitats Regulations 2017 states that any plan or project not directly connected with, or necessary to, the management of a European site, but which would be likely to have a significant effect on such a site, either individually

¹ Highways England (2019) Design Manual for Roads and Bridges, Sustainability and Environment Appraisal LA 115 Habitats Regulations assessment

² The Planning Inspectorate (2017) Advice Note Ten – Habitats Regulations Assessment relevant to Nationally Significant Infrastructure Projects

³ Department for Environment, Food & Rural Affairs, Natural England, Welsh Government, and Natural Resources Wales (2021) *Guidance: Habitats regulations assessments: protecting a European site*. <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site> [Accessed March 2021]

⁴ Chartered Institute of Ecology and Environmental Management (CIEEM) (2019) CIEEM's Code of Professional Conduct <https://cieem.net/resource/code-of-conduct/> [Accessed May 2021]

or in combination with other plans or projects, must be subject to appropriate assessment of its implications for the European site in view of its conservation objectives. PINS *Advice Note 10 Habitat Regulations Assessment*² states that ‘the relevant secretary of state is the competent authority for the purposes of the Habitats Directive and the Habitats Regulations in relation to applications for Nationally Significant Infrastructure Projects (NSIPs).’

- 1.2.3 As the applicant for this scheme, Highways England must provide such information as the competent authority may reasonably require for the purposes of the assessment, or to enable it to determine whether an appropriate assessment is required.
- 1.2.4 Regulation 63 of the Habitats Regulations 2017 states that consent should only be granted for a plan or project once the relevant competent authority has ascertained that that it will not adversely affect the integrity of European sites.
- 1.2.5 Where an appropriate assessment has been carried out and it concludes that a plan or project would adversely affect the integrity of a European site, consent will only be granted if there are no alternative solutions and there are imperative reasons of overriding public interest (IROPI) for the development and compensatory measures have been secured.
- 1.2.6 The staged process of undertaking the above requirements of the legislation is referred to as a Habitats Regulations Assessment (HRA) and the applicant’s role at each stage is summarised as follows:
- **Screening (Stage 1)** – determination of whether there is potential for elements of a project to give rise to significant adverse impacts on the conservation objectives of the qualifying features (interest features) of the European site, alone or in combination with other plans/ projects, i.e. will the project have a ‘likely significant effect’ (LSE) on the European site.
 - **Informing the Appropriate Assessment (Stage 2)** – where there are LSE or there is uncertainty as to whether LSE would occur, report on and provide evidence of examination of adverse effects on the integrity of a European site to inform the competent authority to undertaking the appropriate assessment.
 - **Assessment of Alternatives (Stage 3)** – formal assessment and reporting of alternative solutions shall be undertaken where the SIAA concludes that there are adverse impacts of greater than negligible magnitude or contains insufficient information on any impact.
 - **Assessment of IROPI (Stage 4)** – where the alternative solutions assessment reports that there are no alternative solutions to the project and this has been agreed with the relevant statutory environmental body (SEB) an assessment of IROPI shall be undertaken.
 - **Assessment of compensatory measures** - where IROPI are established and reported an assessment of compensatory measures shall be compiled and on measures to compensate for the negative impact of the project. This should be used as basis for consultation with SEB to seek their representation on the sufficiency of the compensatory measures.

2 Background to the scheme

2.1 Scheme overview

- 2.1.1 The scheme is a strategic route between Gloucester and Swindon that provides an important link between the Midlands/North and the South of England. The route is an alternative to the M5/M4 route via Bristol. The section of the A417 near Birdlip, known as the 'Missing Link', forms the only section of single carriageway along the route and is located in the Cotswolds Area of Outstanding Natural Beauty (AONB).
- 2.1.2 In 2014, the Department for Transport announced its five-year investment programme for making improvements to the Strategic Road Network across England. This scheme is one of more than 100 schemes identified as part of the first *Road Investment Strategy 2015-2020*⁵. Funding for delivery of the scheme has been confirmed within the second *Road Investment Strategy*⁶, which covers the period between 2020 and 2025 and was published on 11 March 2020.
- 2.1.3 The scheme would upgrade this section of the A417 to dual carriageway, in a way that is sensitive to the surrounding AONB, would help unlock Gloucestershire's potential for growth, support regional plans for more homes and jobs, and improve life in local communities (refer to the location plan at Appendix B).

2.2 Scheme vision and objectives

- 2.2.1 The scheme vision is for a landscape-led highways improvement scheme that will deliver a safe and resilient free-flowing road whilst conserving and enhancing the special character of the Cotswolds AONB; reconnecting landscape and ecology; bringing about landscape, wildlife and heritage benefits, including enhanced visitors' enjoyment of the area; improving local communities' quality of life; and contributing to the health of the economy and local businesses.
- 2.2.2 In order to deliver this vision, the following scheme objectives have been set:
- **Safe, resilient and efficient network:** to create a high-quality resilient route that helps to resolve traffic problems and achieves reliable journey times between the Thames Valley and West Midlands as well as providing appropriate connections to the local road network.
 - **Improving the natural environment and heritage:** to maximise opportunities for landscape, historic and natural environment enhancement within the Cotswolds AONB and to reduce negative impacts of the proposed scheme on the surrounding environment.
 - **Community & access:** to enhance the quality of life for local residents and visitors by reducing traffic intrusion and pollution, discouraging rat-running through villages and substantially improving public access for the enjoyment of the countryside.
 - **Supporting economic growth:** to facilitate economic growth, benefit local businesses and improve prosperity by the provision of a free flowing road giving people more reliable local and strategic journeys.

⁵ Department for Transport (March 2015), Road investment strategy: 2015 to 2020, Accessed 29 January 2020, <https://www.gov.uk/government/publications/road-investment-strategy-for-the-2015-to-2020-road-period>

⁶ Department for Transport (March 2020), Road investment strategy: 2020 to 2025, Accessed 11 March 2020, <https://www.gov.uk/government/publications/road-investment-strategy-2-ris2-2020-to-2025>

2.3 Scheme description

- 2.3.1 The scheme would provide 3.4 miles (5.5km) of new, rural all-purpose dual carriageway for the A417. The new dual carriageway would connect the Existing A417 Brockworth bypass with the existing dual carriageway A417 south of Cowley. The new dual carriageway would be completed in-line with current trunk road design standards. The section to the west of the existing Air Balloon roundabout would follow the Existing A417 corridor, but to the south and east of the Air Balloon roundabout, the corridor would be offline, away from the existing road corridor.
- 2.3.2 The scheme would include the following components:
- A new crossing near Emma's Grove for walkers, cyclists and horse riders including disabled users, which would accommodate the Cotswold Way National Trail. A new junction would be incorporated at Shab Hill, providing a link from the A417 to the A436 (towards the A40 and Oxford), and to the B4070 (for Birdlip and other local destinations).
 - A new 37m wide multi-purpose crossing to provide essential mitigation for bats and enhancement opportunity of ecology and landscape integration. The public will also further benefit as the crossing would accommodate the Gloucestershire Way and provide an improved visitor experience.
 - A new junction near Cowley, replacing the existing Cowley roundabout, making use of an existing underbridge to provide access to local destinations. The use of the existing underbridge would allow for all directions of travel to be made.
 - The Existing A417 between the existing 'Air Balloon roundabout' and 'Cowley roundabout' would be detrunked for its entire length. Some lengths of the existing road would be converted into a route for walkers, cyclists and horse riders including disabled users. Other sections would be retained as lower-class public roads, maintaining local access for residents. Some of the route would provide replacement common land.

Physical land-take of the scheme

- 2.3.3 The extent of land use requirements during construction and operation are defined by permanent and temporary land-take requirements. These are shown within the Development Consent Order (DCO) Boundary on the General Arrangement drawings in General Arrangement and Section Plans (Document Reference 2.6). These are set out and justified in the Statement of Reasons (Document Reference 4.1) accompanying the DCO Application.
- 2.3.4 Permanent land-take is required to construct, operate and maintain the scheme and includes the footprint of all the proposed highway infrastructure, earthworks and drainage works, also includes the areas for environmental mitigation, such as landscape planting and areas of habitat replacement. Further details on the essential landscaping areas are shown on the ES Figure 7.11 Environmental Masterplans (Document Reference 6.3).
- 2.3.5 Temporary land-take is required to assist the contractor in the construction of the scheme, including working areas, site compounds and topsoil storage areas, and can also be required for the construction of part of the works with a permanent easement right acquired for operation and maintenance.

Programme

- 2.3.6 Following examination, PINS will make a recommendation to the Secretary of State, who will then decide whether to grant a DCO.
- 2.3.7 If the DCO is granted, construction is expected to start in early 2023 and the scheme is expected to be open to traffic in 2026. However, Highways England may be in a position to commence preparatory works in late 2022, subject to the consents and approvals set out in the Consents and Agreements Position Statement (Document Reference 7.2) having been obtained.
- 2.3.8 The preparatory works delivered under the DCO would consist of:
- Archaeological investigation and ground investigation works including trial pits.
 - Remedial work in respect of any contamination or other adverse ground conditions.
 - Ecological surveys and mitigation works.
 - Site set up works (including the erection of temporary fencing and provision of access points), top-soil stripping and stockpiling for access points and compounds. The spatial extent of these site set up works would be limited to those areas identified as construction compounds on the General Arrangement Plans (Document Reference 2.6a), and access points to those compounds from the public highway.
- 2.3.9 The preparatory works will progress in accordance with the controls set by the EMP in ES Appendix 2.1 (Document Reference 6.4). Implementation of the measures described in the EMP will ensure that there are no significant environmental effects resulting from preparatory works taking place.

3 Protected sites potentially affected by the proposals

3.1 Introduction

3.1.1 LSE could not be excluded at the screening stage for the Cotswold Beechwoods SAC because more detailed consideration of the likelihood that the scheme would adversely impact the SAC through increased visitor pressure was required. The following potential impact pathways were identified for further consideration within the SIAA:

- Recreational pressure during operation – The proposed Cotswold Way crossing will reconnect walking and cycling routes along the Cotswold Way National Trail, which is severed by the Existing A417. This could potentially contribute to increased visitor pressure at the Cotswold Beechwoods SAC which is linked to the scheme by the National Trail. In addition, reduced congestion on the A417 as a result of the scheme could result in more visitors accessing the SAC via vehicle which could also increase visitor pressure. Public access/disturbance and recreational activities are listed as a key vulnerability of the SAC and are included within the conservation objectives for the site.

3.1.2 The key characteristics of the European site are summarised in Table 1 below.

3.2 Cotswold Beechwoods SAC

Table 1 Cotswold Beechwoods SAC

Cotswold Beechwoods SAC [UK0013658]	
Physical area of the European Site	1) 590.2ha
The qualifying interests of the European Site	2) Annex I habitats that are a primary reason for selection of this site: <ul style="list-style-type: none"> • <i>Asperulo-Fagetum</i> beech forests on neutral to rich soils 3) Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: <ul style="list-style-type: none"> • Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco-Bromeliata</i>⁷.
European Site conservation objectives	4) The Conservation Objectives ⁸ aim to: 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: <ul style="list-style-type: none"> • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats; and • The supporting processes on which the natural habitats rely

⁷ Natura 2000 Standard Data Form (2015): Cotswold Beechwoods (UK0013658)
<https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0013658.pdf>

⁸ European Site Conservation Objectives for Cotswold Beechwoods Special Area of Conservation (Site Code: UK0013658)
<http://publications.naturalengland.org.uk/file/6196928853573632>

Cotswold Beechwoods SAC [UK0013658]	
	5) In addition, the conservation objectives supplementary advice ⁹ for beech forests on neutral to rich soils identifies targets that include those relating to recreational pressure (compaction of soil around the root zones of ancient trees), air quality (sensitivity of habitat to changes in air quality and a current exceedance of the critical loads of Nitrogen and acid deposition) and hydrology (changes in water supply having implications for assemblages of plants and animals present).
Details of the existing baseline conditions of the European Site including details of data collection methodologies and consultations undertaken	6) A desktop study of the SAC was undertaken in 2020 to establish the baseline conditions for qualifying interest features. This included accessing the Natura 2000 <i>Standard Data Form</i> ⁷ , the Conservation Objectives for the SAC ⁸ , the Conservation Objectives Supplementary Advice for the SAC ⁹ , the <i>Site Improvement Plan</i> (SIP) for the SAC ¹⁰ and www.magic.gov for details of the condition of the SSSI management units underpinning the SAC.
The value of the site and qualifying interests therein to the European site network	<p>7) With reference to the citation for the SAC¹¹, the Cotswold Beechwoods consists of ancient beech woodland and unimproved grassland. The woodlands are amongst the most diverse and species-rich of their type while the grasslands typify unimproved calcareous grassland for which the area is famous.</p> <p>8) The woods are structurally varied, including blocks of high forest and some areas of remnant beech coppice. The canopy is dominated by beech <i>Fagus sylvatica</i>, with ash <i>Fraxinus excelsior</i>, pedunculate oak <i>Quercus robur</i> and some areas of sycamore <i>Acer pseudoplatanus</i>. Characteristic understorey species include holly <i>Ilex aquifolium</i> and yew <i>Taxus baccata</i> but regenerating ash, sycamore and beech often accounts for much of the shrub layer. The field layer consists mainly of bramble <i>Rubus fruticosus</i> agg., dog's mercury <i>Mercurialis perennis</i> and ivy <i>Hedera helix</i>. Rare plants include red helleborine <i>Cephalanthera rubra</i>, stinking hellebore <i>Helleborus foetidus</i>, narrow-lipped helleborine <i>Epipactis leptochila</i> and wood barley <i>Hordelymus europaeus</i>. The fauna of the woods includes an exceptional variety of invertebrate species, including a rich mollusc fauna.</p> <p>9) The unimproved limestone grassland swards are generally dominated by upright brome <i>Bromopsis erecta</i>, tor-grass <i>Brachypodium pinnatum</i> and sheep's-fescue <i>Festuca ovina</i>, with quaking grass <i>Briza media</i> and a wide range of other flowering herbs. Typical plants include cowslip <i>Primula veris</i>, common bird's-foot-trefoil <i>Lotus corniculatus</i>, common rock-rose <i>Helianthemum nummularium</i>, wild thyme <i>Thymus praecox</i> and field scabious <i>Knautia arvensis</i>.</p> <p>10) With reference to the JNCC <i>Standard Data Form</i>⁷, the SAC is considered to support a significant presence of semi-natural dry grasslands and scrubland facies: on calcareous substrates <i>Festuco-Brometalia</i>. In addition, the <i>Asperulo-Fagetum</i> beech forests are considered to be one of the best areas in the United Kingdom.</p>
Likely future changes in baseline conditions at	11) In the absence of the scheme, baseline conditions may change in response to the current threats and pressures ¹⁰ and proposed

⁹ European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Cotswold Beechwoods Special Area of Conservation Site Code: UK0013658. <http://publications.naturalengland.org.uk/file/5949473331347456>

¹⁰ Natural England (2015) Site Improvement Plan: Cotswold Beechwoods (SIP048) <http://publications.naturalengland.org.uk/file/5734985984114688>

¹¹ Cotswold Beechwoods SAC Citation: SAC EU Code UK0013658 <http://publications.naturalengland.org.uk/file/5713432510726144>

Cotswold Beechwoods SAC [UK0013658]	
the site in the absence of the scheme	<p>changes in management measures. The grassland habitat is particularly under threat of atmospheric nitrogen deposition impacts. Nitrogen deposition currently exceeds site relevant critical load and this will increase further by 2026 in the absence of the scheme (see ES Appendix 5.6 Air Quality Operational Phase Impacts (Document Reference 6.4)). Increased nitrogen deposition levels above critical load may further modify the chemical status of the substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species⁹.</p> <p>12) The woodland and grassland habitats are under threat from recreational pressures. Natural England is developing an Access Strategy to include management measures to address existing and future recreational pressure such as promoting permissive routes and communication with local interest groups such as mountain bike groups. The successful implementation of such measures should reverse some of the existing habitat damage and loss within the SAC from recreational pressure.</p>
Details of the key species, habitat dynamics and functional relationships that maintain the site integrity	<p>13) The beechwood forests interest feature of the SAC is dependent upon maintaining extent and reducing fragmentation which could occur as a result of factors such as invasive species, deer browsing, disease and public access and disturbance and changes in species distributions (such as through drought). The woodland conditions support lichens and bryophytes and edge and scrub habitats are of value for specialist invertebrates and priority butterfly species. Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood, which are subject to appropriate management regimes. Due to historic practices, dead wood is limited in some SSSI units, which is of value for hole-nesting birds and roosting bats in addition to invertebrates, lichens and bryophytes.</p> <p>14) The grassland habitat interest feature of the SAC is dependent on the persistence of a calcareous substrate with low soil nitrogen and phosphate concentrations and good drainage.</p>

3.2.1 The full citation for the SAC discussed in this report is included in Appendix A. A map showing the relative position of the SAC to the scheme is provided at Appendix B – Cotswold Beechwoods SAC Location Plan (SIAA)

4 Assessment methodologies and assumptions

4.1 Introduction

4.1.1 This SIAA has been prepared following the methodology set out in DMRB LA 115 *Habitats Regulations assessment*¹. Appendix C of DMRB LA 115¹ provides an example outline contents for an SIAA, which has informed the structure and content of this report. The HRA has also been carried out in accordance with guidance within PINS *Advice Note 10 Habitat Regulations Assessment*² and *Guidance: Habitats regulations assessments: protecting a European site*³. The PINS Integrity Matrix required by PINS *Advice Note 10*² is included in Appendix C.

4.1.2 Chart 4-1 outlines the stages of HRA according to DMRB LA 115¹. These stages correspond with PINS *Advice Note 10*².

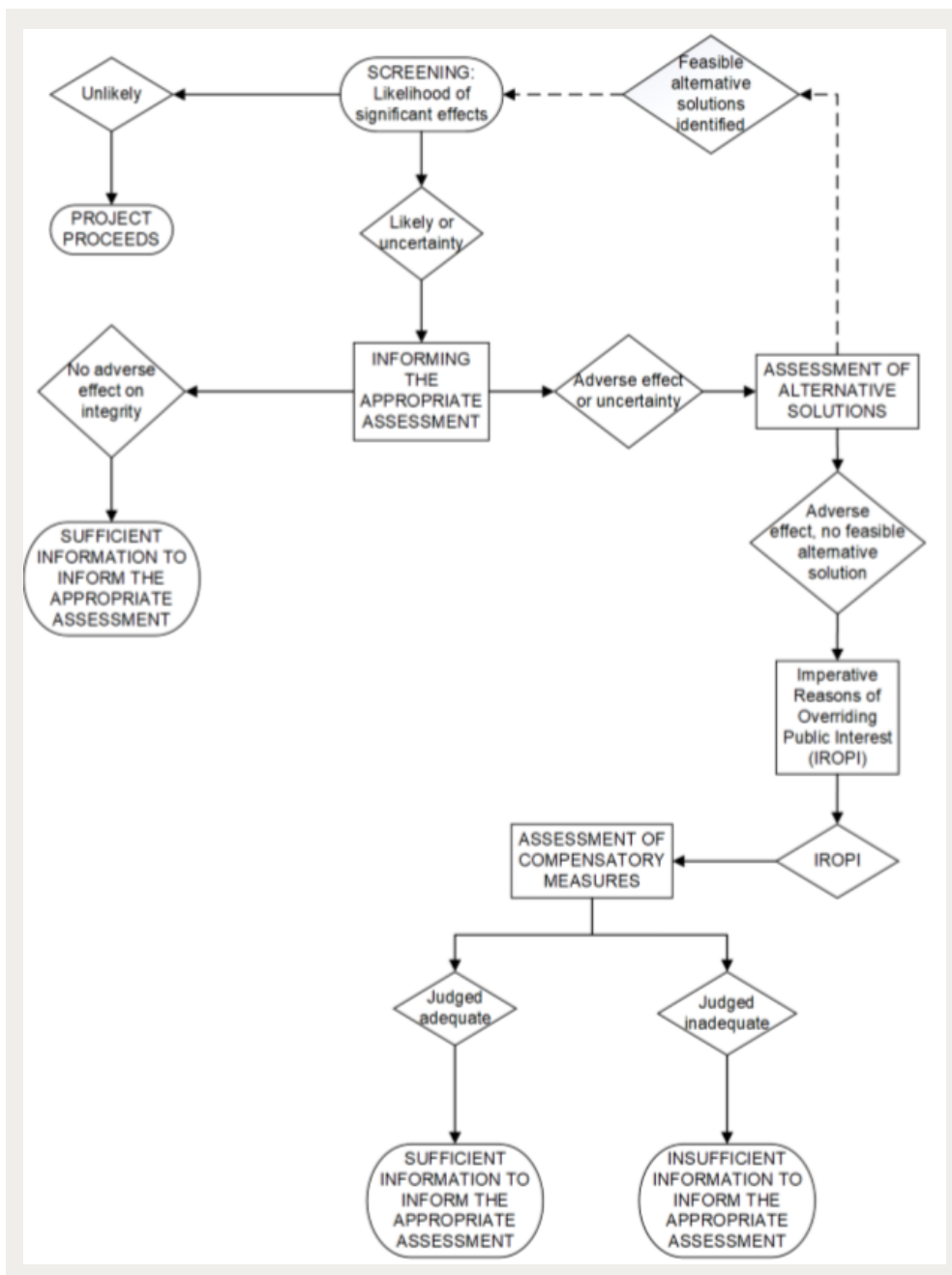


Chart 4-1 Generic HRA process. Source DMRB LA 115¹.

- 4.1.3 The HRA covers the construction and operation phases of the scheme. It is considered highly unlikely that the scheme would be decommissioned as the road is likely to have become an integral part of the infrastructure in the area. Decommissioning would not be either feasible or desirable and therefore, no decommissioning impacts are discussed in this report.

4.2 Consideration of adverse effects on integrity

- 4.2.1 This SIAA focuses on the provision of evidence to inform appropriate assessment of whether increases in recreational pressure on the Cotswold Beechwoods SAC will arise from the scheme that would result in adverse effects on the integrity of the site.
- 4.2.2 The magnitude of the impacts of visitor pressure primarily relate to the degree to which the scheme would change the numbers of and different types of visitor to the SAC. Other key considerations in determining whether there would be an adverse effect on site integrity from increased visitor pressure relate to the frequency, timing, duration and reversibility of impacts. The significance of any effects is determined through consideration of whether there would be a level of change in visitor pressure that would result in degradation of the qualifying feature of beech woodland, such as through increases in soil compaction within the root zones of ancient and veteran trees.
- 4.2.3 The best available scientific evidence has been analysed to predict these changes in the form of published studies on visitor numbers and recreational use of the SAC and Crickley Hill Country Park (as detailed in section 5.3). The professional judgement of a Chartered Town Planner who is the author of ES Chapter 12 Population and human health (Document Reference 6.2) has also contributed to the assessment.
- 4.2.4 The following elements have been considered as part of the methodology to determine whether the scheme will result in an adverse effect on the integrity of Cotswold Beechwoods SAC:
- Vulnerability of the qualifying interests to damage from recreational pressure;
 - Existing levels and types of visitor use of the SAC.
 - Existing accessibility of the SAC and method of arrival (on foot, by vehicle);
 - Visitor use of the areas within and adjacent to the scheme, particularly Crickley Hill Country Park.
 - Connectivity between the scheme and the SAC in terms of the Cotswold Way National Trail and other public rights of way (PRoW).
 - The degree to which measures that are an integral part of the scheme are likely to affect recreational use of the local area, particularly improvements to the accessibility and safety for the crossing of the scheme by walking, cycling and horse-riding (WCH) in comparison to the Existing A417, and provision of new recreational routes.
- 4.2.5 The following assumptions have been made as part of this assessment:
- The approximate figure for annual total visitor numbers to Crickley Hill Country Park of 250,000, stated within a confidential 'Insight Study' commissioned by The National Trust and Gloucestershire Wildlife Trust, is assumed to be broadly correct. This estimate is not evidenced within the Insight Study.
 - The Existing A417 severs the Cotswold Way National Trail meaning walkers and cyclists must cross three lanes of traffic at the Air Balloon roundabout. It is

assumed that the conditions at this crossing point are currently acting as a deterrent for some demographics of visitors from extending their trips to the south of the A417.

- It is assumed that the majority of walkers that answered 'yes' within the Insight Study to the question 'are you walking one of the long-distance footpaths that run through or near here?', were undertaking a planned walk along the Cotswold Way National Trail.

4.3 Mitigation

- 4.3.1 Diversion of visitors away from European sites in the form of provision of improved or new alternative recreational routes is a plainly established and uncontroversial measure to avoid increases in recreational pressure. This assessment considers the diversion of visitors to the new high-quality recreational route along the detrunked A417, including its associated parking provision and signage, as measures that reduce recreational pressure on Cotswold Beechwoods SAC. However, this recreational route forms part of the embedded scheme design, rather than forming a specific mitigation measure in relation to the European site.
- 4.3.2 Although integral measures within the scheme will divert visitor pressure away from the SAC, it is acknowledged that there is uncertainty to their efficacy and it would therefore not be robust to draw a conclusion of no adverse effect on integrity based on those measures. A commitment to additional precautionary mitigation is therefore described to address this uncertainty.

4.4 Other plans and projects that may act 'in combination'

- 4.4.1 *Guidance: Habitats regulations assessments: protecting a European site*³ on assessment of combined effects states that if a proposal has an effect on a European site that is not significant, a check must be undertaken for any other proposal, planned or underway, that affects the same site, that on its own also does not have a significant effect.
- 4.4.2 In accordance with PINS *Advice Note 10 Habitat Regulations Assessment*², where there is potential for in-combination effects, information should be gathered from publicly available sources and appraised for the following types of development:
- Projects that are under construction.
 - Permitted application(s) not yet implemented.
 - Submitted application(s) not yet determined.
 - All refusals subject to appeal procedures not yet determined.
 - Projects on the National Infrastructure's programme of projects.
 - Projects identified in the relevant development plan (the Gloucester, Cheltenham and Tewkesbury Joint Core Strategy (JCS)).
- 4.4.3 If the scheme would be likely to result in an effect on the SAC from visitor pressure that was not significant then potential would exist for in combination effects with other plans and projects that also increase visitor numbers. Other plans and projects considered to have potential to result in increased visitor numbers to the SAC are those that would increase residential units in locations where new residents would be likely to travel to the SAC for recreational purposes.

4.4.4 The Impact Risk Zones (IRZs)¹² for Cotswold Beechwoods SAC identifies a 10km radius from the SAC boundary for any residential development with a total net gain in residential units. Consultation with Natural England identifies that this radius should be extended to 15.4km on the basis of a recreational pressure visitor survey of the Cotswold Beechwoods undertaken in 2019¹³. There are numerous residential projects in the categories of development listed above that fall within a 15.4km radius of the SAC including site allocations within the JCS. Major housing developments (EIA development) and residential site allocations within adopted planning policy that fall within 5km of the scheme are individually identified within ES Chapter 15 Assessment of Cumulative Effects (Document Reference 6.2). These sites and any other residential development with a net gain in residential units within 15.4km of the SAC could potentially contribute to in combination effects if the assessment of the scheme alone identified non-significant effects from visitor pressure on the European site.

¹² a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks posed by development proposals to: Sites of Special Scientific Interest (SSSIs), SACs, SPAs and Ramsar sites. They define zones around each site which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

¹³ Cotswold Beechwoods Visitor Survey (2019): Footprint Ecology
https://www.stroud.gov.uk/media/1120947/beechnwoods-visitor-survey-final_redacted.pdf

5 Potential impacts on Cotswold Beechwoods SAC

5.1 Vulnerability of Cotswold Beechwoods SAC to recreational pressure

- 5.1.1 The Cotswold Beechwoods SAC is designated for its Annex I habitats *Asperulo-Fagetum* beech forests on neutral to rich soils (primary reason) and Annex I habitats Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Bromeliata*) (present as qualifying feature). The condition of the 26 SSSI management units underpinning the SAC designation were largely (19 units) assessed as being in Favourable condition in the most recent condition assessments (2009-2013) with the remainder (seven units) in an Unfavourable-recovering condition¹⁴.
- 5.1.2 The conservation objectives supplementary advice⁸ indicates that recreational pressure is affecting the structure and function of the designated beech woodland habitat through impacts to the root zones of ancient trees. This document sets a target of maintaining the soil structure within and around the root zones of the mature and ancient tree cohort in an uncompacted condition.
- 5.1.3 The *Site Improvement Plan*¹⁰ (SIP) indicates that public use of the SAC has grown considerably over recent years and damage is becoming more widespread. A particular increase has been the use of mountain bikes and horse-riding which uses the woods far beyond the limited network of bridleways. This has created numerous additional trackways and so increasing the erosion of ground flora. Additionally, dog-walking has increased, particularly at Cooper's Hill where car parking is available, and commercial dog walking has also increased. Poorly controlled dogs can cause nitrification of soils through fouling.

5.2 Potential impact pathways

- 5.2.1 The SAC is accessible on foot via several existing PRow including the Cotswold Way National Trail long-distance footpath, which runs for approximately 8.2km through the SAC. The scheme includes a proposed crossing (Cotswold Way crossing) which will carry the diverted Cotswold Way across the new A417 (refer to the location plan at Appendix B).
- 5.2.2 The Cotswold Way crossing will reconnect walking routes along the Cotswold Way National Trail, which is severed by the Existing A417 trunk road. Currently pedestrians must cross three lanes of traffic at the Air Balloon roundabout, which is hazardous and likely to deter people from using this route. The crossing provided as part of the scheme could encourage higher levels of recreational use by walkers following the National Trail, which will provide a footpath connection between the Air Balloon Way and the SAC. This could potentially increase the number of visitors to the SAC that originate from locations to the north of the A417, particularly from Crickley Hill Country Park. If there was a predicted increase in recreational visitors to the SAC arising from the scheme, this could contribute to damage to the habitat for which the site qualifies.
- 5.2.3 There are multiple points of entry to the SAC for visitors arriving by vehicle, including car park provision at a number of locations including Cooper's Hill, Cranham village and Barrow Wake. The scheme will improve traffic flow on the

¹⁴ www.magic.gov accessed 20/03/20.

A417 which could potentially increase visitor numbers to the SAC by vehicle if visitor access routes are dependent on the A417 and current levels of congestion act as deterrent.

5.3 Sources of information

5.3.1 The potential for increases in visitor numbers to the SAC arising from the scheme are assessed below with reference to the following sources of information:

- Footprint Ecology undertook a visitor survey of the Cotswold Beechwoods in 2019¹³ which was commissioned by the local planning authorities: Tewkesbury, Cotswold, Stroud, Cheltenham and Gloucester City Councils (and the Highway Authority), as evidence to inform the HRA of the emerging respective local plan documents.
- The National Trust and Gloucestershire Wildlife Trust commissioned an 'Insight Study' in 2018 that comprised surveys and consultation with visitors and local residents. Aims of the study included understanding who is using the Crickley Hill site and why and issues that would help define a future visitor offer. The full contents of this document are confidential.
- As part of the ES Chapter 12 Population and Human Health (Document Reference 6.2) an assessment of the potential construction and operational effects of the scheme upon population and human health was undertaken, in line with DMRB *LA 112 Population and human health*. Part of this assessment describes the existing environment in the area surrounding the scheme and considers indirect effects on WCH within 250m of the DCO Boundary.
- Annex F Public Rights of Way Management Plan of ES Appendix 2.1 Environmental Management Plan (EMP) (Document Reference 6.4) has been devised which proposes a range of diversions and new routes to improve connectivity and access for walking, cycling and horse-riding in relation to the scheme.
- The SIP for the Cotswold Beechwoods SAC identifies a number of threats and pressures including, of relevance to this SIAA, public access/ disturbance. The information within the SIP, including any actions, has been taken into consideration in this assessment.

5.4 Assessment of potential for increased visitor pressure on the SAC in relation to Cotswold Way crossing

5.4.1 Crickley Hill and Barrow Wake SSSI are publicly accessible nature conservation sites that attract visitors to locations within and adjacent to the scheme and are linked by the Cotswold Way National Trail. Crickley Hill is a country park that falls partially within the DCO Boundary, to the north of the Existing A417. Barrow Wake also falls partially within the DCO Boundary, to the south of the Existing A417 and the site includes a scenic viewpoint attractive to visitors.

5.4.2 The Insight Study states that Crickley Hill Country Park experiences high visitor numbers, approximately 250,000 a year. Facilities include public toilets, café and car parking and the majority of visitors arrive at the park by car (over 90%). The Insight Study includes the results of interviews with members of the public to ascertain the activities undertaken at the sites (more than one reason could be selected). It is reported that people come to the sites for a variety of activities, with the most evident being walking and dog walking (39% and 38% respectively). Sitting and looking at the views (28%) and visiting the café (24%) are also popular

reasons for visiting. The primary motivation for visiting Crickley Hill is given as being the views, in addition to the peace and tranquillity the site affords. Families comprise just over a quarter of visitors at Crickley Hill, about half this level at Barrow Wake. Just under 30% of visitors at Crickley Hill had children in the party and 49% with dogs. Just over a third of the walkers (i.e. more than 10% of total visitors) were walking a long-distance trail, with the majority following the Cotswold Way National Trail.

- 5.4.3 The Existing A417 severs the Cotswold Way National Trail meaning walkers and cyclists must cross three lanes of traffic at the Air Balloon roundabout. The Insight Study recorded a low exchange of visitors between Crickley Hill and Barrow Wake. This aligns with the Population and Human Health assessment which observed relatively high numbers of visitors (540 WCH users over two-day survey period) within Crickley Hill park and low numbers (52 WCH users over two-day survey period) at the southern location near the Air Balloon roundabout. This indicates that the conditions at this crossing point are currently acting as a deterrent for some demographics of visitors from extending their trips to the south of the A417.
- 5.4.4 A grade separated crossing (Cotswold Way crossing) is proposed as part of the scheme which will reconnect the National Trail, stopping up the section at the roundabout and diverting and reclassifying it as a bridleway over the crossing to reconnect to the National Trail to the south. The crossing is likely to increase the numbers of visitors to Barrow Wake from the north. Of visitors to Crickley Hill, 64% said they would use a bridge which could be used by walkers to access Barrow Wake. Of visitors to Barrow Wake 75% would use a similar bridge to access Crickley Hill, as reported in the Insight Study.
- 5.4.5 As part of the scheme, the Existing A417 will be detrunked for much of its length and a 2.7km section repurposed into a restricted byway for WCH, to be referred to as the Air Balloon Way. An upgraded PRoW will provide a link to the Golden Heart Inn where additional parking will be provided. The verges along the WCH route will include new and enhanced woodland and calcareous grassland habitats, and additional native tree and hedge planting, in keeping with the local Area of Outstanding Natural Beauty landscape character. Further detail on these measures are included in Annex D Landscape and Ecological Management Plan (LEMP) of ES Appendix 2.1 EMP (Document Reference 6.4).
- 5.4.6 A new 37 metre wide multi-purpose crossing (Gloucestershire Way crossing) is also proposed as part of the scheme, offering a grade separated crossing for the Gloucestershire Way long-distance footpath north of Shab Hill, which would otherwise be severed by the scheme. Additional crossings at the Cowley and Stockwell Farm overbridges and Shab Hill junction would also serve to maintain and improve recreational routes for WCH across the scheme. The scheme will include enhancements to the PRoW network in addition to Air Balloon Way that will enable a range of new recreational rides and circular walking routes in the vicinity of the scheme of between approximately 2.5km to 6.9km in length.
- 5.4.7 The numbers of WCH crossing the A417 from Crickley Hill Country Park are likely to increase as a result of the provision of the Cotswold Way crossing. The demographic groups reported as using Crickley Hill include high proportions of senior visitors in addition to families with younger children (age 6-12). Around 80% of visitors go to Crickley Hill for a walk and most of these are of short to mid-length (based on average visit duration of 1hr 46min). The enhanced PRoW

network encompassing Crickley Hill, Barrow Wake, the Gloucestershire Way crossing, the Golden Heart Inn and the Air Balloon Way will provide a range of short to mid length walks and rides over easy terrain that will be particularly attractive to the main demographic groups using Crickley Hill.

- 5.4.8 The boundary of the SAC is approximately 2.3km in walking distance along the Cotswold Way long-distance footpath from the Cotswold Way Crossing. It is considered unlikely to attract additional walkers interested in short to mid-length routes starting at Crickley Hill, given the closer proximity and better accessibility of the Air Balloon Way and connected routes using the Gloucestershire Way crossing. The section of the Cotswold Way between Air Balloon Way and the SAC is a footpath and is not therefore likely to increase access to the SAC for cyclists or horse-riders.
- 5.4.9 It is considered that the provision of the Cotswold Way crossing will have a negligible impact on the numbers of long-distance walkers following the Cotswold Way from Crickley Hill and through the SAC. As a National Trail, the Cotswold Way is designated by the Government as a long-distance walking route, with promoted itineraries for walks typically being for distances of 39km – 161km, recommended to be undertaken over five days or more¹⁵. Whilst there are a number of promoted shorter circular and linear walks along the Cotswold Way, these do not include the Crickley Hill area (although they do include a circular walk within the SAC). The localised issue of the current poor connectivity across the A417 is unlikely to be a consideration for the vast majority of walkers who are considering walking the long-distance National Trail. As such it is not anticipated that the improvement in connectivity offered by the Cotswold Way crossing would cause an increase in the number of long-distance walkers electing to walk the National Trail through the SAC and beyond.
- 5.4.10 In addition, while there are concerns over deviation from the National Trail within the SAC, the results of the Footprint Ecology visitor study indicate that visitors are highly concentrated along this promoted route and while the long-distance walkers have a large footprint on this site it is in a confined and manageable way along the marked trail.
- 5.4.11 Furthermore, the new recreational provision as part of the scheme is likely to divert some existing visitor pressure away from the SAC, providing an alternative location for visitors to undertake longer distance walks/ rides from Crickley Hill, Barrow Wake or the new parking locations, instead of visiting the SAC.
- 5.4.12 Whilst no increase in recreational pressure upon the SAC is considered to occur, it is also relevant that no ancient trees were recorded during the latest condition assessment (2012) of the SSSI unit (Witcombe Wood) that is the closest area of the SAC to the scheme¹⁶. Therefore, the vulnerability of the SAC to habitat degradation through impacts to the root zones of ancient trees, as identified in the conservation objectives supplementary advice⁸, is less relevant to the areas of the SAC within at least 3km of the Cotswold Way crossing.
- 5.4.13 It is considered that the scheme will not adversely affect the integrity of the SAC in relation to potential recreational impacts associated with provision of the

¹⁵ Promoted itineraries information taken from National Trails website: https://www.nationaltrail.co.uk/en_GB/trails/cotswold-way/ . Accessed 26/11/20.

¹⁶Condition of SSSI Units for Site Cotswold Commons and Beechwoods SSSI [https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003801&ReportTitle=Cotswold Commons and Beechwoods SSSI](https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003801&ReportTitle=Cotswold%20Commons%20and%20Beechwoods%20SSSI) . Accessed 20/04/21

Cotswold Way crossing. Although integral measures within the scheme will divert visitor pressure away from the SAC, it is acknowledged that there is uncertainty to their efficacy and it would therefore not be robust to draw a conclusion of no adverse effect on integrity based on those measures. Precautionary mitigation will be provided to address this uncertainty.

5.5 Assessment of potential for increased in visitor pressure on SAC as a result of reduced congestion on A417

- 5.5.1 The Footprint Ecology study found that 67% of interviewees visiting the SAC arrived by car with 28% on foot (with other modes of transport including bicycle, horse and public transport), with a high proportion entering and exiting where car parking provision exists. Over 90% of visitors to Crickley Hill and Barrow Wake arrive by vehicle.
- 5.5.2 The postcode analysis of the Footprint Ecology study indicates that interviewee postcodes were widely spread across a number of local authorities. The ranked number of interviewees showing the highest numbers were from Stroud District, roughly a quarter (26%), followed by Gloucester District (17%), Tewkesbury Borough (13%), Cheltenham Borough (10%) and Cotswold District (10%), with the remainder spread across 22 other local authorities. Considering only those travelling directly from home (rather than visiting friends/family or on holiday) the proportions remained roughly similar with Stroud, Gloucester, Tewkesbury, Cotswold and Cheltenham accounting for 82% of interviewees.
- 5.5.3 The SAC has a relatively large visitor catchment and is accessible via several routes other than the A417, such as the M5/A46, the B470 and numerous smaller local roads. Parking is available in a number of key locations and smaller locations, which supports access via multiple routes, such as at Barrow Wake, Cooper's Hill, Cranham Village and also the A46 car park, a car park at the Royal William pub and in laybys such as along the B4070.
- 5.5.4 Within the Footprint Ecology study only 9% of interviewees stated a quick and easy travel route as a reason for visiting the site, in comparison to 30% who stated the site being close to home as a reason.
- 5.5.5 It is likely that current and future visitors to the SAC will continue to show variety in access points and that this is largely dictated by the home location of the visitor and car parking provision in proximity. Reduced congestion and improved traffic flow on the A417 would be unlikely to significantly increase the number of visitors to the SAC as a result of the scheme.
- 5.5.6 In the Footprint Ecology Study, visitors to the SAC were interviewed about what changes to other local greenspaces would encourage them to visit them more. The most common suggestion was more/ better parking, followed by improved footpaths and better signposting/ interpretation/ maps. These features are an integral part of the new recreational provision at the Air Balloon Way. New parking will be provided at the Golden Heart Inn and signage and interpretation boards will be situated at suitable locations of the site, such as on the Air Balloon Way and entrances to the Cotswold Way crossing to educate the public regarding the biodiversity of the site and the sensitivity of sites such as Barrow Wake, Crickley Hill and Emma's Grove. Interpretation boards would include geodiversity and heritage information also. These measures are not provided as specific mitigation to reduce impacts to the SAC but they will provide further incentives for visitors in the locality to utilise the Air Balloon restricted byway for recreational walks and

rides. This may reduce the numbers of visitors to the SAC arriving by vehicle and therefore decrease recreational pressures upon the site.

- 5.5.7 It has been demonstrated beyond reasonable scientific doubt that there is an absence of adverse effects on the integrity of the SAC, in relation to potential recreational impacts associated with reduced congestion on the A417.

5.6 In-combination effects

- 5.6.1 The scheme is not considered to cause an increase in recreational pressure upon Cotswold Beechwoods SAC that would have any adverse effect on the site. This is because new alternative recreational provision integral to the scheme will divert visitor pressure away from the SAC. However, as stated above, there is uncertainty to the efficacy of these measures, and additional precautionary mitigation will be provided.
- 5.6.2 Natural England advice, based upon the Footprint Ecology visitor study¹³, is that residential developments within 15.4km of the SAC are relevant in terms of recreational impacts. The visitor study was commissioned by the local planning authorities in the vicinity of the SAC to inform the production of a recreation mitigation strategy for the SAC in collaboration with Natural England. The recreation mitigation strategy for the SAC is currently in preparation. The precautionary mitigation to be provided in relation to the scheme will be developed in consultation with Natural England and the relevant planning authorities. This will ensure that such measures align with the recreation mitigation strategy and will address any possibility of in combination effects.

6 Integrity of site checklist

6.1 Potential impacts on site integrity for Cotswold Beechwoods SAC

Table 2 Integrity of site checklist

Conservation objectives	Yes/ No
Does the project have the potential to:	
Cause delays in progress towards achieving the conservation objectives of the site?	No
Interrupt progress towards achieving the conservation objectives of the site?	No
Disrupt those factors that help to maintain the favourable conservation objectives of the site?	No
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No

Table 3 Other indicators

Other indicators	Yes/ No
Does the project have the potential to:	
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	No
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No
Reduce the area of key habitats?	No
Reduce the population of key species?	No
Change the balance between key species?	No
Reduce the diversity of the site?	No
Result in disturbance that could affect population size or density or the balance between key species?	No
Result in fragmentation?	No
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	No

7 Mitigation

7.1 Mitigation

- 7.1.1 Due to the possibility that integral measures to the scheme in the form of alternative recreational provision will not remove the risk of an effect entirely, a precautionary approach is being taken to mitigation for this scheme, in order to increase confidence that recreational disturbance would not result in detrimental impacts to the qualifying interests of the SAC. Natural England are supportive of the provision of additional recreational control measures at the SAC (Statement of Commonality (Document Reference 7.3)). They recommend that these are developed in tandem with the recreation mitigation strategy currently being prepared by the local planning authorities in the vicinity of the SAC.
- 7.1.2 Highways England will work with Natural England and Stroud District Council (in their capacity as lead authors/ owners of the recreation mitigation strategy), to agree specific measures to control recreational use of the SAC. Such measures may include the provision of signage/ interpretation boards to raise public awareness of the value of ancient woodland and trees, and the importance of respecting measures installed to reduce root compaction. From correspondence with Natural England it is understood that the draft mitigation strategy includes reference to signage and information boards, and that there is an opportunity for Highways England to collaborate with the participating planning authorities to provide suitable measures.
- 7.1.3 The commitment to agree such measures is identified in the Register of Environmental Actions and Commitments contained within ES Appendix 2.1 EMP, and documented in Annex D LEMP (Document Reference 6.4) of ES Appendix 2.1 EMP.

8 Proposals for monitoring and reporting

8.1 Monitoring

- 8.1.1 The recreation mitigation strategy currently being prepared by the local planning authorities in the vicinity of the SAC includes requirements to monitor for the effectiveness of recreational control measures at the SAC. No specific additional monitoring is prescribed.

9 Consultations

9.1.1 Natural England was consulted on a draft HRA for a previous version of the scheme in April 2020. It was agreed that potential recreational impacts upon the Cotswold Beechwoods SAC should be screened in for appropriate assessment on the basis of uncertainty of whether likely significant effects would occur, to allow analysis of existing visitor study data.

9.1.2 By the point the HRA process commenced for the current scheme, the visitor study analysis had been undertaken, which concluded no likely significant effects upon the SAC. This information was presented in a draft HRA screening report supplied to Natural England in December 2020. Natural England confirmed in a letter dated 21 January 2021 that the technical conclusions of the HRA screening report in relation to recreational pressure were agreed:

'The A417 missing link scheme will substantially alter the recreational use of the local area, with the provision of a new multiuse path, new crossing points and changes to car parking provision. We welcome the consideration given to whether these changes will result in impacts (positive or negative) on the Cotswold Beechwoods SAC. Natural England agrees with the conclusion that the proposal would not result in an increase in visitor pressure on Cotswold Beechwoods SAC.'

9.1.3 In their letter dated 21 January 2021, Natural England commented that as a point of process that the level of detailed assessment of potential recreational impacts on Cotswold Beechwoods SAC should be presented in an SIAA, rather than a HRA screening report. This SIAA has therefore been produced to satisfy this point of process. Natural England have confirmed in a subsequent letter dated 1 April 2021 that they are satisfied with the SIAA:

'We welcome the re-packaging as a Statement to Inform Appropriate Assessment (SIAA). We agree with the conclusion reached in the SIAA that there will be no adverse effects on the Cotswold Beechwoods SAC due to changes to recreational pressure, either alone or in combination with other plans and projects.'

9.1.4 Whilst Natural England were satisfied with the SIAA conclusions prior to the addition of additional precautionary mitigation, they have also confirmed that they approve of the proposal for Highways England to commit to these additional measures. A relevant extract of email from Natural England dated 16 April 2021 is below:

'Update re Cotswold Beechwoods SAC recreation mitigation strategy – A first draft of the mitigation strategy has recently been circulated among the participating planning authorities. This includes costings for potential mitigation measures at a strategic scale. It includes reference to signage and information boards but does not specify where these might be installed. Decisions over the location of interpretation will most likely fall within the remit of the strategy's proposed Project Officer. The draft strategy emphasises the crucial role of the Project Officer in driving forward a range of key measures to address recreation pressure. Although we have no firm timescale for the implementation of the strategy there may well be an opportunity for the LPA collaborative project and the A417NSIP to work in tandem to provide suitable measures in future.'

10 Conclusions

- 10.1.1 The provision of a major new recreational route along the detrunked and repurposed A417 including additional car parking at the Golden Heart Inn and other improvements to connected PRow will serve to meet the needs of the majority of existing and future visitors, and will divert/ concentrate visitors away from Cotswold Beechwoods SAC. An increase in recreational pressure to the SAC is not considered to occur as a result of these measures that are integral to the scheme.
- 10.1.2 It is acknowledged that there is uncertainty to their efficacy of these integral measures and it would therefore not be robust to draw a conclusion of no adverse effect on integrity based on those measures. Therefore, additional precautionary mitigation will be provided in the form of measures to control recreational use of the SAC to address this uncertainty.
- 10.1.3 In conclusion, there will be no significant adverse effect upon the integrity of Cotswold Beechwoods SAC as a result of the scheme, either alone or in combination with other plans or projects.

Appendices

Appendix A Cotswold Beechwoods SAC citation

A.1 Cotswold Beechwoods SAC

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Cotswold Beechwoods
Unitary Authority/County:	Gloucestershire
SAC status:	Designated on 1 April 2005
Grid reference:	SO898134
SAC EU code:	UK0013658
Area (ha):	585.85
Component SSSI:	Cotswold Commons and Beechwoods SSSI

Site description:

The site consists of ancient beech woodland and unimproved grassland lying over Jurassic limestones at the western edge of the Cotswolds. The woodlands are amongst the most diverse and species-rich of their type while the grasslands typify the unimproved calcareous pastures for which the area is famous.

The woods are structurally varied, including blocks of high forest and some areas of remnant beech coppice. The canopy is dominated by beech *Fagus sylvatica*, with ash *Fraxinus excelsior*, pedunculate oak *Quercus robur* and some areas of sycamore *Acer pseudoplatanus*. Characteristic understorey species include holly *Ilex aquifolium* and yew *Taxus baccata* but regenerating ash, sycamore and beech often accounts for much of the shrub layer. The field layer consists mainly of bramble *Rubus fruticosus* agg., dog's mercury *Mercurialis perennis* and ivy *Hedera helix*. Rare plants include red helleborine *Cephalanthera rubra*, stinking hellebore *Helleborus foetidus*, narrow-lipped helleborine *Epipactis leptochila* and wood barley *Hordelymus europaeus*. The fauna of the woods includes an exceptional variety of invertebrate species, including a rich mollusc fauna.

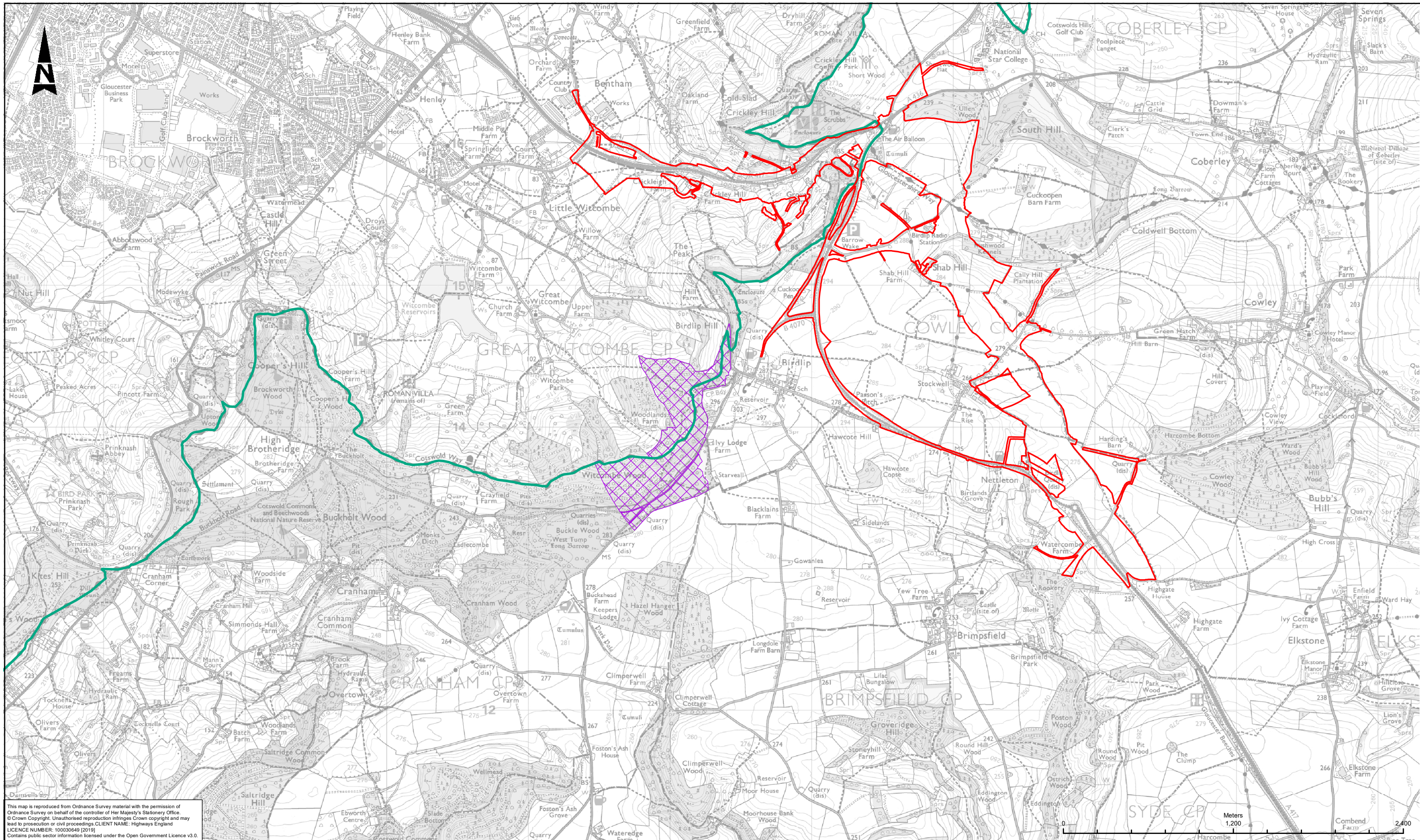
The unimproved limestone grassland swards are generally dominated by upright brome *Bromopsis erecta*, tor-grass *Brachypodium pinnatum* and sheep's-fescue *Festuca ovina*, with quaking grass *Briza media* and a wide range of other flowering herbs. Typical plants include cowslips *Primula veris*, common bird's-foot-trefoil *Lotus corniculatus*, common rock-rose *Helianthemum nummularium*, wild thyme *Thymus praecox* and field scabious *Knautia arvensis*

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- *Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)

This citation relates to a site entered in the Register of European Sites for Great Britain.
 Register reference number: UK0013658
 Date of registration: 14 June 2005
 Signed: [REDACTED]
 On behalf of the Secretary of State for Environment,
 Food and Rural Affairs

Appendix B Cotswold Beechwoods SAC location plan



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- LEGEND**
- DCO BOUNDARY
 - COTSWOLD WAY
 - COTSWOLD BEECHWOODS SAC

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS (REFERENCE SHALL ALSO BE MADE IN THE DESIGN HAZARD LOG)

CONSTRUCTION			
NONE			
MAINTENANCE / CLEANING			
NONE			
USE			
NONE			
DECOMMISSIONING / DEMOLITION			
NONE			

001	19/05/21	APPLICATION SUBMISSION (MAY 2021)	KD	LC	JP	SW
Rev.	Date	Description	By	Chk'd	App'd	Auth'd

Subtality	A3	Drawing Status	STAGE COMPLETED
ARUP			
highways england			

Project Title		A417 MISSING LINK			
Drawing Title		APPENDIX B COTSWOLD BEECHWOODS SAC LOCATION PLAN (SIAA)			
Scale	1:25,000	By	KD	Checked	LC
Original Size	A3	Date	19/05/21	Date	19/05/21
Approved	JP	Date	19/05/21	Authorised	SW
Date	19/05/21	Date	19/05/21	Date	19/05/21
Drawing Number	HE PIN	Originator	Volume	Revision	
HE551505 - ARP	EGN	-DR - LE - 000033	C01	C01	
Location	Type	Role	Number		

Appendix C PINS Integrity Matrix

Matrix key

- ✓: Adverse effect on integrity **cannot** be excluded
- ✗: Adverse effect on integrity **can** be excluded
- C: Construction
- O: Operation
- D: Decommissioning

Table C-1 Cotswold Beechwoods SAC PINS Integrity Matrix

Name of European site and designation: Cotswold Beechwoods SAC						
EU Code: UK0013658						
Distance to NSIP: 212km						
European site features	Adverse effect on integrity					
	Recreational pressure			In combination effects		
Effect						
Stage of Development	C	O	D	C	O	D
Asperulo-Fagetum beech forests on neutral to rich soils	✗*i	✗ii*		✗iii*	✗iii*	
Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Bromeliata</i>).	✗*i	✗ii*		✗iii*	✗iii*	

*i There is no potential effect from increased recreational pressure during construction (refer to the HRA Screening Report (Document Reference 6.5)).

*ii It is considered that the scheme will not adversely affect the integrity of the SAC in relation to potential recreational impacts associated with provision of the Cotswold Way crossing. Although integral measures within the scheme will divert visitor pressure away from the SAC, it is acknowledged that there is uncertainty to their efficacy and it would therefore not be robust to draw a conclusion of no adverse effect on integrity based on those measures. Precautionary mitigation will be provided to address this uncertainty to increase confidence that recreational disturbance would not result in detrimental impacts to the qualifying interests of the SAC. Natural England are supportive of the provision of additional recreational control measures at the SAC. They recommend that these are developed in tandem with the recreation mitigation strategy currently being prepared by the local planning authorities in the vicinity of the SAC.

Highways England will work with Natural England and Stroud District Council (in their capacity as lead authors/ owners of the recreation mitigation strategy), to agree specific measures to control recreational use of the SAC. Such measures may include the provision of signage/ interpretation boards to raise public awareness of the value of ancient woodland and trees, and the importance of respecting measures installed to reduce root compaction. From correspondence with Natural England it is understood that the draft mitigation strategy includes reference to signage and information boards, and

that there is an opportunity for Highways England to collaborate with the participating planning authorities to provide suitable measures.

With these precautionary measures in place, there will be no impact upon the qualifying features of the SAC during operation as a result of the scheme via recreational pressure and there will be no significant adverse effect upon the integrity of the SAC.

*iii Natural England advice, based upon the Footprint Ecology visitor study, is that residential developments within 15.4km of the SAC are relevant in terms of recreational impacts. The visitor study was commissioned by the local planning authorities in the vicinity of the SAC to inform the production of a recreation mitigation strategy for the SAC in collaboration with Natural England. The recreation mitigation strategy for the SAC is currently in preparation. The precautionary mitigation to be provided in relation to the scheme will be developed in consultation with Natural England and the relevant planning authorities. This will ensure that such measures align with the recreation mitigation strategy and will address any possibility of in combination effects.