



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

M42 J6 Improvement Scheme

Written Representations of Natural England

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¹ Note – Annex material presented separately in PDF form

1.0 Introduction

1.1. Purpose and structure of these Written Representations

1.1.1. These Written Representations are submitted in pursuance of rule 10(1) of the Infrastructure Planning (Examination Procedure) Rules 2010 ('ExPR') in relation to an application under the Planning Act 2008 for a Development Consent Order ('DCO') for the M42 J6 Scheme Improvement scheme ('the Project') submitted by Highways England ('the Applicant') to the Secretary of State.

1.1.2. Natural England has already provided a summary of its principal concerns in its Relevant Representations, submitted to the Planning Inspectorate on 28 April 2019 (Annex A). This document comprises an updated detailed statement of Natural England's views, as they have developed in view of the common ground discussions that have taken place with the Applicant to date. These are structured as follows:

Section 2 introduces the status and functions of Natural England.

Section 3 is an account of the legislative framework.

Section 4 is an account of the Policy context.

Section 5 describes the conservation designations, features and interests that may be affected by the Project and which need to be considered.

Section 6 outlines those issues which are excluded from the Written Representations.

Section 7 comprises Natural England's submissions in respect of the issues that concern it. This submission cross-refers to, and is supported by, the evidence contained in the Annexes.

1.1.3 Natural England has been working closely with Highways England providing advice and guidance since 2017. Natural England has also undertaken dialogue with the Warwickshire Wildlife Trust (WWT) and The Woodland Trust (TWT) to provide coordinated advice. Most recently, we met with the applicants' environmental consultant team on 18 September 2018 in Nottingham, and 14 March 2019 in Birmingham. The relevant meeting minutes are contained at Annex B, C and C2. The conversations in the first meeting helped inform our Section 42 response. (Annex D).

1.1.4 At the time of writing the Examining Authority's First Written Questions had not been sighted. Should there be question for Natural England, we will provide this under separate cover.

2. Natural England Status and Functions

- 2.1.1. Natural England is a statutory body established under the Natural Environment and Rural Communities Act 2006 ('NERC' Act). Natural England is the statutory advisor to Government on nature conservation in England and promotes the conservation of England's wildlife and natural features. It is financed by the Department for Environment, Food and Rural Affairs ('Defra') but is a Non-Departmental Public Body, which forms its own views based on the best scientific evidence available.
- 2.1.2. Natural England works for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban and coastal and marine areas; promoting access, recreation and public well-being, and contributing to the way natural resources are managed so that they can be enjoyed now and by future generations.
- 2.1.3. Section 2 of the NERC Act provides that Natural England's general statutory purpose is:
'...to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development.'
- 2.1.4. Section 2(2) states that Natural England's general purpose includes
- a. Promoting nature conservation and protecting biodiversity;
 - b. Conserving and enhancing the landscape;
 - c. Securing the provision and improvement of facilities for the study, understanding and enjoyment of the natural environment;
 - d. Promoting access to the countryside and open spaces and encouraging open-air recreation; and
 - e. Contributing, in other ways, to social and economic well-being through management of the natural environment.
- 2.1.5. Natural England is required to keep under review all matters relating to its general purpose² and to provide public authorities with advice where they request this.³
- 2.1.6. Natural England is a statutory consultee in respect of (amongst other matters):
- a. All applications for consent for Nationally Significant Infrastructure Projects which are likely to affect land in England;⁴ and
 - b. The environmental information submitted pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations').⁵

² NERC Act, s.3(1).

³ NERC Act, s.4(1).

⁴ Planning Act s.42; Infrastructure Planning (Applications: prescribed Forms and Procedure) Regulations 2009, reg.3 and sched. 1.

⁵ Regs. 3(1), 10(6), 11(1), 16(2)(b), 20(3)(g), 22(3)(f), 24(5)(f) of the EIA Regs.

- c. Plans or projects that are subject to the requirements of the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations') which are likely to have a significant effect on European protected sites.
- d. Proposals likely to damage any of the flora, fauna or geological or physiographical features for which a Site of Special Scientific Interest (SSSI) has been notified pursuant to the Wildlife and Countryside Act 1981 (as amended) ('ECA 1981').⁶

2.1.7. In addition, Natural England performs duties relating to SSSIs under the WCA 1981, and in relation to European protected sites and species under the Habitats Regulations.

⁶ Section 28E(1) of the 1981 Act.

3.0 Legislative framework

3.1 Environmental Impact Assessment

- 3.1.1. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2010 ('EIA Regs') transposed Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment (as amended). That directive and its amending instruments have since been repealed and replaced by consolidated Council Directive 2011/92/EU ('the EIAD'). Development consent cannot lawfully be granted for EIA development unless there has been substantial compliance with the EIA Regs.⁷
- 3.1.2 The descriptions in the schedules apply broadly, and are not to be interpreted as mutually exclusive 'pigeon holes'.⁸In assessing whether a development is likely to have a significant effect on the environment, the planning Inspectorate must have regard to criteria in Schedule 3 of the EIA Regs.⁹
- 3.1.3 The environmental statement must meet the requirements of Schedule 4 to the EIA Regulations. These include providing:
- a. An outline of the main alternatives studied by the Applicant and an indication of the main reasons for the Applicant's choice, taking into account the environmental effects;
 - b. A description of the development, its construction and operation phases, its production processes, and an estimate by type and quality of its emissions and residues;
 - c. A description of the aspects of the environment likely to be significantly affected by the development including air, water, soil, fauna and flora, and landscape;
 - d. A description of the likely significant effects of the development on the environment, including direct, indirect, secondary, cumulative, long- and short-term, temporary and permanent effects;
 - e. A description of the measures envisaged in order to prevent / avoid, reduce and remedy / offset the significant adverse effects on the environment;
 - f. The data required to identify and assess the main effects which the development is likely to have on the environment.
- 3.1.4 Regulation 3(2) of the EIA Regs provides that a DCO must not be made unless environmental information has been taken into consideration. 'Environmental information' means the required environmental statement, including any further information requested, any other relevant information, and any duly made representations made about the environmental effects of the

⁷ *Berkeley v SSE* [2001] 2 AC 603, HL which also concerned the materially identical Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

⁸ *R(Warley) v Wealden DC* [2011] EWHC 2083 (Admin) at [41]-[44] and [63]-[64] per Singh J. in relation to the materially identical Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

⁹ EIA Regs, reg 7(1).

development and any associated development.¹⁰ The environmental statement must meet the required standard before consent may be granted.¹¹ Consideration of the environmental information must be done conscientiously. Where the development qualifies as EIA Development consent will be unlawful if the decision ignores issues relating to the significance of environmental impacts or the effectiveness of mitigation.¹²

3.2 Duty to conserve biodiversity

3.2.1 Section 40 of the NERC Act imposes a ‘*duty to conserve biodiversity*’ on public authorities, including members of the Examining Authority and the Secretary of State. In pursuance of this, section 40(1) states:

‘Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.’

3.2.2 For the purposes of the NERC Act, conservation includes restoring or enhancing a habitat or population of organisms.¹³ The Secretary of State must in particular have regard to the Convention on Biological Diversity when performing their duty.¹⁴

3.2.3 Section 41 of the NERC Act requires the Secretary of State to publish a list of the living organisms and types of habitat which in the Secretary of State’s opinion are of principal importance for the purpose of conserving biodiversity in England. Section 41(3) states:

‘the Secretary of State must –

(a) Take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or

(b) Promote the taking by others of such steps.’

3.3 Sites of Special Scientific Interest (SSSIs)

3.3.1 SSSIs are notified as such by Natural England under section 28 of the WCA 1981, where we are of the opinion the land is of special interest by reason of any of its flora, fauna, or geological or physiographical features.

3.3.2 Section 28G of the WCA 1981 places legal obligations on public authorities in relation to SSSIs. These authorities are known as ‘Section 28G authorities’, and the definition given at s.28G(3) embraces all public office-holders including the Secretary of State and the Examining Authority.

3.3.3 An authority to whom section 28G applies has a duty in exercising its functions in so far as their exercise is likely to affect the flora, fauna or geological or physiographical features by reason of which a SSSI is of special interest to:

¹⁰ EIA Regs, reg. 2(1).

¹¹ *R v Cornwall CC, ex p Hardy* [2001] Env LR 25.

¹² *Smith v SSSETR* [2003] EWCA Civ 262

¹³ NERC Act, s.40(3).

¹⁴ NERC Act, s 40(2).

'Take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest.'

3.3.4 In addition, where the permission of a Section 28G authority is needed before proposed operations may be carried out, the section 28G authority must, in accordance with section 28I(5) of the WCA 1981 , take any advice received from Natural England into account:

- a. in deciding whether or not to permit the proposed operations; and
- b. if it does decide to do so, in deciding what (if any) conditions are to be attached to the permission.

3.3.5 'Permission' is defined so as to include any kind of consent or authorisation.¹⁵As the applicant requires development consent from the Secretary of State in order to proceed with its proposals, and as the Secretary of State is a section 28G authority, the duties under section 28I(5) apply to the Secretary of State.¹⁶

¹⁵ WCA 1981, s.28I(7).

¹⁶ Natural England accepts that the notice requirements of section 28I(20 to (4) have been satisfied for the purposes of the Secretary of State's determination of the planning applications at issue here.

4.0 Policy Context

4.1 Introduction

- 4.1.1 The documents referred to below are statements of overarching policy which are central and applicable to planning decisions affecting biodiversity. It has been presumed that the Examining Authority has copies of them and, therefore, it has not been thought necessary to include them as Annexes to these Written Representations.

4.2 National Policy Statement for National Networks (NPSNN)

- 4.2.1 The relevant National Policy Statement is the National Policy Statement for National Networks (NPSNN).
- 4.2.2 This section summarises the provisions of the NPSNN that are most relevant to Natural England's case in relation to particular topics. Bracketed references are made to the corresponding sections of the NPSNN.

Environmental Statement

- 4.2.3 When considering an application for a DCO, the Secretary of State and the Examining Authority should satisfy itself that likely significant effects, including any significant residual effects taking account of any proposed mitigation measures or any adverse effects of those measures, have been adequately assessed [4.15]. Where necessary, the Secretary of State and the Examining Authority should request further information, where necessary, to ensure compliance with the EIA Directive [4.15].

Habitats and Species Regulations

- 4.2.4 Prior to granting a DCO, the Secretary of State must, under the Habitats Regulations, consider whether the project may have a significant effect on a European site (Ramsar sites), either alone or in combination with other plans or projects [4.22].
- 4.2.5 The Applicant should seek the advice of Natural England and provide the Examining Authority, with such information as it may reasonably require, to determine whether Appropriate Assessment is required [4.22]. In the event that an Appropriate Assessment is required, the Applicant must provide the Examining Authority with such information as may be reasonably be required to enable it to conduct the Appropriate Assessment [4.23].

Sites of Special Scientific Interest (SSSI's)

- 4.2.6 Where a development proposal is located outside of a SSSI and is likely to have an adverse effect on the SSSI (either individually or in combination with other developments), development should not normally be granted. Where an adverse effect, after mitigation, on the SSSI's notified special interest features is likely, an exception should only be made where the benefits (including need) clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSI's [5.29].

Biodiversity Enhancements

- 4.2.7 Where the development is subject to EIA, the Applicant should ensure that the environmental statement clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity [5.22]. The Applicant

should also show how the project has taken advantage of opportunities to conserve and enhance biodiversity (and geological) conservation interests [5.23].

- 4.2.8 As a general principle, development should aim to avoid significant harm to biodiversity interests, including through mitigation and consideration of reasonable alternatives. Where significant harm cannot be avoided, compensation measures including 'biodiversity offsetting' should be sought [5.25].

Landscape-scale considerations

- 4.2.9 In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national and local importance; protected species; habitats and other species of principal importance for the conservation of biodiversity; and to biodiversity and geological interests within the wider environment [5.26].

Habitats and Species of Principal Importance

- 4.2.10 For species and habitats that have been identified as being of principal importance for the conservation of biodiversity in England, the Secretary of State should ensure that these are protected from the adverse effects of development by using requirements or planning obligations [5.35]. The Secretary of State should refuse consent where harm to the habitats or species would result, unless the benefits (including need) of the development outweigh that harm. In this context, the Secretary of State should give substantial weight to any such harm to the detriment of biodiversity features of national and regional importance which it considers may result from the proposed development.
- 4.2.11 The Applicant should include appropriate mitigation measures as an integral part of the development. These include measures that will minimise harm to species or habitats during the construction of the operation and, where practicable, restore habitats after construction work has finished [5.36]. The Secretary of State (and the Examining Authority) should consider what appropriate requirements should be attached to any consent and / or planning obligations entered into [5.37].
- 4.2.12 The Secretary of State (and the Examining Authority) will need to take account of what mitigation measures may have been agreed with Natural England ... and whether (these bodies) have granted, refused or intends to grant or refuse, any relevant licences, including protected species mitigation licences [5.38].

4.3 National Planning Policy Framework (NPPF) 2018

- 4.3.1 Although the NPPF does not contain specific policies for Nationally Significant Infrastructure Projects (NSIPs), and defers to the National Policy Statements (NPSs) in this respect, it is submitted that the provisions of the NPPF, including those relevant to the conservation and enhancement, are both important and relevant considerations, and should be taken into account by the Secretary of State and the Examining Authority for the purposes of this DCO application.¹⁷
- 4.3.2 Importantly, NPPF 2018 makes it clear that ancient woodland is irreplaceable habitat. The NPPF glossary defines irreplaceable habitats as:

¹⁷ See NPPF Paragraph 5.

'Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen.'

4.3.3 This already high level of protection afforded to ancient woodland by the NPPF was raised to 'wholly exceptional' in July 2018. Specifically, NPPF Paragraph 175 sub-section (c) makes it clear that

'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists'.

4.4. 'A Green Future' - Defra 25 Year Environment Plan (Defra 25 YEP)

4.4.1 The 25 Year Environment Plan, launched in January 2018, sets out how the Government seeks improve the environment over a generation - by creating richer habitats for wildlife and improving air and water quality. Relevant aspirations to this application include:

- Embedding a 'net environmental gain' principle for all development including housing and infrastructure.
- Expanding the use of natural flood management solutions.
- Designing a new national Nature Recovery Network, alongside the creation of 500,000 hectares of new priority habitat outside our protected sites.
- A commitment to increasing woodland in England in line with our aspiration of 12% cover by 2060: this would involve planting 180,000 hectares by the end of 2042.

4.4.2 Furthermore, the Defra 25YEP provides protection for ancient woodlands specifically via:

- Chapter 1: Using and Managing Land Sustainably: Housing and Planning:

'New development will happen in the right places, delivering maximum economic benefit while taking into account the need to avoid environmental damage. We will protect ancient woodlands and grasslands, high flood risk areas and our best agricultural land.'

- Chapter 4: Focusing on Woodland to maximise its many benefits:

'Beyond the economic benefits, the Government recognises the significant heritage value and irreplaceable character of ancient woodlands and veteran trees. We are committed to ensuring stronger protection of our ancient woodland, making sure they are sustainably managed to provide a wide range of social, environmental, societal and economic benefits.'

4.5 Solihull Local Plan Policies

- 4.5.1 The proposed development works fall entirely within the boundaries of Solihull Metropolitan Borough Council (MBC). The Local planning policies contained within the adopted Solihull Local Plan – Shaping a Sustainable Future (December 2013) therefore apply.

Natural Environment – Generally

- 4.5.2 Solihull MBC Policy P10 Natural Environment bears relevance to these Representations. Policy P10 demands that

‘The full value and benefits of the natural environment (are) taken into account in considering all development proposals...’

- 4.5.3 It goes on to assert

‘...the need for landscape-scale approach to the natural environment and conservation of biodiversity.’

Woodlands and Ancient Woodlands

- 4.5.3 Policy P10 specifically recognises the importance of woodlands, as follows:

‘The Council will seek to protect, enhance and restore the diverse landscape features of the Borough and to create new woodlands and other characteristic habitats, so as to halt and where possible, reverse the degrading of the Arden landscape and promote local distinctiveness. Development should take full account of national and local guidance on protecting and restoring the landscape and the areas in need of enhancement...’

- 4.5.4 It specifically requires that developers:

‘...will be expected to incorporate measures to protect, enhance and restore the landscape, unless it is demonstrated that it is not feasible, disproportionate or necessary.’

- 4.5.6 With regard to Ancient Woodland specifically it seeks the following:

‘The Council will seek to conserve, enhance and restore biodiversity and geodiversity, to create new native woodlands and other habitats and to protect, restore and enhance ancient woodland and green infrastructure assets across the Borough. Protection of ancient woodland, designated sites and priority habitats shall include the establishment of buffers to any new development.’

Sites of Special Scientific Interest (SSSI’s)

- 4.5.7 With regard to SSSI’s Policy P10 states the following:

‘The Council will protect areas of national and local importance for biodiversity and geodiversity, where it is reasonable, proportionate and feasible to do so. Development likely to have an adverse effect on a SSSI, whether directly or indirectly, will be subject to special scrutiny and will be permitted only if the reasons for the development clearly outweigh the nature conservation value of the site and the national policy to safeguard such sites. Where development may have an

adverse effect on a SSSI, developers will be expected to incorporate measures to enhance the condition of the site, unless it is demonstrated it is not feasible.'

Local Wildlife Sites

4.5.8 Policy P10 states that:

'Development likely to have an adverse effect on a ... Local Wildlife Site ... will be permitted only if the reasons for the development clearly outweigh the nature conservation value ... of the site and its contribution to wider biodiversity objectives. Where development would have an adverse effect on a site of local value, developers will be expected to incorporate measures to enhance the site or to restore the links between sites in accordance with (the Boroughs) Green Infrastructure Study, unless it is demonstrated it is not feasible.'

Environmental Enhancements and Biodiversity Net Gain

4.5.9 In respect of enhancements, including wider benefits of green infrastructure Policy P10 requires the following:

'Development should be informed by the latest information on habitats and species, and take full account of national and local guidance on conserving biodiversity, opportunities for biodiversity enhancement and for improving and restoring the Borough's green infrastructure. When appropriate, development should seek to enhance accessibility to the natural environment, especially for disabled people.'

4.5.10 It goes on to require that

'..outside designated sites, developers will be expected to take full account of the nature conservation or geological value, and the existence of any habitats or species included in the Local Biodiversity Action Plan, or sites in the Local Geological Action Plan. Developers will be required to undertake a full ecological survey and to deliver a net gain or enhancement to biodiversity, unless it is demonstrated that it is not appropriate or feasible.'

Environmental Mitigation and Compensation

4.5.11 Where development is likely to have significant harmful effects on the natural environment, as a result of the development itself, or the cumulative impact of developments, Policy P10 requires that:

'developers must demonstrate that all possible alternatives that would result in less harm have been considered.'

4.5.12 It goes on to require, where development is permitted that:

'..appropriate mitigation of the impacts and compensation where relevant will be required to deliver a net gain in biodiversity, habitat creation, landscape character and local distinctiveness. Enhancements should be taken either on the site, or in its vicinity, but where it is demonstrated

that this is not possible, offsetting in alternative strategic locations within the biodiversity or green infrastructure network, to deliver biodiversity or other objectives may be considered.

4.6 Ancient Woodland Standing Advice – Natural England

4.6.1 See Annex E for the full Advice. Core advice of relevance to this DCO consideration is provided below.

Ancient woodland

4.6.2 Ancient woodland takes hundreds of years to establish and is defined as an irreplaceable habitat. It's important for its:

- wildlife (which include rare and threatened species)
- soils
- recreational value
- cultural, historical and landscape value

4.6.3 It's any area that's been wooded continuously since at least 1600 AD. It includes both of the following which have equal protection in the National Planning Policy Framework (NPPF):

- ancient semi-natural woodland mainly made up of trees and shrubs native to the site, usually arising from natural regeneration; and
- plantations on ancient woodland sites - replanted with conifer or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi.

Mitigation and Compensation (as a last resort)

4.6.4 The competent authority and the developer should identify ways to avoid negative effects on ancient woodland or ancient and veteran trees. This could include selecting an alternative site for development or redesigning the scheme.

4.6.5 The competent authority should decide on the weight given to ancient woodland and ancient and veteran trees in planning decisions on a case-by-case basis. You should do this by taking account of the NPPF and relevant development plan policies.

4.6.6 If you decide to grant planning permission that results in unavoidable loss or deterioration, you should use planning conditions or obligations to make sure the developer: avoids damage; mitigates against damage; and (as a last resort) compensates for loss or damage.

4.6.7 Ancient woodland, ancient trees and veteran trees are irreplaceable. Consequently you should not consider proposed compensation measures as part of your assessment of the merits of the development proposal.

Existing condition of ancient woodland

4.6.8 A woodland in poor condition can be improved with good management and development proposals should enhance the condition of existing ancient woodland, where appropriate. Where a proposal involves the loss of ancient woodland, you should not take account of the existing

condition of the ancient woodland when you assess the merits of the development proposal. Its existing condition is not a reason to give permission for development.

Compensation measures

4.6.9 Compensation measures are always a last resort. These measures can only partially compensate for loss or damage. Compensation measures should be appropriate for the site and for the scale and nature of the impacts on it. A compensation strategy could include the following package of measures:

- planting new native woodland or wood pasture
- restoring or managing other ancient woodland, including plantations on ancient woodland sites, and wood pasture
- connecting woodland and ancient and veteran trees separated by development with green bridges, tunnels or hedgerows
- long-term management plans for new woodland and ancient woodland
- managing ancient and veteran trees
- planting individual trees that could become veteran and ancient trees in future
- monitoring the ecology of the site over an agreed period

Planting new native woodland

4.6.10 Establishing new trees and woodland is not a direct replacement for lost or damaged trees or woodland. You can accept large-scale woodland planting as a compensation measure alongside other measures. This could be on soil that has been moved from the destroyed area of ancient woodland ('soil translocation'). You cannot move an ancient woodland ecosystem because:

- it's not possible to replicate the same conditions at another site
- it's no longer an ancient woodland

4.6.11 New woodland creation can be effective where it links to and extends existing woodland, as long as it does not affect other semi-natural habitats or heritage features.

5.0 Conservation designations, features and interests that could be affected by the proposed project

5.1 General Introduction

- 5.1.1 The following is a brief summary of the interest features of the relevant designated areas of concern in this matter. Designation citations and 'Operations likely to damage the special interest' (OLDs) are included in Annexes E, G and H.

5.2 Bickenhill Meadows Site of Special Scientific Interest (SSSI)

- a. Bickenhill Meadows SSSI was first notified in 1991.
- b. This SSSI comprises of two separate units – the north western (NW) Unit and south eastern (SE) Unit. The SSSI includes areas of wet woodland and wet meadows that support a range of plants and other species. A number of streams flow through both SSSI units. The interest features of Bickenhill Meadows SSSI are sensitive to impacts to its hydrological system.
- c. The proposed link road runs approximately 100 – 150 metres east of the NW Unit and 250 metres west of the SE Unit.
- d. Bickenhill Meadows SSSI is notified for its MG4 and MG5 grassland communities.
- e. Further information on Bickenhill Meadows SSSI can be found in Annexes F1 and F2.

5.3 River Blythe Site of Special Scientific Interest (SSSI)

- a. The River Blythe SSSI was first notified in 1989.
- b. This SSSI comprises a wide range of natural structural features such as riffles, pools, small cliffs and meanders, combined with a high diversity of substrate types ranging from fine silt and clay in the lower reaches to sands and gravels in the upper and middle reaches and in the riffles. The structure of this river is very variable and diverse, and is important as a rare example of such in lowland Britain and a particularly fine example of a lowland river on clay. It supports a diverse plant community and botanically is one of the richest rivers in lowland England, with the most species-rich sections containing as many species as the very richest chalk streams. The SSSI is sensitive to any changes to the water quality of the river or its tributaries, or changes to the physical structure of the river or its tributaries.
- c. Proposal proximity, around 3000 metres west of the River Blythe and between 500 and 600 metres west of the Blythe tributary, Shadow brook.
- d. The River Blythe SSSI is notified for its flowing waters – slow flowing, naturally eutrophic lowland river, dominated by clay.
- e. Further information on River Blythe SSSI can be found in Annexes G1 and G2.

5.4 Shadowbrook Local Wildlife Site (LWS)

- 5.4.1 The LWS encompasses the whole of the eastern unit of Bickenhill Meadows SSSI. The LWS contains old meadows and pasture with a small stream and wet woodland. The area outside of

the SSSI designation provides a good buffer to the SSSI habitat and protection from development. The LWS would be sensitive to any changes in its hydrology.

5.5 Aspbury's Copse Ancient Woodland

- a. Aspbury's Copse Ancient Woodland is on the ancient woodland inventory. It was placed on the inventory when it was created in the West Midlands in 1982.
- b. Aspburys Copse was reduced in area on the ancient woodland inventory (AWI) in September 2018 to account for removal of highly disturbed ground originating from the construction of the M42. This information is shown in the plan at Annex I.
- c. The ancient woodland is classified, on the ancient woodland inventory, as a plantation on an ancient woodland site and covers 2.27 hectares bisected by the M42.
- d. The Proposed slip roads will cut into the ancient woodland site on both sides of the M42.
- e. The proposed new motorway service junction lies just to the north of Aspbury's Copse.

6.0 Issues not for consideration in these Written Representations

6.1.1. Natural England can confirm also those themes and issues within our remit where no concerns exist at this time. These are as follows:

European Sites

6.1.2 Natural England has reviewed the Habitat Regulations Assessment – ‘No Significant Effects Report’ submitted as part of the DCO and has concluded there is no potential for Likely Significant Effects (LSE) or ‘Adverse Effects’ on the Integrity of any European Sites. This was confirmed within our section 42 response (see Annex D, page 3 for further information).

Other Sites of Special Scientific Interest (SSSI)

6.1.3 Natural England considered likely impact upon relevant SSSI’s as part of the section 42 review (Annex D, page 4). We concluded at the time that impacts on Coleshill and Bannerley Pools SSSI was unlikely.

6.1.4 At this time, we also considered impacts upon The River Blythe SSSI also unlikely. However, we have since reconsidered as there may construction impacts and operational impacts associated with altered water quality. We welcome the mitigation measures provides in the ES Chapter 14 – relating to road drainage and the water environment and recommend securing via condition. We will not discuss these further here.

Likely Air Quality Impact upon Protected Sites

6.1.5 Natural England confirms that it has considered the DCO application in respect of likely impact upon the SSSI’s in the vicinity of the development site. This was an issue we raised with the applicants consultants at a recent meeting (14 March 2019) although this has not been minuted (Annexes C1 and C2).

6.1.6 Natural England raised this issue as a result of the change to ‘the Habitats Regulations’ in 2017¹⁸ affecting assessment of projects likely to generate road traffic emissions to air which are capable of affecting European Sites. This change had been prompted by the ‘the Wealden Judgment 2017’¹⁹.

6.1.7 In June 2018 we published the following document ‘*Natural England’s approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001)*’ for the express purpose of helping competent authorities to better understand Natural England’s own approach when applying the Habitats Regulations to these matters in its role as statutory adviser. Whilst developed for European Site assessment, we make it clear that the assessment approach outlined in the document also applies to sites of national protection.

6.1.8 We can confirm that we have since reviewed the air emissions data contained within the Environmental Statement (ES) (specifically paragraphs 9.9.131 to 9.9.144 of the biodiversity chapter) and whilst the ES makes no specific reference to our guidance we welcome the

¹⁸ Conservation of Habitats and Species Regulations 2017

¹⁹ High Court judgment in *Wealden v SSCLG* [2017]

approach taken. Their assessment has focused on whether these sites are sensitive to nitrogen, whether they currently exceed their critical loads, and how much additional NOx will be deposited due to the road construction, expressed as a % of the site's critical loads. Inclusion of this evidence and approach is consistent with our guidance.

- 6.1.9 The ES concludes there will be no significant effect on any national site from increased air emissions. The need for further air quality cumulative consideration need, therefore, not be taken forward, and given these results and we accept no further consideration in this regard.

European Protected Species

- 6.1.10 Natural England confirms that protected species issues do not form part of these Written Representations. A summary of our reasoning is provided below.
- 6.1.11 On 30 October 2018, Natural England received three draft mitigation licence applications, in relation to bats, great crested newts and otters (reference numbers EPS.CWM/BA/000111, EPS.CWM/GC/000111 and SPMWLM/BA/000111). Following assessment of these draft applications, on 16 November 2018, Natural England confirmed that, on the basis of the information provided, it sees no impediment to licences being issued, should the decision be made to 'make' the DCO.
- 6.1.12 Should the DCO be 'made' then the mitigation licence applications must be formally submitted to Natural England. At this stage any modifications to the timings of the proposed works (e.g. due to ecological requirements of the species concerned) must be made and agreed with Natural England before a licence is granted.

7 Natural England's concerns and advice

7.1 The Principal Issues

7.1.1 Natural England identified the following principal issues in its Relevant Representations which were submitted to the Planning Inspectorate on 28 April 2019 (Annex A). These are:

- a. Likely adverse impacts to Bickenhill Meadows SSSI**
- b. The need for further compensation improvements associated with the loss of Ancient Woodland**

7.1.2 Natural England has also questioned the applicants in respect of its proposed quantity and quality of environmental enhancements associated with the scheme. (Annex A, paragraph 1.6, bullet 3). Given the scale of the scheme and recent Government Biodiversity Net Gain mandate we would expect the applicants to demonstrate a clear commitment to Net Gain as part of these proposals. We feel there is more that could, and should, be done to offset the long term and permanent impacts and losses of the proposed development for the benefit of the local community, people and wildlife. There is no doubt that the road itself will create further severance of habitat in the area, in perpetuity.

7.1.3 Since submission of the DCO application, the issues set out above have been subject to further discussions between Natural England, the Warwickshire Wildlife Trust (WWT), the Woodland Trust (TWT) and the applicant. Further site investigations and development of the scheme has, therefore, progressed. These will be outlined in detail within the Statement of Common Ground (SGC) which is, we understand, is currently in development and being led by the applicant's environmental consultants.

7.1.4 The principal issues will be outlined in detail below along with any updates on the progress or resolution of issues.

7.2 Likely adverse impacts to Bickenhill Meadows SSSI

Hydrological Impacts associated with DCO application

7.2.1 Bickenhill Meadows SSSI comprises of two separate units (NW Unit and SE Unit) located either side of the proposed link road. The SSSI includes areas of wet woodland and wet meadows that support a range of plants and other species. The cutting and associated works are also in close proximity to streams that flow through both SSSI units, which may be impacted during the construction and operation phases. Natural England is concerned that the proposed DCO would result in likely adverse impacts to the SE unit and adjacent nature reserve which is also a wet meadow habitat, reliant on a particular water supply to maintain the vegetation assemblage for which the site is designated. (See Annexes F1 and F2).

Hydrological Mitigation embedded in the DCO application

7.2.2 In accordance with best practice, the Scheme's design should follow the mitigation hierarchy. Natural England is informed by the applicant that the potential to alter the horizontal or vertical alignment of the road any further is limited in that it has already moved as far east as possible to avoid impact upon the NW SSSI Unit. We accept, therefore, that approaches now need to focus upon options for mitigation and compensation.

- 7.2.3 In respect of the SW SSSI Unit – Natural England is concerned that the proposed DCO mitigation to retain water supply to this grassland relies on a heavily engineered solution which we do not consider sustainable. Specifically, the applicants have proposed an emerging design that focuses on maintaining the existing hydrological regime of the SSSI, including the placement of an impermeable barrier within the cutting to the east and installation of a pumping system to infiltration system design. Whilst Natural England accepts that the proposed pumping solution is likely to be effective, it would require assurances that the infrastructure would be financed, maintained and monitored by Highways England into the future. Natural England would also require this system to be in place ahead of any development likely to impact upon the SSSI hydrology. Therefore, a phased approach would be required in order to ensure that there would be no harm to the SSSI. Natural England would not accept proposals which only implemented mitigation after the site had been impacted.
- 7.2.4 Crucially, however, Natural England has stressed the importance of investigating of an alternative solution which is more innovative, passive, and maintains ecological processes, as a matter of priority. The proposed heavily engineered solution outlined above is an ‘end of pipe’ solution which, whilst would likely ensure the site was not damaged, cannot adequately replace a naturally functioning ecosystem. The proposed solution relies heavily on continued human intervention to ensure effectiveness. We would strongly encourage the applicants to, instead, design a solution which is able to safeguard the Site’s features via more passive adaptation of the natural hydrological processes informed by further monitoring.

Ground Investigations in the DCO

- 7.2.5 Natural England’s advice has informed the ground investigation, monitoring, design and assessment work undertaken to date regarding Bickenhill Meadows SSSI. This work has been undertaken in order to better understand the underlying geology, hydrogeology, the potential for the scheme to affect groundwater flows / levels and to establish whether the SSSI’s grassland communities at critical times are more sensitive to groundwater levels or rainfall.
- 7.2.6 From the findings submitted in the DCO we accept that the scheme is unlikely to impact upon the special features of the NW Unit. However, a catchment loss of 21% was identified for the SE Unit.
- 7.2.7 Natural England has queried whether the proposed baseline monitoring thus far is sufficient to fully understand how the hydrology of the how the site operates, given natural variability including 2018’2 exceptionally dry summer. We understand that the dip well monitoring will continue throughout examination of the DCO which is likely to provide us with 4 months of further evidence.
- 7.2.8 As it DCO evidence stands, the potential for effects on groundwater flows and the SSSI grassland communities has yet to be fully determined. We are aware, however, that the applicants have developed a series of ‘precautionary mitigation’ options focused on the avoidance and reduction of impact, consistent with the mitigation hierarchy. These are further discussed below at paragraphs 7.2.10 – 7.2.20.

Concluding Statement - hydrological impacts in the DCO

7.2.9 In summary, Natural England confirms that based on the information provided in the DCO, the proposed development is likely to adversely impact upon Bickenhill Meadows SSSI SE Unit. We welcome the commitment to undertake further groundwater monitoring and further hydrological investigations as necessary. The applicants are currently considering mitigation through use of either a heavily engineered solution or a more passive solution which we would prefer. We are content that the agreed monitoring and continuing dialogue around mitigation will bring to bear an appropriate solution, however, we suggest that a heavily engineered solution should be seen as a last resort.

Further scheme development post DCO submission

7.2.10 Natural England welcomes the further work the applicants have been undertaking since submission of the DCO in respect of presenting an improved solution to the SSSI mitigation, in response to our concerns.

7.2.11 On 14 March 2019, Natural England met with the applicants, their environmental consultant team and Warwickshire Wildlife Trust to discuss this further work and potential scheme alterations. The minutes of this meeting are provided at Annexes C1 and C2. At this meeting, the applicants provided an update to the hydrological monitoring since the DCO submission and a subsequent update to the hydrological conceptual model.

7.2.12 Natural England accepts the following statements made by the applicants:

- That the results of the dip well monitoring so far suggest that the SSSI is rainwater fed.
- That the development will inevitably lead to a loss of the catchment to the SW SSSI Unit, however, that the 'significance' of this loss is yet to be determined. (The initial conclusions of the micro drainage exercise undertaken indicate that the 'likely' loss of overall catchment as contained within the DCO Scheme [c.21%] are now expected to be more in the region of a 2% catchment loss. This is a broad range of figures which are yet to be further evidenced and the 'significance' of the figure determined. Natural England has requested that the level of tolerance of the 2% figure be shared with NE along with the assumptions of the micro drainage exercise so that we can have further confidence in any revised mitigation scheme for the SSSI.); and
- That the central ditch (SW SSSI Unit) does not play an important role in the recharge process.

7.2.13 The applicants then tabled 5 Options ('A-E') as potential solutions, including examples of both pumped and passive, and outlined merits and disbenefits of each. Natural England welcomed these efforts and, specifically, took 'Options A-C' forward for further consideration. These were further discussed and 'Option C' identified as the preferred option for both Natural England and The Warwickshire Wildlife Trust (WWT). This is provided at Annex H.

7.2.14 Option C' is a passive system which seeks to draw water from the Catherine-de-Barnes Road (B4438). The piping / drainage provisions cross WWT land where current drainage does not currently exist.

7.2.15 Whilst, in principle, supportive of Option C going forward, Natural England and WWT seek further confirmation from the applicants in respect of:

- Further evidence demonstrating whether or not the water drawn from the Catherine-de-Barnes Road (B4438) would need treating before entering the SSSI unit;
- Further evidence determining the 'significance' of the catchment loss to the SSSI SW Unit;
- More clearly defining the potential impacts upon WWT land to understand implications of land ownership and access requirements;
- More clearly defining what prior provision will be made in the event, once operational, the passive solution indicated that insufficient water was being fed into the SSSI Unit. The applicants agreed to consider the installation of 'ghost infrastructure' for this purpose.

7.2.16 These above were requested at the meeting and are still awaited.

Habitat Enhancement and Biodiversity Net Gain

7.2.17 Natural England is disappointed that the application currently fails to deliver on Net Gain in accordance with the aspirations of the Defra 25YEP.

7.2.18 Natural England would encourage further work to explore the potential for further habitat enhancement features helping to offset, in part, the segregating nature of the new road infrastructure.

7.2.19 Importantly, Natural England notes the SE Unit of Bickenhill Meadows SSSI is owned by Warwickshire Wildlife Trust (in addition to a designated Local Wildlife Site to the south of the Unit), and is surrounded by Shadowbrook Meadows Local Nature Reserve (LNR). We advise ongoing dialogue with the Warwickshire Wildlife Trust and the local authority in respect of potential impacts and delivery of a project wide mitigation and compensation package.

7.2.20 We would also welcome an understanding as to how the NW Unit management and immediately adjacent habitat enhancement area will align with the objectives and management of the adjacent management agreement with Birmingham Airport, ensuring landscape-scale connections and continuity. This in accordance with NPSNN paragraphs 5.23 and Solihull Local Plan Policy P10.

7.3 Ancient Woodland Concerns

Likely Impact upon Ancient Woodland as a result of the DCO proposals

7.3.1 Aspburys Copse is the only ancient woodland shown on the Ancient Woodland Inventory (AWI) where loss, as well as direct impacts, will definitely occur. The construction of two new slip roads

to service the new motorway junction 5A, will bisect both halves of Aspburys Copse. This will result in direct loss of this irreplaceable habitat, and severe disturbance.

- 7.3.2 The development will incur direct adverse impacts such as habitat loss, disturbance to soils and hydrology as well as likely impacts of noise, vibration, light and air pollution, species disturbance and restriction of movement. The slip road construction will cause further fragmentation of this already fragmented woodland habitat, impacting upon ecosystem and wider ecological network functioning.
- 7.3.3 Natural England notes that a number of the Scheme revisions have been made in order to help minimise the extent of permanent land take required from within Aspbury's Copse. These include realignment of the J5A slip roads and reduction in span of Solihull Road overbridge. These measures are welcomed by Natural England and are in accordance with the mitigation hierarchy.
- 7.3.4 Additionally, Natural England has already confirmed that the 'highly disturbed area' within Aspbury's Copse, created when the M42 was constructed, no longer constitutes ancient woodland and has been removed from the Ancient Woodland Inventory. Natural England provided the digital data for this to the applicant's consultants on 19 September 2018. Based on this digital data and the most recent Scheme, Natural England calculates a loss of ancient woodland to both parcels (0.06ha from the eastern parcel, to a total of 1.05ha) and a greater 0.27ha loss from the western parcel to 1.22ha). The total reduction in classified ancient woodland, from this removal of 'highly disturbed land', is 0.33ha. We understand this digital data will help further inform detailed design work going forward. This information is shown in the plan featured at Annex I.
- 7.3.5 Natural England recognises another ancient woodland in the vicinity – Barbers Coppice, which may incur impacts such as noise, light and air pollution both during construction and operation. We would welcome efforts to reduce potential impact directly and indirectly (see Annex J).

Cumulative impacts associated with the motorway including the Motorway Service Area proposal

- 7.3.6 The impacts of the scheme are likely to be compounded by a separate proposal for a new motorway service area. Natural England advises the need to take into account cumulative impacts in this respect
- 7.3.7 Cumulative impacts over time, particularly of ancient woodland loss and severance caused by the M42 as a whole, including its construction, should also be considered when determining impacts and compensation.

The proposed DCO compensation of Ancient Woodland

- 7.3.8 The proposed compensation package for the loss of and damage to ancient woodland at Aspbury's Copse is the creation of woodland by planting on a site immediately south of the eastern half of the wood, where translocated ancient woodland topsoil will be spread. The proposed compensation ratio is 3:1. Natural England deems this compensation ratio too low for an irreplaceable habitat (See paragraphs 7.3.11 – 7.3.16 below). It is of note that whilst irreplaceable habitats are not covered by the emerging Defra's Biodiversity Metric 2018 suggested evidenced compensatory area ratios for

the most technically difficult 'replaceable' habitats are of the order of 24:1 (See Annex K – 'Updating the Defra Biodiversity Metric').

- 7.3.9 NPPF Paragraph 175 requires '*development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are **wholly exceptional** reasons and a suitable compensation strategy exists*'.
- 7.3.10 Since the 2018 revision of the NPPF there is growing evidence that developments are being refused partly or wholly on the basis of loss and damage to ancient woodland; however, evidence around the application of the revised NPPF for compensation is currently lacking.

Natural England's position in respect to what constitutes appropriate compensation

- 7.3.11 Compensation needs to be considered on a scheme by scheme basis, exploring all opportunities where unavoidable irreplaceable habitat loss is to occur. The level of compensation should reflect the amount (area) and nature of the irreplaceable habitat loss. Cumulative losses of ancient woodland should be considered when determining appropriate compensation.
- 7.3.12 Ancient woodland is deemed irreplaceable largely because of the time taken to reach the target community being more than 100 years and beyond the scope of scheme proposals. New planting, even on ancient woodland soils, will take long periods to develop the species and structural diversity of the target community. This time lag must be taken into account when considering compensation ratios, increasing compensation area to allow for the fact that the condition of the compensatory habitat will be sub-optimal for the duration of the scheme.
- 7.3.13 Natural England welcomes the location of the proposed compensation area adjacent to the southern boundary of the eastern half of Aspbury's Copse. However, this is a single compensation measure affecting a single location for compensatory habitat. The ancient woodland itself is already severed by the existing M42, and this further loss will impact upon both halves of the woodland yet compensatory benefits are only provided on one side of the motorway. This does not, in our view, provide adequate compensation in terms of habitat buffering and functional connectivity to the wider ecological network. Moreover, whilst Natural England recommends maximizing connections to the wider ecological network, such as via hedgerow linkages, compensatory areas are best located in functional blocks rather than in linear strips.
- 7.3.14 In addition to the proposed compensation area, Natural England encourages the applicant to seek further opportunities to enhance Aspbury's Copse and the ecological networks in the wider area by buffering, extending and linking woodland and trees, e.g. by new woodland planting and hedgerow creation and restoration. The current condition and management of ancient woodland in the area should be considered when designing the compensation package, including measures to ensure positive management of Aspbury's Copse and nearby Barber's Coppice. We understand that both Aspbury's Copse and Barber's Coppice are narrowly located outside the airport safeguarding zone and hence opportunities for further planting may apply. Hence, long term management plans should be drawn up for Aspbury's Copse, including the compensatory planting area, and any other ancient woodlands to be managed as part of an improved compensation package.

7.3.15 In particular, as ancient woodland losses will occur in both halves of the Aspbury's Copse woodland it would be useful to explore further woodland creation contiguous with the western half of the wood. This could further extend and buffer Aspbury's Copse. Furthermore, additional woodland creation north of Aspbury's Copse would buffer the woodland from potential impacts of the proposed new motorway service junction. Natural England advises that opportunities to enhance the diversity of additional created woodland, such as by ground flora species introductions, should be explored.

Soil translocation methodology

7.3.16 Natural England advises that the evidence base for the success, or otherwise, of translocation of ancient woodland soils, is lacking, however, we feel it is preferable to retain this important component of the ecosystem, as close to the donor site as possible, as is proposed.

7.3.17 Natural England has no objections to the proposed soil translocation methodology, the allocated area of soil translocation or the allocated area for contiguous replanting proposed, as detailed in the associated Technical Note to the environmental statement, provided that the soil types are suitable. However, we would urge that methods to translocate an intact soil profile and field layer are further explored. Such techniques are widely used in grassland translocation, and whilst we recognise the additional difficulties that woodland soils represent, we think that taking this type of approach where practicable will be beneficial.

7.3.18 We advise the completion of a soil survey at the receiver site, because evidence shows that translocations have only been successful where the receiver site soil types have been matched to the donor site. If the soil types do not match, an alternative site (preferably close to another ancient woodland) should be sought. We understand such a survey was planned for October 2018 although we are uncertain we have had sight of the full results. We further advise long term monitoring of the translocated site; with data being made publically available to allow its incorporation into the evidence base for ancient woodland soil translocation. If additional compensatory planting were provided, the opportunity for a control site in a soil translocation experiment arises - Natural England encourages exploration of this opportunity.

Fungi and Lichen Surveys

7.3.19 In order to fully assess the impacts on fungi and lichen, relevant surveys will need to be carried out regularly. A refresh of the 2015 Survey was expected September 2018 but these do not form part of the DCO and Natural England cannot find evidence of their position from the March 2019 meeting draft notes (Annex C1 and C2). When this information is available Natural England could provide further advice.

Conclusion on Ancient Woodland

7.3.20 In summary, Natural England confirms that, based on the information provided to date, the proposed development will result in direct loss to Aspbury's Copse Ancient Woodland. This does not accord with the objectives of the NPSNN, NPPF 2018 Paragraph 175, aspirations of the Defra 25 YEP, Solihull Local Plan Policy P10 or Natural England's Standing Advice which collectively seek to protect and enhance this precious and irreplaceable asset for all.

7.3.21 We understand from the applicant's environmental consultants that the location of the new junction cannot be moved and, therefore, direct loss is unavoidable. Further scheme changes are seeking to mitigate loss and compensation in the form of soil translocation and compensatory planting is proposed. Should your authority determine that the DCO proceed despite the impact upon ancient woodland, further evidence and detailed dialogue is required in order to ensure the loss of this irreplaceable habitat is more appropriately compensated.

7.4 Conclusions

- 7.4.1 *Bickenhill Meadows SSSI* - Natural England considers the existing mitigation scheme as contained in the DCO, deliverable but not ideal. Since the submission, the applicants have sought to further refine the mitigation scheme based on further hydrological monitoring evidence and a focus upon a more passive, naturalistic approach. This is welcomed by Natural England. In principle, we are supportive of the 'Option C' mitigation solution tabled at the 14 March meeting. However, this needs further refining with further evidence. The nature of, and reasoning for, this further evidence was agreed at the meeting yet is still awaited.
- 7.4.2 *Aspburys Copse Ancient Woodland* - Natural England welcomes the efforts by the applicants to modify scheme design which sought to directly reduce the loss and damage to ancient woodland. We also welcome the siting of compensatory measures adjacent to the eastern side of this important asset. However, policy dictates that ancient woodland is an 'irreplaceable habitat' which must be protected and conserved. The compensation package as provided in the DCO has seen no further progression since the submission, despite further discussions. We consider the existing package unacceptable on grounds of: low habitat compensation ratio; lack of compensatory planting for the western half of Aspbury's Copse; and poor connectivity of the compensatory area to the wider ecological network (hence limiting its long term functional performance). Furthermore, more detail is needed on long term management and monitoring.
- 7.4.3 *Biodiversity offsetting* – Natural England is disappointed that this significant scheme does not aspire to deliver in terms of Biodiversity Net Gain. We welcome use of the Defra Biodiversity Metric in helping measure losses and gains and hence, offset, individual losses. However, we consider this exercise potentially fails to account for the wider local impact caused by the introduction of this significant linear road feature itself, hence severing existing and potential Nature Recovery Networks in perpetuity. We would welcome further dialogue around this including the potential greening of Solihull overbridge which was once a consideration but regrettably did not feature in the DCO.

Natural England

Part II: Annexes

M42 J6 Scheme Improvement (NSIP) – Relevant Representations

Planning Inspectorate Reference: TR010027

FINAL prepared by Susan Murray 27/04/2019

- 1.1. Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.
- 1.2. Natural England's advice in these relevant representations is based on information submitted by Highways England in support of its application for a Development Consent Order ('DCO') in relation to the M42 J6 Scheme Improvement (*the project*).
- 1.3. Natural England has been working closely with the Highways Agency to provide advice and guidance since 2017. Natural England has also been working with the Warwickshire Wildlife Trust to provide coordinated advice.
- 1.4. These relevant representations contain a summary of what Natural England considers the main issues to be in relation to the DCO application, and indicate the principal submissions that it wishes to make at this point. Natural England will develop these points further as appropriate during the examination process. It may have further or additional points to make, particularly if further information about the project becomes available.
- 1.5. Our key concerns comprise:
 - (1) **Likely adverse impacts to Bickenhill Meadows SSSI. The south eastern SSSI unit and adjacent nature reserve is a wet meadow habitat, reliant on a particular water supply to maintain the vegetation assemblage for which the site is designated.**
 - We are concerned that the evidence currently informing the DCO application is insufficient to understand the hydrology of the site and, therefore, the required mitigation to protect the grassland habitat.
 - We are concerned that the proposed mitigation to retain water supply to this grassland relies on a heavily engineered solution which we do not consider sustainable.
 - (2) **Part destruction of Aspbury's Copse ancient woodland which is an irreplaceable habitat.**
 - We do not consider that the compensation described within the DCO application is sufficient or proportionate.
- 1.6. Outstanding matters requiring attention:
 - We ask that further evidence is provided to facilitate a good understanding of how the SSSI grassland is supplied with water sufficient to sustain the rare grassland assemblage and that a sustainable solution is found to retain this water supply to the SSSI. We are aware that site monitoring is ongoing. We

are also aware the applicants are working towards a more naturalistic solution and welcome this development.

- We ask that the Ancient Woodland compensation package is re-visited in both scale and form. Effective compensation expectations are for more functional blocks of woodland as opposed to linear strips.
- We would welcome a clear commitment to achieving valuable Biodiversity Net Gain in respect of this project and the adoption of the DEFRA metric. In consideration of the scale of the scheme and recent Biodiversity Net Gain mandate we would expect Highways England to deliver an exemplar scheme in respect of net gain. Further, whilst we accept that the opportunities for particular planting may be limited by the Airport Safeguarding Zone, we do not consider this limits ecological enhancements related to grassland. Specifically, we would seek to ensure the SSSI NW Unit area is supported and enhanced by adjacent offsetting and turf translocation measures.

1.7. Natural England will continue discussions with Highways England to seek to resolve these concerns and agree outstanding matters in a statement of common ground. Failing satisfactory agreement, Natural England advise s that these matters will require consideration by the Examining Authority as part of the examination process.

M42 Junction 6 Improvement Scheme
Stakeholder meeting notes

Meeting:	Meeting with Natural England to update the organisation on the status of the scheme, and to discuss specific matters relating to: Bickenhill Meadows SSSI; Aspbury's Copse; Biodiversity offsetting; species licencing; and mitigation.																						
Date:	18 th September 2018 – 1:00pm																						
Venue:	AECOM 12 Regan Way Chetwynd Business Park Chilwell Nottinghamshire NG9 6RZ																						
Meeting notes by:	Jamie Gleave																						
Attendees:	<table> <tr> <td>Jamie Gleave (JG) [EIA]</td> <td>AECOM</td> </tr> <tr> <td>Graeme Cowling (GC) [EIA]</td> <td>AECOM</td> </tr> <tr> <td>Marcus Wainwright-Hicks (MWH) [Biodiversity]</td> <td>AECOM</td> </tr> <tr> <td>Jeremy Truscott (JT) [Biodiversity]</td> <td>AECOM</td> </tr> <tr> <td>Tim Jones (TJ) [Hydrology]</td> <td>AECOM</td> </tr> <tr> <td>Owen Tucker (OT) [Hydrology]</td> <td>AECOM</td> </tr> <tr> <td>Susie Murray (SM)</td> <td>Natural England</td> </tr> <tr> <td>Paul Horswill (PH)</td> <td>Natural England</td> </tr> <tr> <td>Mike Robinson (MR)</td> <td>Natural England</td> </tr> <tr> <td>Emma Goldberg (EG)</td> <td>Natural England</td> </tr> <tr> <td>Ian Butterfield (IB)</td> <td>Natural England</td> </tr> </table>	Jamie Gleave (JG) [EIA]	AECOM	Graeme Cowling (GC) [EIA]	AECOM	Marcus Wainwright-Hicks (MWH) [Biodiversity]	AECOM	Jeremy Truscott (JT) [Biodiversity]	AECOM	Tim Jones (TJ) [Hydrology]	AECOM	Owen Tucker (OT) [Hydrology]	AECOM	Susie Murray (SM)	Natural England	Paul Horswill (PH)	Natural England	Mike Robinson (MR)	Natural England	Emma Goldberg (EG)	Natural England	Ian Butterfield (IB)	Natural England
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Paul Horswill (PH)	Natural England																						
Mike Robinson (MR)	Natural England																						
Emma Goldberg (EG)	Natural England																						
Ian Butterfield (IB)	Natural England																						
Apologies:	None.																						
Numbers attending:	11																						

Comment		Action / Owner
1.0	Introductions	
1.1	GC opened the meeting with introductions and set out the purpose of the meeting.	-
1.2	GC presented an overview of the status of the M42 Junction 6 Improvement scheme. This identified the key design changes made since last meeting Natural England in April 2018, summarised the work being undertaken as part of the environmental impact assessment, and set out the approach to mitigation being adopted on the scheme.	
1.3	GC confirmed to attendees that Highways England plans to submit the Development Consent Order application for the scheme in later November 2018.	
2.0	Environmental Mitigation and Design Considerations	
2.1	GC explained that the approach to environmental mitigation across the scheme has been influenced by the restrictions imposed by Birmingham Airport's safeguarding zone, which coincides with much of the land required to construct, operate and maintain the scheme. This constraint has limited the extent to which landscaping can be used to visually screen and contain the scheme in views, and to provide ecological mitigation/offsetting.	
2.2	OT stated that ponds have been avoided in the Drainage Strategy due to their potential to attract birds (thereby increasing the potential for bird strike within the safeguarding zone); however alternative SuDS measures including swales and wetlands have been included.	
2.3	GC noted that the vast majority of the scheme will be unlit.	
2.4	SM queried whether consultation had been undertaken with Warwickshire Wildlife Trust. GC confirmed that a meeting was planned with the Trust, and that meetings had also been undertaken with Solihull Metropolitan Borough Council.	
3.0	Habitats Regulations Assessment	
3.1	GC had circulated a copy of the draft Habitats Regulations Assessment: No Significant Effects Report to SM in advance of the meeting. SM noted that she had reviewed this, and confirmed that Natural England was in agreement with the findings of the screening exercise in that there would be no requirement for an Appropriate Assessment.	
4.0	Biodiversity Assessment: Overview	
4.1	MWH presented a summary of the biodiversity assessment being progressed as part of the environmental impact assessment process, highlighting the findings of baseline surveys and the designated sites, habitats and species that are predicted to experience impacts from the scheme.	
4.2	SM queried why the River Blythe SSSI and Coleshill and Bannerly Pools SSSI were not included in the assessment. MWH clarified that the assessment has not predicted any effects on either of these receptors.	
4.3	MR queried whether the scheme will result in water quality effects on the River Blythe SSSI, given that all local watercourses flow into this waterbody. OT clarified that none of the scheme road outfalls discharge directly to the Blythe. There are outfalls to its tributaries (Hollywell Brook and Shadow Brook), and for these the water quality risk assessments undertaken have shown that these would be considered priority outfalls by Highways England. This scheme includes various design measures to treat road runoff and provide greater spillage containment which represents a significant improvement over the existing situation, as there is currently no known treatment of road runoff or spillage containment and the M42 is a heavily trafficked road.	

4.4	MWH confirmed that Great Crested Newt connectivity would not be severed by the scheme, as all ponds and habitats are located to the east of the proposed new link road.	
4.5	MWH noted that some surveys (e.g. aquatics and reptiles) are still ongoing.	
4.6	MWH stated that reptiles had originally been scoped out of the biodiversity assessment, but that these have been partially surveyed whilst undertaking other surveys where land access has been granted.	
5.0	Protected Species Licencing and Ecological Mitigation	
5.1	MWH stated that the project is looking to submit draft licences to Natural England around the end of October 2018. PH noted that Natural England would need to review the raw data and information relating to any access limitations encountered, alongside the draft licences. MWH noted that the intention is to provide Natural England with a focused report to support the review and evaluation of the draft licences; this would only identify areas where presence of a legal constraint from species has been confirmed, such as a bat roost (i.e. not where an absence of species was noted). Attendees were in agreement that this was an appropriate approach to take to support the draft licences.	
5.2	MWH noted that Letters of No Impediment would be required from Natural England for submitting as part of the Development Consent Order application in November 2018. PH was content that, subject to the required information being submitted, Natural England could meet these timeframes.	
5.3	MWH presented the proposed mitigation measures for licence and non-licence species. A combination of design-based measures (embedded mitigation) and construction-based measures (standard measures) are being proposed to mitigate adverse effects on species, the exact location of which has yet to be determined due to ongoing assessment and landowner engagement.	
5.4	PH noted that Natural England was comfortable with the inclusion of a badger tunnel as a means of restoring the connectivity of badger setts and habitats that would be severed by the new link road. MWH agreed to share the confidential findings of the badger surveys with PH in advance of submitting a draft licence for this species.	MWH
5.5	GC set out the purpose and content of the Bird Strike Management Plan that has been produced following engagement with Birmingham Airport, noting that conventional measures will be used to reduce the risk of birds conflicting with flight paths.	
5.6	JT and MWH stated that the precise form and location of bat mitigation had yet to be determined; however, both noted that bat boxes would likely be the preferred solution (as opposed to any free standing structures). Potential sites for mitigation were discussed, and the possibility of siting these in land under the control of Warwickshire Wildlife Trust and within Bickenhill Meadows SSSI was mentioned. PH agreed with this approach, subject to a review of the final survey findings and impact assessments, and agreed to return to AECOM (MWH) on the level of commitment and certainty that Natural England would require to inform licencing.	PH
5.7	MWH identified the ponds that have confirmed Great Crested Newt presence, and explained the precautionary approach to mitigation. PH agreed with the approach to licencing for this species.	
6.0	Biodiversity Offsetting and Net Gain	
6.1	MWH introduced the approach to biodiversity offsetting on the Scheme, and shared information on the integrated approach to landscaping and biodiversity mitigation/enhancement. GC noted that the plans shared reflect an earlier design position, and that these are now being refined to account for the changes noted in his presentation at the start of the meeting.	
6.2	MWH confirmed that the DEFRA metric has been applied across the Scheme to establish the extent of habitat loss, and to calculate the area and type of habitat required to offset this loss – the objective being to achieve an overall net gain in	

	biodiversity. MWH confirmed that the Warwickshire metric for biodiversity offsetting would not be used in the case of this DCO application	
6.3	IB queried how biodiversity mitigation and enhancement measures intend to be secured on the Scheme. JG responded by stating that a separate report (Biodiversity Offsetting Report) is being prepared as part of the Development Consent Order application documentation, which will present all the work relating to biodiversity offsetting and will set out the mechanisms for securing such measures.	
7.0	Ancient Woodland (Aspbury's Copse)	
7.1	GC noted that a Technical Note covering the proposed approach to mitigating effects associated with landtake within the Ancient Woodland at Aspbury's Copse had been circulated to Natural England for consideration. GC highlighted that the design of the scheme in this location has included departures from standards to minimise the extent of permanent landtake required within Aspbury's Copse.	
7.2	MWH outlined the approach to the translocation of soils at Aspbury's Copse, and the area and extent of contiguous replanting proposed.	
7.3	EG queried the allocated area for soil translocation and compensation, and enquired as to whether a soil survey had been undertaken. GC noted that a project-wide soil survey is planned for October 2018.	
7.4	EG requested that the title of the Technical Note be adjusted to reflect that the translocation of Ancient Woodland relates to the soils.	
7.5	EG queried whether the proposals for Aspbury's Copse have been included in any wider biodiversity offsetting calculations. MWH confirmed that as irreplaceable habitat the proposed soil translocation and planting for loss of ancient woodland was not being factored into the calculation, which is in accordance with the DEFRA biodiversity offsetting metric being applied on the scheme.	
7.6	EG noted that high levels of air pollution at Aspbury's Copse are high. MWH noted that the air quality assessment has recorded a local reduction in pollutant levels at this location with the operational Scheme in place, and JG explained that this was attributable to traffic flows on the M42 motorway being displaced onto proposed M42 Junction 5A and new link road.	
7.7	SM and EG confirmed that Natural England has no objection to the approach to soil translocation at Aspbury's Copse, or the location of the compensation planting. SM did, however, emphasise that Natural England's preference is to include planting where feasible on the Scheme. JG noted this, and confirmed that the approach to landscaping has worked within the constraints imposed by the safeguarding zone and that opportunities have been harnessed, where possible, to plant earthwork cuttings and take severed/redundant land parcels for mitigation.	
7.8	SM queried the rationale for why the proposed M42 Junction 5A is located partly within the Ancient Woodland. GC clarified that a detailed options appraisal had been undertaken over time to determine the optimum location of the new junction, taking into account engineering requirements and design standards. JG informed SM that the Environmental Statement will provide a narrative on the historic studies and decision-making that has informed the Scheme design, and referred SM to the Scheme Assessment Report which is available on Highways England's website: https://highwaysengland.co.uk/projects/m42-junction-6-improvement/	
7.9	GC noted that the design work for the Ancient Woodland is reliant on receipt of the revised digital polygon of its boundaries. SM confirmed this will be forwarded to GC as soon as it becomes available.	SM
8.0	Bickenhill Meadows SSSI	
8.1	OT presented an overview of the ground investigation, monitoring, design and assessment work undertaken to date regarding Bickenhill Meadows SSSI, in order to better understand the underlying geology, hydrogeology, the potential for the Scheme to affect groundwater flows/levels, and to try and establish whether the SSSI's grassland communities at critical times are more sensitive to	

	groundwater levels or rainfall.	
8.2	TJ noted that he has been visiting the SSSI regularly since land access had been granted, and that the conditions at the site had been recorded as part of the process of dipwell installation (to monitor groundwater levels).	
8.3	OT presented the emerging findings of the studies into the SSSI which were summarised on the presentation slides and detailed in the Version 4 of the Technical Note AECOM has produced. The ground investigations undertaken around the periphery of the north west unit have not encountered groundwater, and have confirmed that Mercia Mudstone is found at a shallow depth of circa 0.5m. Investigations within and surrounding the south east unit encountered water at differing depths, and confirmed that there are thicker deposits of superficial geology consisting of a mixture of sand, gravel and clay. Dipwells have been installed but as yet only limited recordings of water in them had been recorded	
8.4	OT described the emerging conceptual model that has been developed as part of the ongoing studies. Although boreholes within the SSSI are yet to be completed, the results of boreholes just to the east indicated that the north west unit is separated from the cutting by the less permeable Mercia Mudstone that is also at a higher elevation. As there are no significant superficial deposits or shallow groundwater, it is unlikely that the road cutting would intercept or cause the draw-down of any groundwater. Based on this information, it is considered unlikely that the Scheme would affect groundwater flows associated with this unit.	
8.5	For the south east unit, OT noted that we are working to two hypotheses: 1. That an isolated bowl of mixed superficial deposits exists across the unit, that are surrounded by permeable Mercia Mudstone (which would render no significant effect); or 2. A narrow trench of mixed superficial deposits exists between the unit and Catherine-de-Barnes Lane, for which the groundwater flows could be affected by the proposed road cutting (it has been calculated that around 14 % [<i>correction from the meeting where 12% may have been mentioned</i>] of the catchment might be affected but no estimates of what this means in terms of water resource has not yet been undertaken).	
8.6	OT explained the approach being taken for mitigation of any potential effects on the south east unit. As the potential for effects on groundwater flows and the SSSI grassland communities has yet to be determined, a series of precautionary mitigation solutions is being developed, focused on the avoidance and reduction of impact consistent with the mitigation hierarchy agreed with NE.	
8.7	OT tabled an emerging design of a solution that focuses on maintaining the existing hydrological regime of the SSSI. This includes measures to incorporate an impermeable barrier within the earthwork cutting slope (clay lining) to the east, and a means of intercepting groundwater within superficial deposits to the west and pumping water across the cutting to an infiltration system. OT noted that the way in which water would be allowed to infiltrate the ground to the east of the cutting was to be confirmed.	
8.8	OT proposed that the implementation of mitigation could be delivered on a phased approach following various 'triggers'. The first trigger would be when the cutting is exposed and the ground conditions could be examined in detail. The second trigger might be after a period of monitoring to see if there are any changes to the SSSI that cannot be explained by other factors. OT acknowledged that it may be that it is most cost effective to construct the various elements of the pumping/infiltration system as part of the main works so it is available should it be needed. OT noted that dipwell monitoring would continue throughout the examination of the Development Consent Order application, and could potentially continue 2-3 years into operation of the Scheme to assess and interpret the continual 'health' of the SSSI.	
8.9	IB queried whether the proposed baseline monitoring would be sufficient to fully understand how the hydrology of how the site operates, given natural variability including this year's exceptionally dry summer. IB also noted that further understanding is needed of the source of water to the springs within the north west SSSI unit before we can conclude no effect, and noted that there is likely to be a groundwater pathway. IB recommended that the conceptual model needs to	

	be developed further to account for this. Greater clarity was also required over the impact of the gas pipeline in the SE SSSI unit, and whether the pipeline is potentially impacting groundwater flow, given the changes in vegetation observed above the pipeline.	
8.10	IB confirmed that the provisional pumping solution would work as intended, but that this would be an expensive engineered solution which would require more maintenance to ensure it operated properly. IB also noted that it raises a number of issues in relation to monitoring the system and who would be responsible for this indefinitely. IB would prefer if a more innovative passive system could be investigated as an alternative solution, although acknowledged that new infrastructure (i.e. pumps) was probably unavoidable. IB stated that it would not be acceptable to monitor the SSSI and only implement the mitigation if the Site had first been impacted.	OT / TJ
8.11	IB noted that the Scheme would take part of the catchment (approximately 14% and that this possible loss should not be referred to as a small proportion of the catchment as it is over a sixth of the total catchment), and that his preference would be to look at solutions that could 'normalise' this (as whatever solution is progressed it needs to maintain the water within the catchment). IB acknowledged that 'year on year' variation in rainfall may compensate in wet years to an extent for any reduction in catchment but that overtime the loss of part of the catchment could be detrimental to the conservation status and resilience of the SSSI (such as to climate change).	
8.12	IB stated that if an engineered pumping solution were to be implemented as part of the Scheme, Natural England would require assurances that the infrastructure would be financed, maintained and monitored by Highways England in the future. IB suggested that further work be undertaken to identify whether the movement of water and how it is reintroduced back into the ground/SSSI could be an opportunity to provide habitat enhancement and biodiversity benefit (e.g. pond, swale or ditch similar to being proposed elsewhere on the Scheme). OT also noted that there may be an opportunity to use the ephemeral ditch along the northern boundary to the SE Unit.	OT / TJ
8.13	JG sought clarification from Natural England that if such a solution were to form part of the mitigation approach and be submitted as part of the Development Consent Order application, and assuming the necessary assurances were in place, would this be acceptable from a planning perspective. IB confirmed that this would be.	
9.0	Next Steps	
9.1	GC outlined the next steps in the process, noting that the environmental impact assessment will be finalised and submitted as part of the Development Consent Order application in November 2018. GC also noted that a targeted round of public consultation is currently live, and that this (alongside securing Letters of No Impediment from Natural England) will feed into the application. Further discussions will then be held post-submission to develop Statements of Common Ground between Highways England and Natural England, to inform the examination process.	
10.0	Any Other Business	
10.1	None.	-
Meeting closed at 4pm		

Enc. PDF of the project presentation.

M42 Junction 6 Improvement Scheme
Stakeholder meeting notes

Meeting:	Meeting with Natural England and the Warwickshire Wildlife Trust to update the organisation on the status of the Scheme, and to discuss specific matters relating to: Bickenhill Meadows SSSI; Aspbury's Copse and Biodiversity offsetting.	
Date:	14 th March 2019 – 11:00am	
Venue:	AECOM Victoria Square Birmingham	
Meeting notes by:	Graeme Cowling / Jamie Gleave	
Attendees:	Jonathan Pizzey (JP) [HE Senior PM] Jamie Gleave (JG) [EIA] Graeme Cowling (GC) [EIA] Marcus Wainwright-Hicks (MWH) [Biodiversity] Tim Jones (TJ) [Hydrology] Owen Tucker (OT) [Hydrology] Susie Murray (SM) Ian Butterfield (IB) Marion Bryant (MB) (<i>by telephone</i>) Annie Ottaway (AO)	AECOM AECOM AECOM AECOM AECOM AECOM AECOM Natural England Natural England Natural England Warwickshire Wildlife Trust
Apologies:	Karl Curtis (KC) Mike Robinson (MR)	Warwickshire Wildlife Trust Natural England
Numbers attending:	10	

Comment		Action / Owner
1.0	Introductions	
1.1	GC opened the meeting with introductions and set out the purpose of the meeting including the desired objectives around the topics noted as 2.0, 3.0 and 4.0 .	
2.0	Bickenhill Meadows SSSI	
2.1	OT provided a summary of SSSI data collected to date which now includes data collected and interpreted post DCO finalisation and submission in January 2019.	
2.2	OT informed the room that as part of this data analysis updates to the conceptual model have been progressed. Data from the dipwells strongly suggest that the SSSI is rainwater fed (see attached handout) and that it is likely that the SSSI unit had already recharged at the time of the meeting (14 th March 2019) due to rainfall events over the winter period of 2018.	
2.3	OT presented the findings of a microdrainage exercise undertaken to better understand and refine the surface water catchment for the Shadowbrook Meadows unit. This microdrainage exercise presented the direct catchment to the SE unit and initial conclusions reducing the initial c.21% overall catchment lost to the Scheme (as per the DCO submission) to c.2% of the microdrainage catchment. IB requested that level of tolerance of this number be shared with Natural England along with the assumptions of the microdrainage exercise.	
2.4	SE queried whether the conceptual model could bring both groundwater and surface water together to inform the solution. OT responded, noting that AECOM have explored this internally, concluding the quantity of data and the assumptions required to compensate for the data not being available would render the activity too unreliable.	
2.5	ME introduced the 5 options (A – E) considered as solutions, broadly falling into two categories, pumped and passive. ME discussed the merits of all options and explained why Options D and E were discounted (see presentation handout as attached), Natural England and Warwickshire Wildlife Trust accepted the justification for discounting the options and the discussion focussed on the three options progressed for further consideration.	
2.6	ME discussed Options A and B (see presentation handout as attached) and indicated to the meeting that Option C was the Project's current preferred solution, noting that it was a passive system as per previously requested by Natural England which drew water from the Catherine-de-Barnes Road (B4438) where it was accepted around the room minimal treatment would be required of this water prior to entering the SSSI unit.	
2.7	AO noted that Option C drainage/piping provisions cross WWT land where current drainage isn't present. A request was made by AO for AECOM to more clearly delineate the solution if progressed further with commentary for WWT to understand the implications on land ownership and access requirements for maintenance. ME noted this level of detail will be worked up if the Option C is accepted as being the solution to be implemented as part of the Scheme.	
2.8	AO queried what would happen if the passive solution once operational indicated that insufficient water was being fed into the SSSI unit. A general discussion on the viability of installing 'ghost infrastructure' for pumping was explored. AECOM will consider this as the solution is refined further.	
2.9	IB provided his summary of what AECOM have presented to the meeting, which included; the rainfall data strongly indicating that the SSSI is rainfall recharged, the refining of the catchment area and the possible loss of approximately 2% of the microdrainage catchment and the confirmation that the central ditch does not play an integral part of the overall recharge process. Natural England were complementary of the work undertaken to better understand the impacts to the SSSI unit.	
3.0	Ancient Woodland (Aspbury's Copse)	

3.1	GC provided an overview of the impact (in terms of area lost to the Scheme) to Aspbury's Copse ancient woodland, and the proposed location and replanting area ratio the project is proposing.	
3.2	SM and MB confirmed that Natural England is content with the location for the benefit of being contiguous to the eastern parcel and for soil translocation.	
3.3	MB noted that notwithstanding the points confirmed within 3.2 above, Natural England are of the opinion that a 3:1 compensation replanting area ratio is considered too low for irreplaceable habitat.	
3.4	SM reiterated MB's statement for the benefit of those within the meeting room and referred back to the latest update the National Planning Policy Framework (NPPF) (2019) provides ancient woodland greater protection and consideration in the planning process.	
3.5	GC clarified that the replanting ratio is on area to allow for the loss of component parts of the ancient woodland and not just tree loss. GC noted the area would allow for far greater replanting of trees (in terms numerical quantity) in addition to targeted soil translocation in the area.	
3.6	IB stated that Natural England were not disputing the area of approximately 1.9 ha for compensation planting but considered the ratio of 3:1 to be insufficient.	
3.7	Natural England accepted the constraints to planting with regards to airport safeguarding and queried if the project has looked at areas around the western parcel of the ancient woodland. AECOM noted that the Scheme is aiming to maximise woodland planting around Junction 5A in addition to the compensation planting area.	
3.8	Natural England concluded that the organisation was in the process of deciding whether to formally object to the Scheme on the grounds of the compensation planting area being considered too low for irreplaceable habitat. JP accepted this statement and explained Natural England were in the relevant representations period and could provide further formal comment through this process but the desire is to avoid this objection if possible.	
4.0	Biodiversity Offsetting and Net Gain	
4.1	MWH provided an update to the offsetting status of the Scheme.	
4.2	GC outlined that Highways England have confirmed the desire to achieve a net gain for the Scheme. GC noted that legal advice the project received prior to submission of the DCO was that the compulsory purchase order (CPO) procedures could not be used to purchase land for non-essential environmental mitigation. As biodiversity net gain for the Scheme is considered non-essential and an aspirational policy, the decision was made by the project to remove the biodiversity offsetting report from the DCO application. SM accepted this explanation.	
4.3	SM queried whether the project has explored opportunities to pay for or contribute towards wildlife programmes to attain a net gain. AO noted that Warwickshire Wildlife Trust policy is to not accept financial contributions to fulfil a projects offsetting net gain requirements.	
4.4	MWH continued to explain the offsetting credits the Scheme is currently achieving and noted that the refining process is ongoing.	
4.5	AECOM noted that the final Biodiversity Offsetting report will be shared with Natural England.	
5.0	Any Other Business	
5.1	None.	
Meeting closed at 4pm		

Enc. PDF of the project presentation.

From: Murray, Susan
To: ["Cowling, Graeme"](#)
Subject: M42 J6 - Minutes of 14 March meeting – NE / WWT collated comments
Date: 09 April 2019 07:08:00

Good Morning Graeme

M42 J6 Scheme Improvement NSIP

Minutes of 14 March meeting – NE / WWT collated comments

Please see below collated comments for your information.

In case you are not aware, Annie Ottaway is leaving WWT this week and your contact from now on in will be Karl Curtis.

2.4 Reference to SE – should be SM

2.6 Recommended change – full stop after (B4438). 'ME informed the group that that AECOMs assessments have indicated that minimal treatment would be required to this water in order to retain good water quality entering the SSSI.

2.8 We also discussed problems from an oversupply of water as well as insufficient water

3.7 ... accepted the constraints to additional tree planting ...

4.3 Recommended change second sentence – AO noted that WWT policy is not to accept financial contributions towards current reserve management as this is not additional and therefore does not constitute net gain. WWT do/have, however, taken on new land with offsetting funding to enhance it.

4.5 We agreed that the BO report be reviewed by NE.

Mike Robinson (Bickenhill Meadows SSSI, NE) was not at the meeting but was shared a copy of the presentation slides and these draft minutes to aid early understanding of the issues discussed and gather his views. He has provided the following comments that we trust you find of use:

- Would welcome further explanation of the hydrological update – specifically outlining the evidence around the figures they are using for the loss of catchment area as it's changed from 21% to 2%
- Re: grassland to the north of the SSSI – more clarity around the detail of what is proposed here

- What is the Microdrainage software?
- In slide 11 you say there is no clear difference in MG4/MG5 water table levels but in slide 13 then you that the MG5 area doesn't need mitigation but the catchment area will be reduced by 31%. Presumably the MG5 area will still suffer if there is a change in water levels / availability. If the water table levels of the MG4 and MG5 are currently the same and supporting the two different grassland habitats they should be kept the same going forward to maintain the habitats?

And lastly, I am currently scheduling in time for NE personnel on this project going forwards – both in terms of statutory involvement and potential DAS. I know you are currently drafting up a SoCG. Can I ask what the timescales / delivery dates are you are currently working to in respect of this project so I can weave them in and ensure response in a timely fashion.

In DAS terms, I am aware we are still in discussions around a couple of issues and hydrological monitoring is still ongoing. Do you perceive that there is further DAS work required this FY or that it will all be dealt with via the statutory process? If so, we will need to send you a new DAS form for the set up of a new contract – last years is being invoiced now and, hence, will be closed. I confirm we are, therefore, currently of the understanding that there is no existing DAS contract with AECOM. If you consider there a further need, please do let me know asap and I will send you a new form for completion.

Many thanks,

Susie Murray

West Midlands Area Team (East) Urban Planning Lead Adviser

Planning for a Better Environment Team

Natural England

M: 07920 594142

susan.murray@naturalengland.org.uk

Hours of work – 27 hours per week:

Generally Mon.9.30-3.00; Tues. 8.00-5.30; Wed. 9.30-3.00; Thurs.9.30-3.00; Fri.9.30-1:00

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Natural England offers two chargeable services – The Discretionary Advice Service ([DAS](#)) provides pre-application, pre-determination and post-consent advice on proposals to developers and consultants as well as pre-licensing species advice and pre-assent and consent advice. The Pre-submission Screening Service ([PSS](#)) provides advice for protected species mitigation licence applications.

These services help applicants take appropriate account of environmental considerations at an early stage of project development, reduce uncertainty, reduce the risk of delay and added cost at a later stage, whilst securing good results for the natural environment.

In an effort to reduce Natural England's carbon footprint I will, wherever possible, avoid travelling to meetings and attend via audio, video or web conferencing.

Natural England is accredited to the Cabinet Office Customer Service Excellence Standard

Date: 02 October 2018
Our ref: 257747 M42 J6 s42 PEIR FINAL1
Your ref: TR010027/S42(1)(a)/September 2018



FAO Mr Jonathon Pizzey submitted via
m42junction6@highwaysengland.co.uk

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BY EMAIL ONLY

Dear Mr Pizzey

Nationally Significant Infrastructure Project: M42 J6 Improvement Scheme
Location: Solihull, West Midlands

Thank you for contacting Natural England regarding the above development. Your consultation is dated 30 August 2018. Our comments to this consultation are provided below, following a brief outline of engagement with Natural England.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

I am Natural England's case officer for this project. Please do not hesitate in contacting me should you wish to discuss any natural environment issues arising from the proposal. We are keen to work with developers during the pre-application stages of NSIP's in particular, in an attempt to resolve any potential impacts on the natural environment and help remove potential delays to the submission and consideration of a Development Consent Order (DCO).

Please find outlined below an introduction to engagement with Natural England in respect of an NSIP.

NATURAL ENGLAND AND 'NSIP' ENGAGEMENT

The Planning Inspectorate's Advice Note 11, Annex C 'Working with Public Bodies in the NSIP process' sets out in detail the legislative basis and scope of Natural England's role as the Government's advisory body on developments affecting nationally designated wildlife and geological conservation sites, and nationally protected landscapes. Annex C describes the need for Environmental Impact Assessment, Habitat Regulations Assessment and species licensing and the statutory requirement for consultation by the developer under Section 42 of the Planning Act 2008 on these matters. The Advice Note also describes the importance of early engagement as an opportunity to identify and resolve issues that may otherwise delay the approval of the project or that may reduce effort for all parties during the examination stages of the NSIP.

Natural England often provides written representations and attends NSIP hearings. Our experience of the NSIP process is that development proposals with potentially serious impacts can often be resolved if both ourselves and the developer invest time early on in the pre-application phase to understand each other's concerns. This allows discussion of potential impacts and how they might

be reduced through mitigation measures, or collection of further evidence which may allay the concerns. We also support the development of Evidence Plans in appropriate cases, which can give a developer more certainty up front about what environmental evidence it will need to collect to ensure that environmental impacts are considered properly.

Discretionary Advice Service (DAS)

We welcome your early engagement with Natural England via our Discretionary Advice Service (DAS) <https://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals> and hope that this level of valuable engagement continues.

Natural England developed this service in order to be able to provide additional advice beyond that which we give in our response to the required statutory consultations, enabling us to invest in increased capacity to provide more, and earlier access to our expertise, which we hope will improve our customer service, support sustainable development and achieve better environmental outcomes through the planning system.

STATUTORY CONSULTATION UNDER SECTION 42 OF THE PLANNING ACT 2008

The development proposal consists of improvements to junction 6 of the M42 motorway near Solihull in Birmingham. This development is deemed necessary by Highways England to enable better movement of traffic; support improved access to the airport; and provide capacity on the road network for future traffic associated with the planned High Speed 2 (HS2) Birmingham International Station.

Natural England understands the scheme comprises the following key elements:

- A new junction located approximately 1.8km south of junction 6;
- A new 2.4km long dual carriageway road to link the new junction to the Clock Interchange junction;
- Upgrades to junction 6; and
- Realignment and improvement of local roads west of the M42.

These proposals fall within the definition of a Nationally Significant Infrastructure Project (NSIP) to which the Planning Act 2008 applies. Development consent for this development will then be granted by a Development Consent Order (DCO) made by the Secretary of State for Transport following a Planning Inspectorate (PINS) recommendation. Natural England understands the DCO application will eventually be accompanied by the Environmental Statement (ES) currently in production.

In accordance with Section 10 of the Planning Act 2008, a Preliminary Environmental Information Report (PEIR) was prepared to inform the initial Section 42 consultation undertaken January to March this year. This presented the information available on the proposed scheme and likely environmental impacts at that time. We have also accessed further historical online documentation at www.highwaysengland.co.uk/m42-j6 associated with this consultation.

Following that initial Section 42 consultation, the Scheme has been further refined.

Notably, Scheme revisions which are the subject of this consultation include:

- Minor alterations to the M42 5a junction and realignment of slip roads at new southern junction (which have been moved closer to the M42 carriageway);
- Reduction in span of Solihull Road Overbridge;
- Roundabout near Barber's Coppice has been moved closer to Catherine de Barnes Lane and reduced in size;
- A new bridge to Bickenhill (potentially a Green Bridge? Unconfirmed); and

- Additional land (temporarily) required from Bickenhill Meadows SSSI) for potential environmental mitigation and on-going surveys.

Under Section 42 of the Planning Act 2008 you have provided us with:

- Further Statutory Consultation Section 42(1)(a) letter including Appendix 1 (outlining design changes) – dated 30 August 2018

Further pre-application dialogue between ourselves and the associated consultant team has also provided us with the following:

- Habitat Regulations Assessment: No Significant Effects Report HE551485-ACM-LSI-ZZ_SW_ZZ_ZZ-RP-DC-0608 AECOM (Version 1 – Issued for comment – September 2018);
- Technical Note for Licensing of Protected Species – AECOM 14/09/18;
- Technical Note for Translocation of Ancient Woodland – AECOM 14/09/18;
- Bickenhill Meadows SSSI – Preliminary Hydrological Investigation Technical Note (V3) AECOM 21/08/18 (60543032);
- A series of 3 plans issued by AECOM at the 18 September 2018 meeting indicating Ecological Constraints (Bats, GCN and Badger); and
- Minutes of 18 September 2018 meeting – AECOM and Natural England.

Furthermore, since the September 2018 meeting there has been further dialogue between NE and the applicant consultant team regarding Ancient Woodland digital data and Protected Species licensing.

Natural England wishes to relay the following advice at this stage of the projects development.

THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2010 (AS AMENDED) WILDLIFE AND COUNTRYSIDE ACT 1981 (AS AMENDED)

Internationally designated sites

European sites are afforded protection under the Conservation of Habitats and Species Regulations 2010, as amended (the 'Habitats Regulations'). The application site is located in excess of 15km of the following (i.e. it's closest) European designated sites (also commonly referred to as Natura 2000 sites):

- Ensor's Pool SAC
- Fens Pools SAC
- Cannock Extension Canal SAC
- The River Mease SAC

Natural England has reviewed the evidence contained in the applicant's draft (shadow) Habitat Regulations Assessment – No Significant Effects Report. The HRA screening exercise has concluded that there is no potential for Likely Significant Effects or Adverse Effects on the Integrity of any of the sites in question, either as a result of the scheme, either alone or in combination with other plans or projects. Given the intervening distance and the lack of specific environmental pathways between the application site and the designated sites in question, NE concurs with its conclusions.

In summary, Natural England advises that there will be no need for the Secretary of State for Transport to progress the assessment to Appropriate Assessment stage.

Nationally designated sites

The application site is located in close proximity to the following sites which are also notified at a national level as Sites of Special Scientific Interest (SSSI's):

- Bickenhill Meadows SSSI;
- The River Blythe SSSI; and
- Coleshill and Bannerley Pools SSSI.

Natural England has considered the evidence and advises that the development is unlikely to impact upon the special features of either The River Blythe SSSI or Coleshill and Bannerley Pools SSSI. However, the interest features of Bickenhill Meadows SSSI are sensitive to impacts to its hydrological system. We consider the proposed development is likely to impact upon the SSSI both directly (for 'mitigation' purposes) and indirectly, due to changes to hydrology.

Bickenhill Meadows SSSI

Bickenhill Meadows SSSI comprises of two separate units (NW Unit and SE Unit) located either side of the proposed link road. The SSSI includes areas of wet woodland and wet meadows that support a range of plants and other species. The cutting and associated works are also in close proximity to streams that flow through both SSSI units, which may be impacted during the construction and operation phases.

In accordance with best practice, the Scheme's design should follow the mitigation hierarchy. Natural England is informed by the applicant that the potential to alter the horizontal or vertical alignment of the road any further is limited in that it has already moved as far east as possible to avoid impact upon the NW Unit. We accept, therefore, that approaches now need to focus upon options for mitigation and compensation.

Natural England's advice has informed the ground investigation, monitoring, design and assessment work undertaken to date regarding Bickenhill Meadows SSSI. This work has been undertaken in order to better understand the underlying geology, hydrogeology, the potential for the scheme to affect groundwater flows / levels and to try and establish whether the SSSI's grassland communities at critical times are more sensitive to groundwater levels or rainfall.

The emerging findings of the studies into the SSSI were presented at a meeting on 18 September 2018. From this, we understand that the evidence gathered so far suggests that it is unlikely that the scheme would affect groundwater flows associated with the NW Unit (See 18 September Minutes Comment 8.4). However, there needs to be a better understanding of the source of water to the springs to the SSSI NW unit.

There are currently two working hypotheses associated with the hydrology of the SE Unit (See 18 September Minutes Comment 8.5). We recognise that further baseline monitoring and investigations are required. In particular, for one hypothesis we are informed that the proposed link road may remove a significant part of the SSSI's groundwater catchment (approximately 14%). We need to understand if this is indeed the case, and if so, what that means for water resource. Furthermore, greater clarity is required over the potential impact of the gas pipeline in the southeastern SSSI unit upon groundwater flow. We recommend adaptation to the conceptual model to take up to date data into account.

Natural England has queried whether the proposed baseline monitoring will be sufficient to fully understand how the hydrology of the how the site operates, given natural variability including this year's exceptionally dry summer. However, we also understand that the dipwell monitoring will continue throughout examination of the DCO which is likely to provide us with 2-3 years of further evidence.

As it stands, the potential for effects on groundwater flows and the SSSI grassland communities has yet to be determined. We have been informed that the applicants are therefore developing a series of 'precautionary mitigation solutions' focused on the avoidance and reduction of impact, consistent with the mitigation hierarchy. Specifically, the applicants have proposed an emerging design that focuses on maintaining the existing hydrological regime of the SSSI, including the placement of an impermeable barrier within the cutting to the east and installation of a pumping system to infiltration system design. Whilst Natural England accepts that the proposed pumping solution is likely to be effective, it would require assurances that the infrastructure would be financed, maintained and monitored by Highways England into the future. Natural England would require this system to be in place ahead of any development likely to impact upon the SSSI hydrology. Therefore, a phased approach would be required in order to ensure that there would be no harm to the SSSI. Natural England would not accept proposals which only implemented mitigation after the site had been impacted.

Crucially, however, Natural England would stress the importance of investigating of an alternative solution which is more innovative, passive, and maintains ecological processes, as a matter of priority. The proposed heavily engineered solution outlined above is an end of pipe solution which, whilst would likely ensure the site was not damaged, cannot adequately replace a naturally functioning ecosystem. The proposed solution relies heavily on continued human intervention for to ensure effectiveness. We would strongly encourage the applicants to, instead, design a solution which is able to safeguard the Site's features via more passive adaptation of the natural hydrological processes.

Furthermore, we would encourage further work to explore the potential for habitat enhancement features such as swales or ponds. Importantly, Natural England notes the SE Unit of Bickenhill Meadows SSSI is owned by Warwickshire Wildlife Trust (in addition to a designated Local Wildlife Site to the south of the Unit), and is surrounded by Shadowbrook Meadows Local Nature Reserve (LNR). We advise ongoing dialogue with the Warwickshire Wildlife Trust and the local authority in respect of potential impacts, mitigation and a project wide compensation package.

In summary, Natural England confirms that based on the information provided to date, the proposed development is likely to adversely impact upon Bickenhill Meadows SSSI SE Unit. We welcome the commitment to undertake further groundwater monitoring and further hydrological investigations as necessary. The applicants are currently considering mitigation through use of either a heavily engineered solution or a more passive solution which we would prefer. We are content that the agreed monitoring and continuing dialogue around mitigation will bring to bear an appropriate solution, however, we suggest that a heavily engineered solution should be seen as a last resort.

Ancient Woodland

Asbury's Copse is the only ancient woodland shown on the Ancient Woodland Inventory where loss, as well as direct impacts, will definitely occur. The construction of two new slips roads to service the new motorway junction 5A, will bisect both halves of Asbury's Copse, resulting in direct loss of irreplaceable habitat, and severe disturbance. Likely impacts are habitat loss, disturbance to soils and hydrology, impacts of noise, vibration, light and air pollution, species disturbance and restriction of movement. The slip road construction will cause further fragmentation of this already fragmented woodland habitat, impacting upon ecosystem and wider ecological network functioning.

Natural England recognises another ancient woodland in the vicinity – Barbers Coppice – which may occur impacts such as noise, light and air pollution both during construction and operation. We welcome efforts to reduce potential impact directly and indirectly.

Natural England reminds the applicant that ancient woodland is irreplaceable habitat (NPPF 2018). Specifically, NPPF Paragraph 175 sub-section (c) makes it clear that

*'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are **wholly exceptional** reasons and a suitable compensation strategy exists'.*

Further Standing Advice in respect of Ancient Woodlands is provided at the link below. <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences> Natural England notes that a number of the Scheme revisions which are the subject of this consultation have been made in order to help minimise the extent of permanent land take required from within Aspbury's Copse. These include realignment of the J5A slip roads and reduction in span of Solihull Road overbridge. These measures are welcomed by Natural England and are in accordance with the mitigation hierarchy.

Additionally, Natural England has already confirmed that the 'highly disturbed area' within Aspbury's Copse no longer constitutes ancient woodland and has been removed from the Ancient Woodland Inventory. Natural England provided the digital data for this to your consultants on 19 September 2018. Based on this digital data and the most recent Scheme, Natural England calculates a loss of ancient woodland to both parcels (0.06ha from the eastern parcel, to a total of 1.05ha) and a greater 0.27ha loss from the western parcel to 1.22ha). The total reduction in classified ancient woodland, from this removal of 'highly disturbed land', is 0.33ha. We understand this digital data will help further inform detailed design work going forward.

The proposed compensation package for the loss of and damage to ancient woodland at Aspbury's Copse is the creation of woodland by planting on a site immediately south of the eastern half of the wood, where translocated ancient woodland topsoil will be spread. The current compensation ratio is 3:1; this may alter slightly when ancient woodland polygons are altered on the Ancient Woodland Inventory due to the removal of the 'highly disturbed land'. However, Natural England deems this compensation ratio likely too low for an irreplaceable habitat.

In addition to the compensation area, we would encourage the applicant to seek further opportunities to enhance Aspbury's Copse and the ecological networks in the wider area e.g. new woodland planting and hedgerows. The current condition and management of ancient woodland in the area should be considered when designing the compensation package, including measures to ensure positive management of Aspbury's Copse and nearby Barber's Coppice. We understand that both Aspbury's Copse and nearby Barber's Coppice are narrowly located outside the airport safeguarding zone and hence opportunities for further planting may apply.

In particular, as ancient woodland losses will occur in both halves of the Aspbury's Copse wood it would be useful to explore further woodland creation contiguous with the western half of the wood. This could further extend and buffer Aspbury's Copse. Furthermore, additional woodland creation north of Aspbury's Copse would buffer the woodland from potential impacts of the proposed new motorway service junction.

Natural England has no objections to the proposed soil translocation methodology, the allocated area of soil translocation or the allocated area for contiguous replanting proposed, as detailed in the associated Technical Note, provided that the soil types are suitable. However, we would urge that methods to translocate an intact soil profile and field layer are further explored. Such techniques are widely used in grassland translocation, and whilst we recognise the additional difficulties that woodland soils represent, we think that taking this type of approach were practicable will be beneficial.

We advise the completion of a soil survey at the receiver site, because evidence shows that translocations have only been successful where the receiver site soil types have been matched to the donor site. If the soil types do not match, an alternative site (preferably close to another ancient woodland) should be sought. We understand such a survey is planned for October 2018. We further advise long term monitoring of the translocated site.

Importantly, Natural England has requested that the title of the associated Ancient Woodland Technical Note be adjusted to reflect that the translocation of Ancient Woodland relates to the soils, i.e. 'Translocation of ancient woodland soils', as this helps prevent confusion that we are not suggesting that ancient woodland can be moved.

In order to fully assess the impacts on ancient woodland Natural England would need to examine relevant environmental surveys and ecological impact assessments of relevant ancient woodland and surrounding land. Notably, we understand the fungi and lichen surveys will be carried out in 2018 to re-validate the surveys from 2015. When this information is available Natural England could provide further advice.

Finally, the impacts of the scheme are likely to be compounded by a separate proposal for a new motorway service area. Therefore, the EIA will need to take into account cumulative impacts in this respect.

In summary, Natural England confirms that, based on the information provided to date, the proposed development is likely to result in direct loss to Aspbury's Copse Ancient Woodland. We understand from AECOM that the location of the new junction cannot be moved, and therefore, direct loss is unavoidable. Further Scheme changes are seeking to mitigate loss and compensation in the form of soil translocation and compensatory planting is proposed. Further evidence and detailed dialogue is required in order to ensure the loss of this irreplaceable habitat is fully compensated.

Protected Species

Protected Species Standing Advice

Natural England has published [Standing Advice](#) on protected species. The Standing Advice includes a habitat decision tree which provides advice on deciding if there is a 'reasonable likelihood' of protected species being present. It also provides detailed advice on the protected species most often affected by development, including flow charts for individual species to enable an assessment to be made of a protected species survey and mitigation strategy.

The Planning Inspectorate should apply our Standing Advice to the DCO application as it is a material consideration in the determination of applications in the same way as any individual response received from Natural England following consultation.

The Standing Advice should not be treated as giving any indication or providing any assurance in respect of European Protected Species (EPS) that the proposed development is unlikely to affect the EPS present on the site; nor should it be interpreted as meaning that Natural England has reached any views as to whether a licence may be granted.

If you have any specific questions on aspects that are not covered by our Standing Advice for European Protected Species or have difficulty in applying it to this application please contact me at the number provided below. You should also refer to our advice on protected species and NSIP's in the Advice Note 11, Annex C detailed above. This contains details on licence arrangements and pre application consultations.

http://www.naturalengland.org.uk/Images/WML-G36_tcm6-28566.pdf

Other Comments in respect of Species Licensing and Mitigation

Natural England understands that the applicants are looking to submit draft licence applications to us around the end of October 2018. Natural England has also since confirmed to the applicant the level of commitment and certainty it requires in respect of land ownership and precise locations of compensatory habitats.

We also understand that a focused report will be forthcoming to support the review and evaluation of draft licence applications. We have agreed that this only needs to identify areas where protected species are found to be present and presenting a legal constraint, and not where absence of species is noted.

We understand that the applicant is seeking Letters of No Impediment (LONI) from Natural England to be submitted in support of the application for DCO (currently planned for November 2018). We are content that, subject to the required information being submitted, that we are able to meet this timeframe. We have also already confirmed that we will be able to issue a LONI which confirms whether or not the 3 related tests are likely to be satisfied subject to (i) purchase of the land by CPO and (ii) the precise location of the compensation being confirmed.

Natural England has discussed the principle of mitigation measures currently proposed within the accompanying Technical Note with the applicants' ecologists and has generally welcomed the measures proposed. Key areas of general agreement are as follows:

- Badgers - there should be no need to create artificial setts as no main setts are being impacted. Natural England accepts the proposed inclusion of a badger tunnel as a means of restoring the connectivity of badger setts and habitats that would be severed by the new link road. We confirm we would need to have sight of the confidential badger surveys ahead of submission of a draft licence application for this species.
- Bats – impacts are very low and can be adequately compensated by erecting bat boxes in suitable locations.
- Great crested newts – no ponds will be lost but there is a need to protect GCN that may be using terrestrial habitats affected by the scheme, through fencing, capture and relocation.

In summary, badgers, bats and great crested newts are likely to be affected by the Scheme,, and licences will be required. Natural England is in agreement with the general principle of the mitigation provided in the associated Technical Note. We have agreed a timescale for submission of draft licence applications to obtain a Letter of No Impediment, providing the required information from the applicant is forthcoming and timely.

Biodiversity Net Gain

Natural England advises the adoption of a Biodiversity Net Gain approach to the project. Net Gain is strongly referenced within the NPPF.

We understand the applicants are using the Defra Metric (2012) in order to establish the extent of habitat loss and to calculate the area and type of habitat required to offset this loss. Natural England has no comments to make in this regard but does advise liaison with Warwickshire County Council's Ecology Services team, particularly in consideration of their adopted Biodiversity Offsetting Metric. Natural England would also wish to stress that whilst metric approaches to compensation are extremely valuable, these are simply a tool to help the development team make better informed decisions. Natural England considers that due to the scale of the Scheme, together with the impacts upon local wildlife sites and habitat connectivity, the design team should seek to maximise the environmental benefits from the

development.

Natural England would also stress the importance of excluding ancient woodland from Net Gain calculations given that it constitutes 'irreplaceable habitat'. Therefore, the proposed woodland compensation measures (including proposed soil translocation and planting for loss of ancient woodland) was not factored into the calculation, this is in accordance with the DEFRA biodiversity offsetting metric.

As one specific measure, we would welcome the greening of the new pedestrian footbridge.

Natural England has requested that the applicants detail specifically which biodiversity measures proposed within the Scheme are biodiversity mitigation, compensation or enhancement. We are informed by AECOM that a separate report ('Biodiversity Offsetting Report') will be submitted as part of the DCO application and we welcome this measure.

Natural England confirms that, at this stage, we welcomes the applicants embracing of Net Gain principle, although we are presently unsure as to whether the current Scheme achieves this. We would support a landscape-scale response to habitat connectivity and await the Biodiversity Offsetting Report with interest.

Other Advice

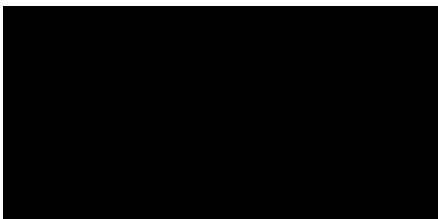
We would expect you to assess and consider the other possible impacts resulting from this proposal on the following when determining this application:

- local sites (biodiversity and geodiversity)
- local landscape character
- local or national biodiversity priority habitats and species.

Natural England does not hold locally specific information relating to the above. These remain material considerations in the determination of this planning application and we recommend that you seek further information from the appropriate bodies (including Warwickshire County Council Ecology Services and Warwickshire Wildlife Trust) in order to ensure you have provided sufficient information to fully understand the impact of the proposal before determination of the application. A more comprehensive list of local groups can be found at [Wildlife and Countryside link](#).

Should I be able to assist you in clarifying any points contained within this letter please do not hesitate to contact me on the number below.

Yours sincerely



Susan Murray
Planning for a Better Environment - Lead Adviser
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Ancient woodland, ancient trees and veteran trees: protecting them from development

What planning authorities should consider for developments affecting ancient woodland, ancient trees and veteran trees.

Published 13 October 2014

Last updated 5 November 2018

From: [Forestry Commission](#) and [Natural England](#)

Applies to: England

You should use this Natural England and Forestry Commission guidance (known as 'standing advice') to help you decide on development proposals affecting ancient woodland, ancient trees and veteran trees.

Standing advice is a 'material planning consideration'. This means you should take it into account when making decisions on planning applications. It replaces the need for each agency to give an individual response to planning consultations. It has the same authority as an individual response.

This guidance is also useful for decision-makers who are responsible for major infrastructure projects, such as road and rail schemes.

Natural England and the Forestry Commission will only provide bespoke advice as set out in the [when to contact](#) sections, or in exceptional circumstances.

Ancient woodland

Ancient woodland takes hundreds of years to establish and is defined as an irreplaceable habitat. It's important for its:

- wildlife (which include rare and threatened species)
- soils
- recreational value
- cultural, historical and landscape value

It's any area that's been wooded continuously since at least 1600 AD. It includes:

- ancient semi-natural woodland mainly made up of trees and shrubs native to the site, usually arising from natural regeneration
- plantations on ancient woodland sites - replanted with conifer or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi

They have equal protection in the [National Planning Policy Framework](#) (NPPF).

Other distinct forms of ancient woodland are:

- wood pastures identified as ancient
- historic parkland, which is protected as a heritage asset in the NPPF

Many of these do not appear on the Ancient Woodland Inventory because their low tree density did not register as woodland on historic maps.

You should give consideration to wood pasture identified as ancient in planning decisions in the same way as other ancient woodland.

'Wooded continuously' does not mean there's been a continuous tree cover across the whole site. Not all trees in the woodland have to be old. Open space, both temporary and permanent, is an important component of ancient woodlands.

Ancient and veteran trees

Ancient and veteran trees can be individual trees or groups of trees within wood pastures, historic parkland, hedgerows, orchards, parks or other areas. They are often found outside ancient woodlands. They are irreplaceable habitats with some or all of the following characteristics.

Ancient trees

An ancient tree is exceptionally valuable. Attributes can include its:

- great age
- size
- condition
- biodiversity value as a result of significant wood decay and the habitat created from the ageing process
- cultural and heritage value

Very few trees of any species become ancient.

Veteran trees

All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value.

Making decisions

When making planning decisions, you should consider:

- conserving and enhancing biodiversity
- reducing the level of impact of the proposed development on ancient woodland and ancient and veteran trees (see ['Avoid impacts, reduce impacts and compensate as a last resort'](#))

You should make decisions on planning applications in line with paragraph 175C of the [NPPF](#).

You should refuse planning permission if development will result in the loss or deterioration of ancient woodland, ancient trees and veteran trees unless:

- there are wholly exceptional reasons
- there's a suitable compensation strategy in place

Assess the impacts

You should use the following process to assess impacts on ancient woodland when making decisions on planning applications. The process also applies to:

- wood pastures identified as ancient
- ancient trees and veteran trees

Consult inventories

You can use the following inventories to help you decide whether a development will affect ancient woodland (including wood pastures identified as ancient) or ancient and veteran trees:

- Natural England's ancient woodland inventory - [download the data](#) (enter 'ancient woodlands' into the search box) or view it on the [Magic map system](#) (zoom in to see local detail)
- [ancient tree inventory](#) (click on 'Tree search' and enter a postcode)
- [wood pasture and parkland inventory \(includes some ancient sites\)](#) (zoom in to see local detail)

Ancient woodlands smaller than 2 hectares are unlikely to appear on these inventories. You should use this guidance for all ancient woodlands and ancient and veteran trees whether they're on the inventories or not. They are updated and reviewed from time to time.

You should [contact Natural England](#) if a site has evidence of ancient woodland on it and is not on the inventory.

Potential impacts

Development can affect ancient woodland, ancient and veteran trees, and the wildlife they support on the site or nearby. You can assess the potential impacts using this [assessment guide](#) to help you with planning decisions.

Direct impacts of development on ancient woodland or ancient and veteran trees include:

- damaging or destroying all or part of them (including their soils, ground flora or fungi)

- damaging roots and understorey (all the vegetation under the taller trees)
- damaging or compacting soil around the tree roots
- polluting the ground around them
- changing the water table or drainage of woodland or individual trees
- damaging archaeological features or heritage assets

Nearby development can also have an indirect impact on ancient woodland or ancient and veteran trees and the species they support. These can include:

- breaking up or destroying connections between woodlands and ancient or veteran trees
- reducing the amount of semi-natural habitats next to ancient woodland
- increasing the amount of pollution, including dust
- increasing disturbance to wildlife from additional traffic and visitors
- increasing light or air pollution
- increasing damaging activities like fly-tipping and the impact of domestic pets
- changing the landscape character of the area

Providing evidence

You and the developer should work together to make sure there's enough suitable evidence to make a decision. This may include fieldwork and historic maps.

You should include proposed [mitigation and compensation measures](#).

You should ask developers for a tree survey and an ecological survey, where appropriate. The tree survey should be in accordance with guidance in [British Standard BS 5837 'Trees in relation to demolition, design and development'](#). Ecological surveys should follow guidance approved by the [Chartered Institute of Ecology and Environmental Management \(CIEEM\)](#).

Avoid impacts, reduce ('mitigate') impacts, and compensate as a last resort

You and the developer should identify ways to avoid negative effects on ancient woodland or ancient and veteran trees. This could include selecting an alternative site for development or redesigning the scheme.

You should decide on the weight given to ancient woodland and ancient and veteran trees in planning decisions on a case-by-case basis. You should do this by taking account of the NPPF and relevant development plan policies.

If you decide to grant planning permission that results in unavoidable loss or deterioration, you should use planning conditions or obligations to make sure the developer:

- avoids damage
- mitigates against damage
- compensates for loss or damage (use as a last resort)

Ancient woodland, ancient trees and veteran trees are irreplaceable. Consequently you should not consider proposed compensation measures as part of your assessment of the merits of the development proposal.

Existing condition of ancient woodland

A woodland in poor condition can be improved with good management and development proposals should enhance the condition of existing ancient woodland, where appropriate. Where a proposal involves the loss of ancient woodland, you should not take account of the existing condition of the ancient woodland when you assess the merits of the development proposal. Its existing condition is not a reason to give permission for development.

Mitigation measures

Mitigation measures will depend on the development but could include:

- improving the condition of the woodland
- putting up screening barriers to protect woodland or ancient and veteran trees from dust and pollution
- noise or light reduction measures
- protecting ancient and veteran trees by designing open space around them
- identifying and protecting trees that could become ancient and veteran trees in the future
- rerouting footpaths
- removing invasive species
- [buffer zones](#)

Use of buffer zones

A buffer zone's purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development.

For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic.

A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter.

Where possible, a buffer zone should:

- contribute to wider ecological networks
- be part of the green infrastructure of the area

It should consist of semi-natural habitats such as:

- woodland
- a mix of scrub, grassland, heathland and wetland planting

You should plant buffer zones with local and appropriate native species.

You should consider if access is appropriate and can allow access to buffer zones if the habitat is not harmed by trampling.

You should avoid including gardens in buffer zones.

You should avoid sustainable drainage schemes unless:

- they respect root protection areas
- any change to the water table does not adversely affect ancient woodland or ancient and veteran trees

Compensation measures

Compensation measures are always a last resort. These measures can only partially compensate for loss or damage.

Compensation measures should be appropriate for the site and for the scale and nature of the impacts on it. A compensation strategy could include the following package of measures:

- planting new native woodland or wood pasture
- restoring or managing other ancient woodland, including plantations on ancient woodland sites, and wood pasture
- connecting woodland and ancient and veteran trees separated by development with green bridges, tunnels or hedgerows
- long-term management plans for new woodland and ancient woodland
- managing ancient and veteran trees
- planting individual trees that could become veteran and ancient trees in future
- monitoring the ecology of the site over an agreed period

Plant new native woodland

Establishing new trees and woodland is not a direct replacement for lost or damaged trees or woodland. You can accept large-scale woodland planting as a compensation measure alongside other measures. This could be on soil that has been moved from the destroyed area of ancient woodland ('soil translocation'). You cannot move an ancient woodland ecosystem because:

- it's not possible to replicate the same conditions at another site
- it's no longer an ancient woodland

New woodland creation can be effective where it links to and extends existing woodland, as long as it does not affect:

- other semi-natural habitats

- heritage features

Restore or improve ancient woodland

You can partially compensate for loss or damage of ancient woodland by improving:

- and restoring plantations on ancient woodland sites
- the management of nearby ancient woodland sites and connecting them better to semi-natural habitat
- the condition of important features of ancient woodland
- access for management purposes

You can partially compensate for loss or damage to wood pasture by restoring soils and pasture.

Management plans should follow the [UK Forestry Standard](#). You can monitor the ecology of the site, over an agreed period, to help you advise on management measures.

Compensate for the loss of ancient and veteran trees

You can partially compensate by planting:

- young trees of the same species with space around each one to develop an open crown
- new trees near to the trees they're replacing

As a last resort, you can manage nearby ancient and veteran trees (including dead and dying trees) to help prolong their life. You should get advice from a registered tree consultant ('arboriculturist') before carrying out work on veteran trees by contacting:

- the [Arboricultural Association](#)
- the [Institute of Chartered Foresters](#)

Leave the intact hulk of the ancient or veteran tree where it is (preferably standing) to benefit invertebrates and fungi. If that's not possible, move it near other ancient and veteran trees or parkland in the area.

When to contact Natural England

Natural England is a [statutory consultee](#) for proposals that affect any [site of special scientific interest](#). For all other proposals that affect ancient woodland or ancient and veteran trees, you should use the guidance on this page.

Consultation service

Natural England
Electra Way

Crewe Business Park
Crewe
Cheshire
CW1 6GJ

Email consultations@naturalengland.org.uk Telephone 0300 060 3900

When to contact the Forestry Commission

The Forestry Commission is a [non-statutory consultee](#). You should use the guidance on this page. Contact your [Forestry Commission England area office](#) for individual advice that's not covered on this page.

Forestry Commission England Tree Health Team

620 Bristol Business Park
Coldharbour Lane
Bristol
BS16 1EJ

Telephone: 0300 067 4000

Further information

Policy and standards:

- ['Keepers of time'](#) policy statement
- [National Planning Policy Framework, paragraphs 11 \(footnote 6\), 175c, 190](#)
- [The UK Forestry Standard](#)
- [British Standard 5837:2012](#) 'Trees in relation to design, demolition and construction - Recommendations'
- [British Standard 42020:2013](#) Biodiversity. Code of practice for planning and development
- [Managing ancient and native woodlands in England](#)

Other useful information:

- Natural England (2000) [Veteran Trees – a guide to good management](#)
- Lonsdale, D (2013) ['Ancient and other veteran trees: further guidance on management'](#)
- Soil translocation - ['A Habitats Translocation Policy for Britain'](#). JNCC, 2003, pages 9 to 10
- Corney et al (2008) [Impacts of nearby development on the ecology of ancient woodland](#)
- Ryan (2012) [Impacts of nearby development on the ecology of ancient woodland - addendum](#)
- [Woodland Trust: Ancient tree guides](#)

Published 13 October 2014

Last updated 5 November 2018 [+ show all updates](#)

COUNTY: WEST MIDLANDS

SITE NAME: BICKENHILL MEADOWS

DISTRICT: Solihull

SITE REF: 15W18

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended

Local Planning Authority: SOLIHULL METROPOLITAN BOROUGH COUNCIL

National Grid Reference: SP 182822, SP 188816

Area: 7.2 (ha.) 17.8 (ac.)

Ordnance Survey Sheet 1:50,000: 139

1:10,000: SP 18 SE

Date Notified (Under 1949 Act): –

Date of Last Revision: –

Date Notified (Under 1981 Act): 1991

Date of Last Revision: –

Other Information:
New site.

Description and Reasons for Notification:

Bickenhill Meadows consists of two groups of fields comprising species-rich grassland situated to the south and west of the village of Bickenhill on predominantly neutral soils overlying Keuper Marl.

The meadows comprise one of the richest grassland floras in the county with good examples of both meadow foxtail *Alopecurus pratensis* – great burnet *Sanguisorba officinalis* floodmeadow and common knapweed *Centaurea nigra* – crested dog's-tail *Cynosurus cristatus* meadow and pasture. Both grassland types have declined very severely nationally in the 20th century due to agricultural improvement. The West Midlands Region contains a major part of the national resource of the common knapweed – crested dog's-tail grassland type which is typically associated with level topography, loam or clay soils, moderately free drainage and the retention of traditional farming methods with small fields.

There is a complex pattern of vegetation resulting from local variations in topography and drainage, such as the ridge and furrow pattern, evident in some of the fields. This has led to the development of mosaics where the main vegetation types intermingle, as well as to areas where each type can be recognised. Characteristic species include common bent *Agrostis capillaris*, meadow foxtail, Yorkshire-fog *Holcus lanatus*, sweet vernal-grass *Anthoxanthum odoratum*, common sorrel *Rumex acetosa*, cat's-ear *Hypochoeris radicata*, ribwort plantain *Plantago lanceolata* and yellow rattle *Rhinanthus minor*. The sward is enriched by the presence of cowslip *Primula veris*, quaking-grass *Briza media*, lady's bedstraw *Galium verum*, devil's-bit scabious *Succisa pratensis*, heath-grass *Danthonia decumbens* and common spotted-orchid *Dactylorhiza fuchsii*. The fields also contain a number of uncommon species such as betony *Stachys officinalis*, pepper-saxifrage *Silaum silaus*, saw-wort *Serratula tinctoria*, as well as meadow thistle *Cirsium dissectum*, a county rarity.

Further interest is provided by wetter areas characterised by rushes *Juncus* spp., sedges *Carex* spp. and tall herbs such as meadowsweet *Filipendula ulmaria* and great burnet. Both groups of meadows have streams and there is a good range of tree and shrub species in the hedgerows around the fields.

Operations likely to damage the special interest

Site name: **Bickenhill Meadows**

OLD1002847

Ref. No.	Type of Operation
1	Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
2	Grazing.
3	Stock feeding.
4	Mowing or other methods of cutting vegetation.
5	Application of manure, fertilisers and lime.
6	Application of pesticides, including herbicides (weedkillers).
7	Dumping, spreading or discharge of any materials.
8	Burning.
9	The release into the site of any wild, feral or domestic animal*, plant or seed.
10	The killing or removal of any wild animal*, including pest control.
11	The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould and turf.
12	Tree and/or woodland management+ including afforestation, planting and felling.
13a	Drainage (including the use of mole, tile, tunnel or other artificial drains).
13b	Modification of the structure of watercourses (eg streams, springs, ditches, drains), including their banks and beds, as by re-alignment, re-grading and dredging.
13c	Management of aquatic and bank vegetation for drainage purposes.
14	The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
15	Infilling of ditches, drains, ponds or marshes.
16a	Freshwater fishery production and/or management, including sporting fishing and angling.
20	Extraction of minerals, including sand and gravel, topsoil, subsoil and spoil.
21	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22	Storage of materials.
23	Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
26	Use of vehicles or craft likely to damage or disturb features of interest.
27	Recreational or other activities likely to damage the grasslands, hedge or streams.
28	Game and waterfowl management and hunting practice.

* 'animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate.

+ including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.

COUNTY: WEST MIDLANDS & WARWICKSHIRE SITE NAME: RIVER
BLYTHE

DISTRICT: SOLIHULL, NORTH WARWICKSHIRE, SITE REF: 15WF5
STRATFORD-UPON-AVON

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended.

Local Planning Authority: WARWICKSHIRE COUNTY COUNCIL, Solihull
Metropolitan Borough Council, North Warwickshire Borough Council, Stratford-upon-Avon District Council

National Grid Reference: SP 109729 to SP 212916 Area: 102.2 (ha.) 252.5 (ac.)

Ordnance Survey Sheet 1:50,000: 139 1:10,000: SP 17 SW, NW, NE, SP 27 NW,
SP 28 SW, NW, SP 29 SW

Date Notified (Under 1949 Act): – Date of Last Revision: –

Date Notified (Under 1981 Act): 1989 Date of Last Revision: –

Other Information:

A new site.

Description and Reasons for Notification:

The 39 kilometre stretch of the River Blythe, from the point at which Spring Brook exits from under the Stratford-upon-Avon to Birmingham railway line to its confluence with the River Tame, is a particularly fine example of a lowland river on clay.

The Blythe has a wide range of natural structural features such as riffles, pools, small cliffs and meanders. These features are combined with a high diversity of substrate types ranging from fine silt and clay in the lower reaches to sands and gravels in the upper and middle reaches and in the riffles. The structure of this river is very variable and its importance is increased because of the rarity of such examples in lowland Britain.

The diverse physical features of the Blythe are mirrored by its diverse plant communities. The mean number of plant species found in any 1 km stretch is above average for a lowland river, as is the number of species recorded for the whole length of the river. Botanically, the Blythe is one of the richest rivers in lowland England with the most species-rich sections containing as many species as the very richest chalk streams.

Unlike many lowland rivers, the Blythe shows a clear succession of plant communities from its source to its confluence with the Tame. The substratum in the upper reaches is frequently composed of loose gravel and the margins still retain a high density of trees and shrubs. The vegetation in the channel is, therefore, shade-impooverished but algae and some flowering plants such as waterweeds *Elodea* spp. and water-starworts *Callitriche* spp. provide seasonal cover. The habitats in these upper reaches are important for their invertebrates.

Downstream, the trees and shrubs on the margins become fewer but still remain at a higher density than most lowland rivers. As the river becomes deeper and wider and the shading from trees is reduced, the flora becomes rich and varied. In the shallow, fast-running stretches with gravel beds, water-crowfoots *Ranunculus fluitans* and *R. penicillatus* var. *calcareus* grow in profusion with 'blanket-weed' algae which are abundant through the summer months. Where larger stones are present a rich encrusting algal flora develops along with the fresh water sponge *Ephydatia fluviatilis*.

There is a rich flora in stretches with a moderate rate of flow over a clay bottom. The emergent common clubrush *Schoenoplectus lacustris* and branched bur-reed *Sparganium erectum* occur here alongside submerged species of pondweed *Potamogeton pectinatus*, *P. perfoliatus* and *P. crispus*, lesser bur-reed *Sparganium emersum*, spiked water-milfoil *Myriophyllum spicatum* and many other less common species. On the margins, sedges *Carex* spp. are frequent alongside species of sweet-grass *Glyceria* spp., reed canary-grass *Phalaris arundinacea* and many other flowering plants.

In the lower reaches where shallow stretches alternate with deeper, slower sections, the flora is diverse. Alongside many of the species recorded upstream are flowering rush *Butomus umbellatus*, arrowhead *Sagittaria sagittifolia* and yellow water-lily *Nuphar lutea*. The marginal flora is rich with mats of aquatic vegetation encroaching from the banks into the water. Amphibious bistort *Polygonum amphibium*, great yellow-cress *Rorippa amphibia* and reed sweet-grass *Glyceria maxima* are typical constituents of this community.

Several damp, unimproved meadows occur along the length of the river. They receive some of their water from annual flooding and are largely dependent upon the river for the maintenance of a high water-table. Rushes *Juncus* spp., sedges and tufted hair-grass *Deschampsia cespitosa* are usually the dominant species along with moisture-loving herbs such as meadowsweet *Filipendula ulmaria*, marsh marigold *Caltha palustris* and wild angelica *Angelica sylvestris*. There are several small areas of wet alder *Alnus glutinosa* and willow *Salix* spp. woodland which have a varied ground flora and are an integral part of the river system.

The river supports a diverse invertebrate community with a wide range of molluscs, oligochaetes and caddisflies. The most notable species is the pea-shell cockle *Pisidium moitessierianum* which is at the western edge of its range here. The dragonflies are also well represented with the beautiful demoiselle *Calopteryx virgo* being the least common of the species found.

Operations likely to damage the special interest

Site name: River Blythe

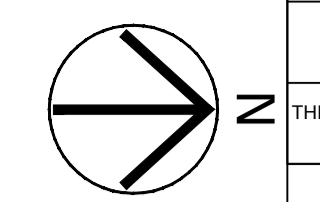
OLD1001772

Ref. No.	Type of Operation
1	Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
2	The introduction of grazing and changes in the grazing regime (including type of stock, intensity or seasonal pattern of grazing and cessation of grazing).
3	Stock feeding and changes in stock feeding practice.
4	Mowing or other methods of cutting vegetation and changes in the mowing or cutting regime (including hay making to silage and cessation).
5	Application of manure, fertilisers and lime.
6	Application of pesticides, including herbicides (weedkillers).
7	Dumping, spreading or discharge of any materials.
8	Burning.
9	The release into the site of any wild, feral or domestic animal*, plant or seed.
10	The killing or removal of any wild animal*, including pest control.
11	The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould and turf.
12	Tree or woodland management+ and changes in tree or woodland management+.
13a	Drainage (including the use of mole, tile, tunnel or other artificial drains).
13b	Modification of the structure of watercourses (eg rivers, streams, springs, ditches, drains), including their banks and beds, as by re-alignment, re-grading and dredging.
13c	Management of aquatic and bank vegetation for drainage purposes.
14	The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
15	Infilling of ditches, drains, ponds, pools or marshes.
16a	Freshwater fishery production or management and changes in freshwater fishery production and management, including sporting fishing and angling.
20	Extraction of minerals, including sand and gravel, topsoil, subsoil and spoil.
21	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22	Storage of materials.
23	Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
26	Use of vehicles or craft likely to damage or disturb features of interest.
27	Recreational or other activities likely to damage or disturb features of interest.
28	Game and waterfowl management and hunting practices and changes in game and waterfowl management and hunting practice.

* 'animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate.

+ including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.

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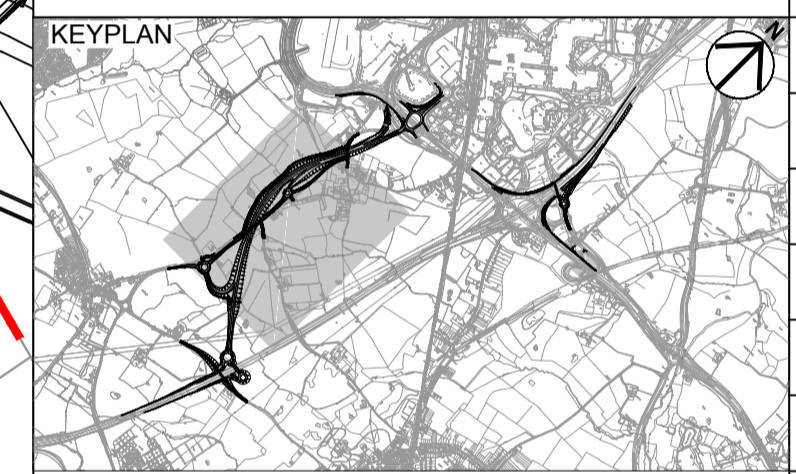
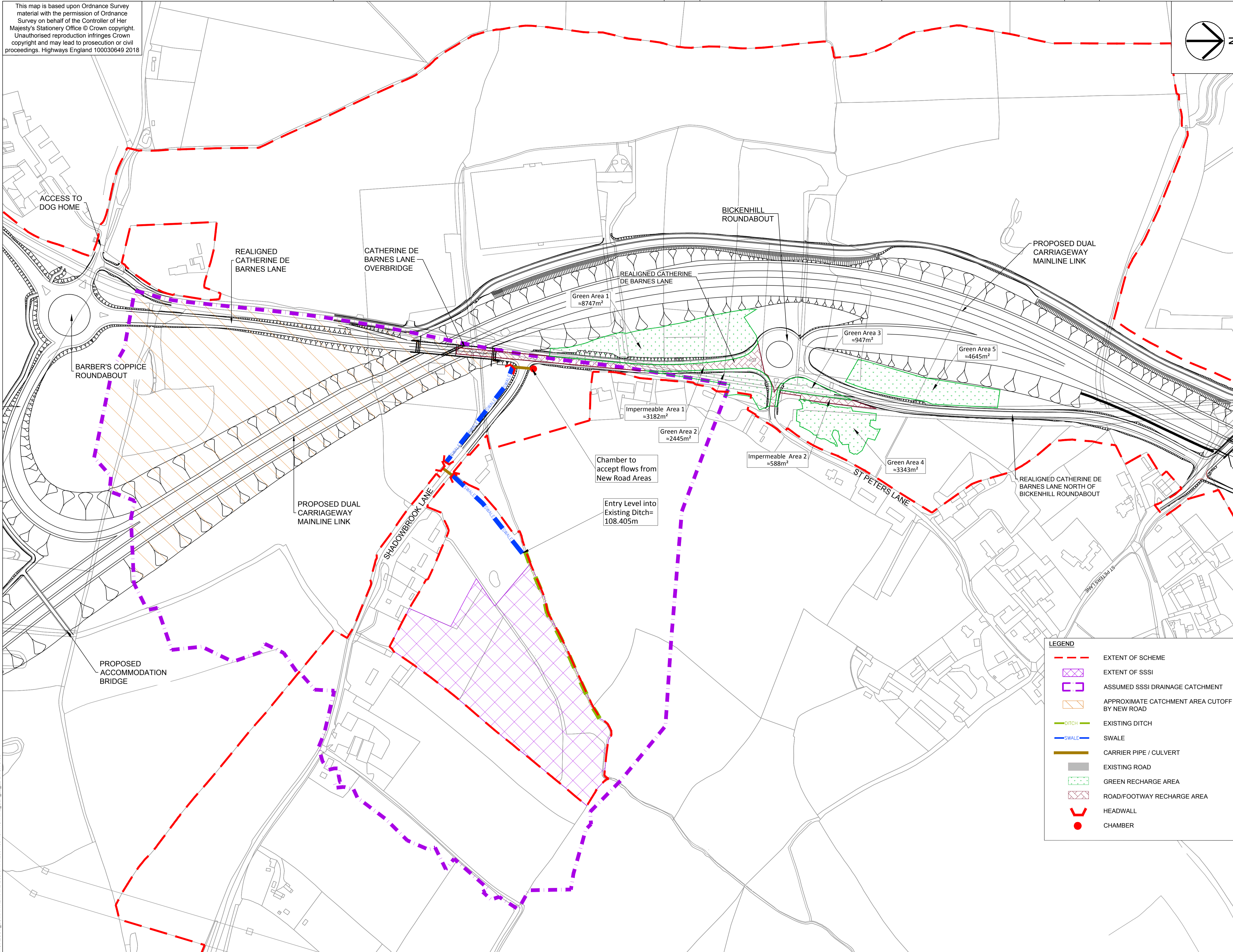


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Revision Details	By	Date	Suffix

Purpose of issue

FOR INFORMATION
 Client: Highways England
 Floor 5
 Two Colmore Square
 38 Colmore Circus
 B4 6BN

Project Title
M42 JUNCTION 6 IMPROVEMENT

Drawing Title
BICKENHILL MEADOWS SSSI MITIGATION SOLUTION OPTION C

Designed	Drawn	Checked	Approved	Date
OM	MA	OM	JF	04/03/19

Internal Project No. 60543032
 Scale @ A1 1:2000
 Suitability S2
 Zone M42

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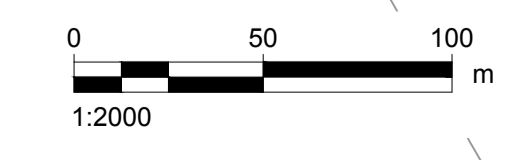
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LEGEND

- EXTENT OF SCHEME
- EXTENT OF SSSI
- ASSUMED SSSI DRAINAGE CATCHMENT
- APPROXIMATE CATCHMENT AREA CUTOFF BY NEW ROAD
- EXISTING DITCH
- SWALE
- CARRIER PIPE / CULVERT
- EXISTING ROAD
- GREEN RECHARGE AREA
- ROAD/FOOTWAY RECHARGE AREA
- HEADWALL
- CHAMBER

Swale to fall at maximum grade of 1 in 200
 Pipes to fall at maximum grade of 1 in 167 (225mm Ø)

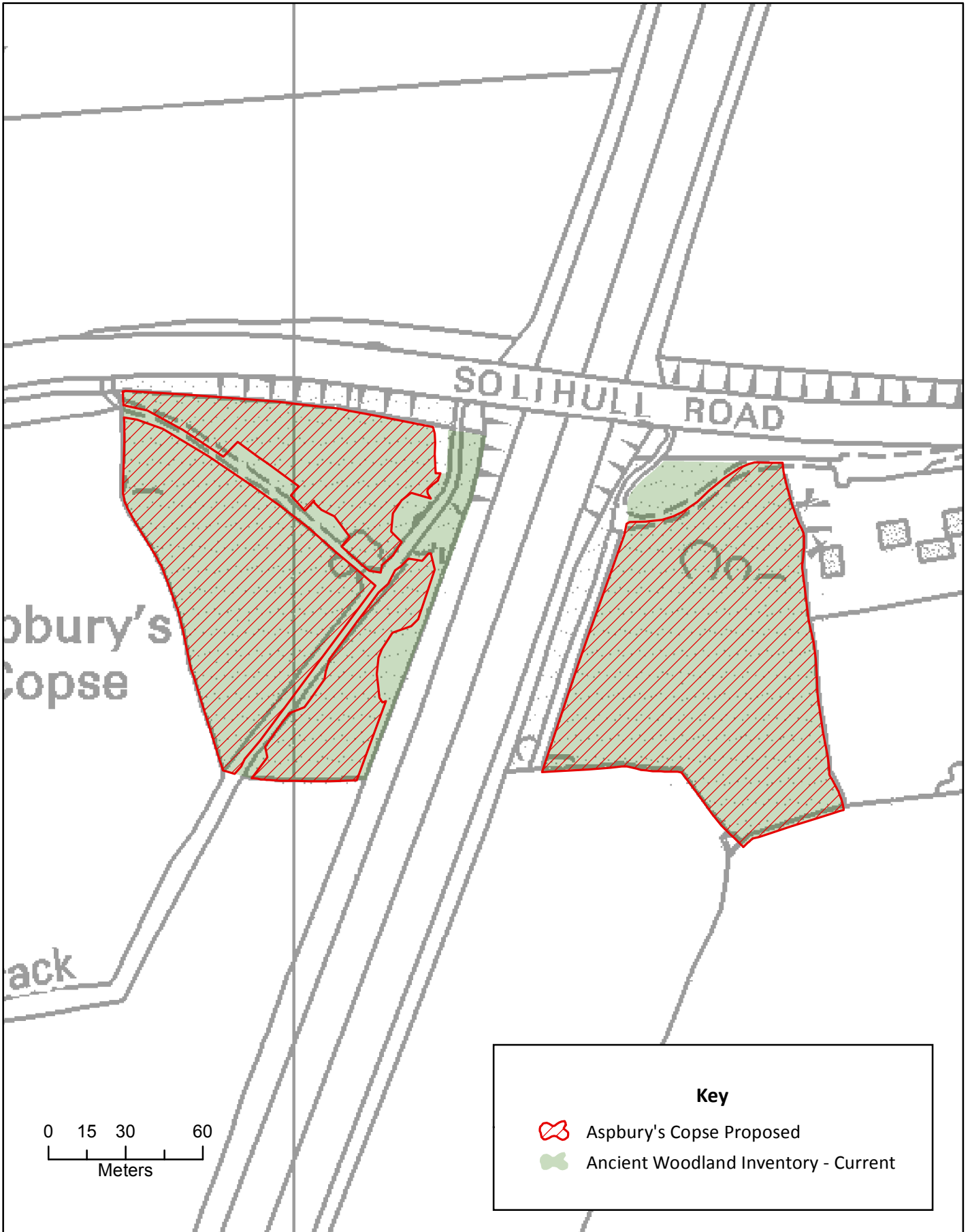


Plot Date: 13 March 2019 15:17:59
 File Name: C:\P\WORKING\AECOM\EU\MATTHEW.HARDCASTLE\THESS\BICKENHILL\GEN_ZZ_SK-CH-0100

Drawing Number	Originator	Volume	Rev
HE551485 - ACM	HGN	1	P01

Location: M42_GEN_ZZ_ZZ -DR-SK-0100
 I Type I Role I Number

Aspbury's Copse



M42 Junction 6 Improvement Scheme DAS advice on ancient woodland

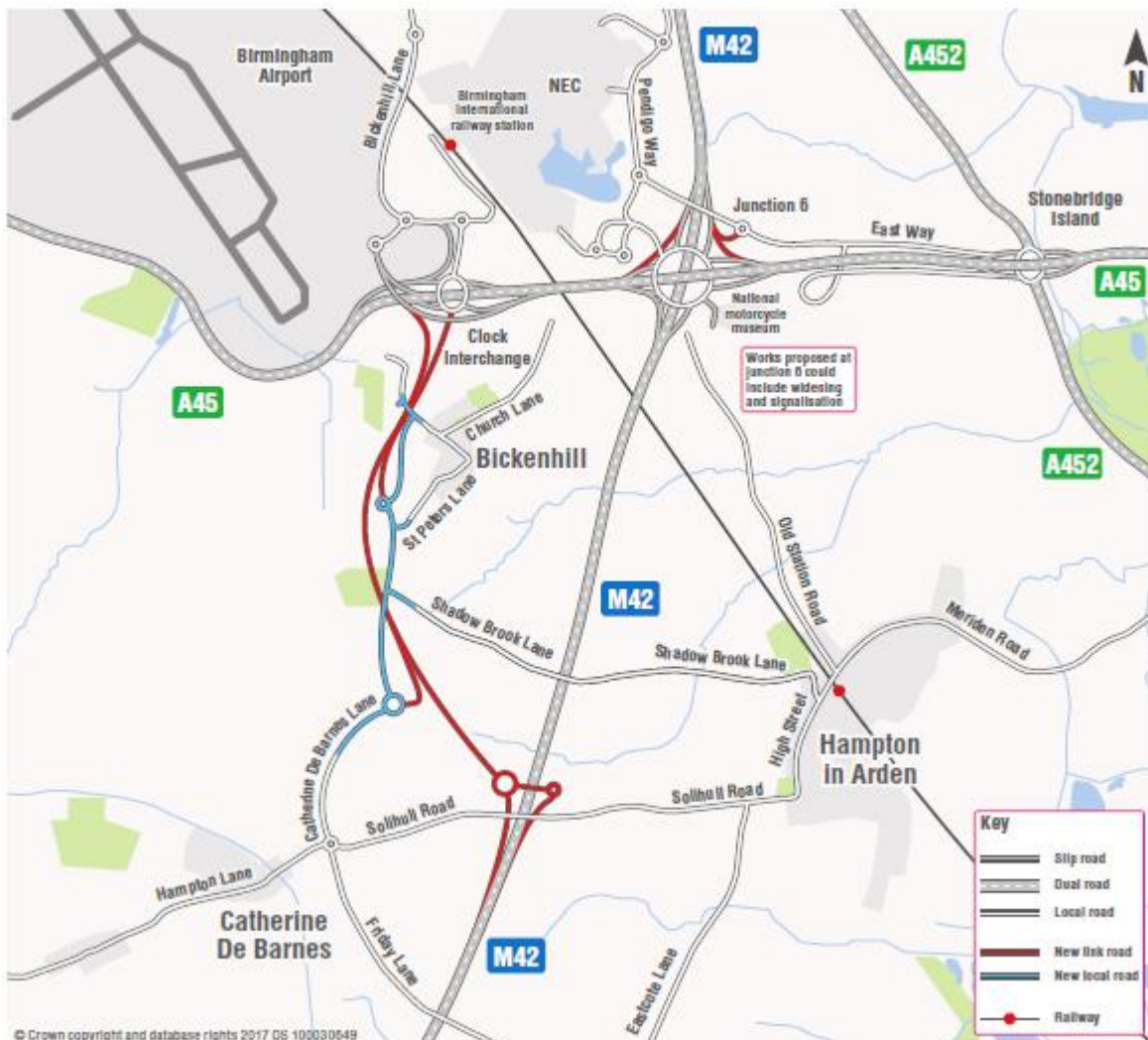
Dr Marion Bryant Woodland and Trees Specialist, Specialist Services and Programmes, Natural England

24/08/18

Introduction

The woodland specialist team was asked to provide advice on the above road scheme relating to three areas: impacts on ancient woodland, compensation for impacts on ancient woodland and the Standing Advice review following the publication of the revised NPPF.

This project is at the preliminary design stage (Stage 3). A preferred route has been chosen and published, a modified version of Option 1, Option 1B; three viable options were considered. It is of note that Option 3 avoided loss of ancient woodland, however, this was ruled out, in part due to other environmental impacts, such as on a local SSSI and green belt. This advice only deals with the preferred route – Option 1B, shown on the plan below.



As the project is at the preliminary design stage, detailed surveys are currently being undertaken to inform the EIA and are not yet available. In order to assess fully the impacts on ancient woodland Natural England would need to examine relevant environmental surveys and ecological impact assessments of relevant ancient woodland and surrounding land. When this information is available Natural England could provide further advice. This report therefore represents initial advice on the available information - available on the Highways England website <https://highwaysengland.citizenspace.com/he/m42-junction-6-improvement/>

The impacts of this scheme are likely to be compounded by a separate proposal for a new motorway service area; the environmental assessment will need to take into account cumulative development impacts.

Impacts on ancient woodland

Aspbury's Copse, grid reference SP190806, is the only ancient woodland shown on the ancient woodland inventory where loss, as well as direct impacts, will definitely occur. Another ancient woodland in the vicinity, Barber's Coppice, grid reference SP183808, may incur impacts, such as noise, light and air pollution, both during construction and operation. The construction of two new slip roads to service the new motorway junction 5A, will bisect both halves of Aspbury's Copse, resulting in direct loss of irreplaceable habitat, and severe disturbance. Likely impacts are habitat loss, disturbance to soils and hydrology, impacts of noise, vibration, light and air pollution, species disturbance and restriction of movement. The slip road construction will cause further fragmentation of this already fragmented woodland habitat, impacting on ecosystem and wider ecological network functioning. The exact areas of loss and severe disturbance are currently unknown and will need to be calculated taking into account cumulative development impacts. Further potential impacts due to the siting of the new junction to the north of the wood will also need to be investigated.

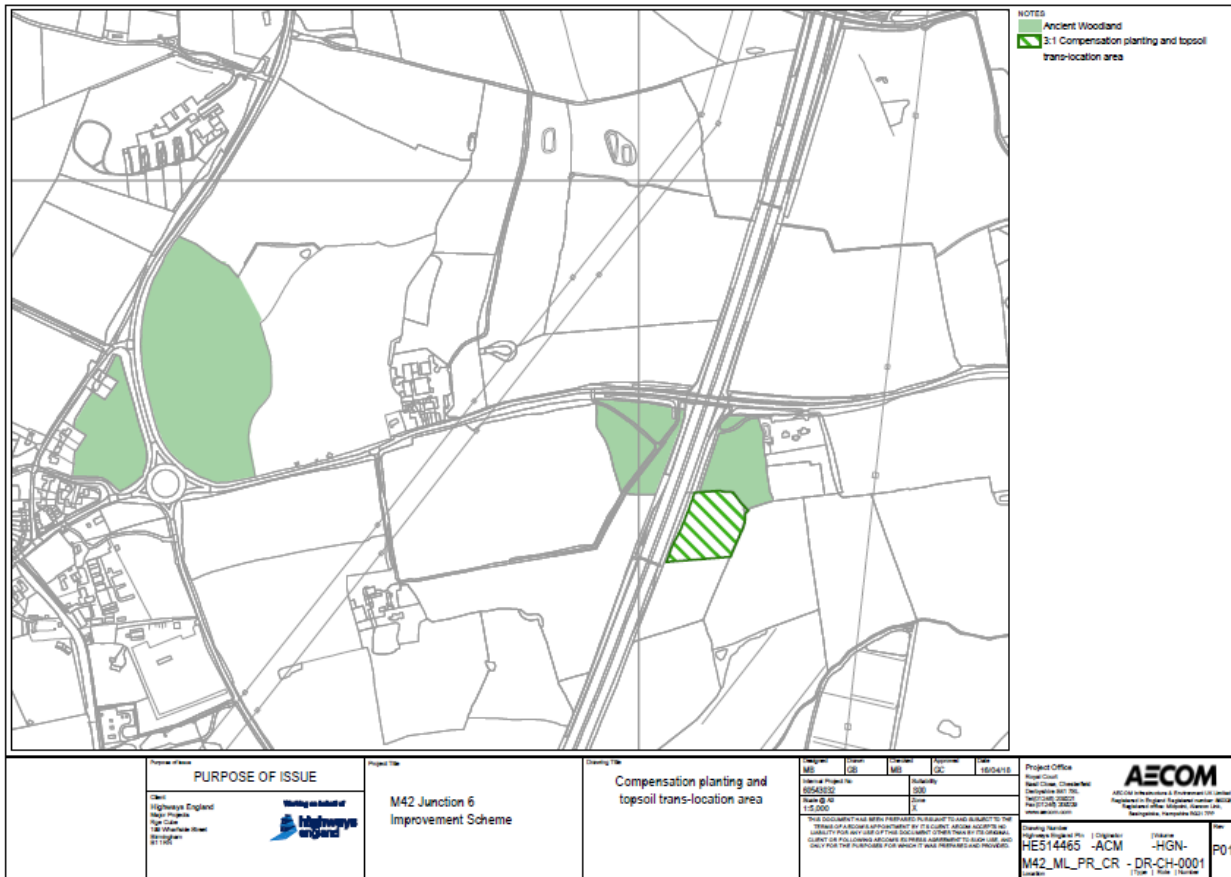
Aspbury's Copse removal of disturbed area from ancient woodland inventory

Natural England were recently provided with evidence on highly disturbed areas within Aspbury's Copse (as part of a consultation on proposals for a new motorway service area); this damage to the ancient woodland occurred during the original construction of the M42. As a result of examination of this evidence Natural England have decided that the highly disturbed area no longer constitutes ancient woodland and it will be removed from the ancient woodland inventory. A map of the agreed removal area and the digital data is currently being prepared by our GI specialist and will be provided separately when available.

Compensation for impacts on ancient woodland

The proposed compensation package for loss of and damage to ancient woodland at Aspbury's Copse is woodland creation by planting on a site immediately south of the

eastern half of the wood, where translocated ancient woodland topsoil will be spread. The current compensation ratio is 3:1; this may alter slightly when ancient woodland polygons are altered on the ancient woodland inventory due to the partial removal detailed above. The planting and soil translocation receptor site is shown in green hatching on the plan below.



This compensation ratio is deemed low for an irreplaceable habitat. In addition to the area of habitat created for compensation, Natural England would encourage further opportunities to be sought during detailed study of the area, to further enhance Aspbury's Copse and ecological networks in the wider area. Ancient woodland is an isolated and scarce resource in this landscape, however, the hedgerow network should be explored for linkage opportunities. The current condition and management of ancient woodland in the area should be considered when designing the compensation package. Positive management of Aspbury's Copse and Barber's Coppice should be sought.

Whilst the evidence base for the merits of ancient woodland soil translocation (where woodland is to be lost) are lacking, it is an important part of the ancient woodland system, which would otherwise be lost entirely. The position of the soil receptor site immediately adjacent to the eastern half of the wood is positive. Soil translocation methodology is likely to be key to success, especially considering transferring soils with as little disturbance as

possible, e.g. by lifting a whole area of soil, rather than by bulldozing and respreading. Long term monitoring of the translocated site should be undertaken, which will add to the evidence base.

As ancient woodland loss will occur in both halves of this wood it would be useful to explore further woodland creation contiguous with western half of the wood. This would further extend and buffer Aspbury's Copse. Further woodland creation north of Aspbury's Copse would buffer the woodland from potential impacts of the new motorway junction.

Standing Advice review

The Natural England / Forestry Commission Standing Advice on ancient woodland and veteran trees is currently under review following the publication of the revised NPPF. This review is close to completion and the revised standing advice is due to be published in September 2018. The revised advice is not yet finalised, but it will reflect changes to the NPPF including the addition of the term 'wholly exceptional' and of ancient woodland and veteran trees as irreplaceable habitats, and it will also provide further clarity on buffers and when to take woodland condition into account.

Updating the Defra Biodiversity Metric



1. Introduction

We are proposing to update the **metric** approach to quantifying biodiversity net gain. The metric selected is an evolution of the one piloted by Defra in 2012¹. We are calling this the 'Defra Biodiversity Metric 2.0'. This guide briefly explains how the updated metric will work.

This release explains the 'beta' version of the Defra Biodiversity Metric 2.0, which is still subject to refinement according to stakeholder feedback. Further detailed guidance and a finalised metric will follow early next year to enable users of the metric to apply it effectively and consistently in practice, and to minimise risks of misinterpretation. Natural England will provide an automated spreadsheet tool to support users of the Defra metric, which will also be accompanied by guidance for those using the tool in practice.

Headline changes from the 2012-2014 Defra metric

Like the 2012-2014 metric, the updated version will use habitats as a proxy for the biodiversity value of a site. Some alterations have been made to give a fairer and more balanced assessment, including:

- A different mechanism for spatial factors, which allow habitat connectivity and strategic importance to be assessed for development sites as well as for compensation sites.
- A new multiplier to incentivise local delivery when compensation is required.
- New intermediate scores for condition, allowing for greater precision where a habitat's condition does not fit well into the existing three condition tiers.
- Updated habitat distinctiveness bands reflecting expert assessment, new habitat types which are better suited to urban and on-site habitat creation, and a new higher tier band.
- The finalised updated metric will include supplementary metrics for linear features such as hedgerows and rivers.
- The finalised updated metric will include a function to recognise the value of intermediate habitats before target condition is reached.
- A translation of the distinctiveness bands to the new UKHAB habitat classification will be provided (Phase 1 habitat types may still be used), and new condition guidance will be provided to supersede the previously used Farm Environment Plan (FEP) specifications.

2. General approach

The metric uses **habitat** to describe biodiversity, which is converted into measurable '**biodiversity units**' according to the area of each type of habitat. The metric scores different habitat types (e.g. woodland, grassland) according to their relative biodiversity value and adjusts this according to the condition and location of the habitat. Where new habitat is created or existing habitat is enhanced then the associated risks of doing so are factored into the metric.

¹ DEFRA. 2012. Biodiversity offsetting pilots. Technical paper: the metric for the biodiversity offsetting pilot in England. Defra. March 2012. <https://www.gov.uk/government/collections/biodiversity-offsetting>

The metric can be used as an auditing tool to quantify the biodiversity value of habitats on a patch of land and it can be used to calculate the losses and gains in biodiversity from actions such as development or from positive conservation management.

The biodiversity metric is based on **habitat area**. There are, in addition, supplementary metrics for habitats with special biodiversity properties that require separate consideration to properly reflect their value to biodiversity. Examples that will be included in the finalised version of the metric are: hedgerows and lines of trees, and rivers and streams. These have their own assessment and output units, which are distinct and need to be kept separate in any 'account' of biodiversity value or change. For simplicity's sake, this guide focuses solely on the main habitat area metric. The general approach and principles are, however, similar for the supplementary metrics.

3. Key principles of using this metric

- **The metric does not change policy or the protection afforded to biodiversity:** existing levels of protection afforded to protected species and to habitats are not affected by the use of this metric.
- **The metric sits within a decision framework based on the mitigation hierarchy:** it informs decision-making where application of the mitigation hierarchy² and good practice principles³ has concluded that compensation for habitat losses is justified.
- **The metric is a proxy for biodiversity:** while it is underpinned by ecological evidence the metric is only a proxy for biodiversity and has been kept deliberately simple to make it of practical use.
- **The metric focuses on widespread species and typical habitats:** it is a suitable proxy for widespread species found in typical examples of different habitats. Scarce and protected species are likely to need separate consideration to the biodiversity metric.
- **The metric recognises the importance of place and connectivity:** it seeks to enhance biodiversity in the locality of impacts so far as possible as well as contributing to wider ecological networks by creating more, bigger, better and joined areas for biodiversity⁴.
- **The metric informs decisions:** Decisions and management interventions need to take account of expert ecological advice and not just the biodiversity unit outputs of the metric. The historic or landscape significance of a habitat, and relevant planning policies, are also relevant.

4. Valuing habitats for biodiversity

To apply the metric a site should be surveyed, mapped and divided into parcels of distinct habitat types present using a recognised habitat classification system. All surfaces present, including built on surfaces, can be included. Users have a choice between the 'Phase 1' and the new 'UKHAB' habitat classification systems, the latter providing a more detailed classification for urban areas. Whichever habitat classification is used, this needs to be used consistently for the whole project to maintain comparability. The unit of area measurement is hectares.

The biodiversity 'value' of a habitat parcel is evaluated on the basis of its area and the relative 'quality' of its habitat. The assessment of quality comprises four components (explained further below):

- Distinctiveness
- Condition
- Strategic significance
- Habitat connectivity

² Planning policy explained: <https://www.gov.uk/guidance/national-planning-policy-framework>

³ CIEEM, CIRIA, IEMA. 2016 Biodiversity Net Gain – Good Practice Principles for Development. https://www.cieem.net/data/files/Publications/Biodiversity_Net_Gain_Principles.pdf

⁴ Lawton et al (2010) Making Space for Nature: a review of England's wildlife sites and ecological network.

The metric operates by applying a score to each of these elements for a habitat parcel. Then a calculation using the scores and the area of the habitat gives a number of **biodiversity units** that represents the biodiversity value of that habitat parcel. The calculation for a simple scenario is illustrated in Appendix 1.

The initial calculation determines the 'baseline' or 'pre intervention' value in biodiversity units. The process is then repeated using a 'post development' or 'post intervention' scenario to account for the impact of the development or intervention (including any on site measures to retain, enhance or create additional biodiversity within the development site).

At this point additional factors to account for the risk associated with creating, restoring or enhancing habitats are considered. The risks (explained further below) are:

- Difficulty of creating or restoring a habitat
- Temporal risk
- Spatial Risk

The relative value in biodiversity units 'post development' is then deducted from the 'baseline' to give a value for the extent of change. If a 'Net Gain' is achieved on site there is no need to consider off site measures. However if the calculation does not result in a sufficient 'Net Gain' in biodiversity units the development proposal can be revisited to improve the number of biodiversity units obtained or, if there is no scope for additional on-site compensation or enhancement, off-site measures will need to be considered.

If off site measures are required, a similar process is undertaken to establish biodiversity unit values on the offsite land 'pre intervention' and 'post intervention' to calculate how many units that land can contribute as compensation. The change in biodiversity units on site is then added to the change in units off site to provide a total change in biodiversity units for the development. The total change in units needs to be sufficient to ensure a 'Net Gain' is achieved.

The example in Appendix 1 illustrates the general approach used to calculate biodiversity value for habitats as described above. The metric will be accompanied by a freely available tool which will perform the calculations shown in Appendix 1.

5. Description of quality components

5.1 Distinctiveness

Habitats are assigned to distinctiveness bands based on an assessment of their distinguishing features including consideration of species richness, rarity (at local, regional, national and international scales), and the degree to which a habitat supports species rarely found in other habitats. The distinctiveness band of each habitat is preassigned for each habitat classification scheme.

Distinctiveness categories (area habitat)		
Category	Score	Example of habitat type
Very High	8	Priority habitats as defined in Section 41 of the NERC Act that are highly threatened, internationally scarce and require conservation action e.g. blanket bog
High	6	Priority habitats as defined in Section 41 of the NERC Act requiring conservation action e.g. lowland fens
Medium	4	Semi-natural vegetation not classed as a priority habitat e.g. hazel scrub
Low	2	Semi-natural or modified vegetation not classed as a priority habitat and of lower relative value to most wildlife e.g. Temporary grass and clover ley; intensive orchard; rhododendron scrub
Very Low	0	Habitats and land cover of little or no value to wildlife e.g. Developed land sealed surface

5.2 Condition

The metric takes account of the condition of a habitat. This means assessing the characteristics of a habitat parcel against a set of minimum requirements equating to 'good' condition for that habitat type. Condition assessment uses agreed standards and methodology tailored to the habitat unit type, which will be provided early next year and will supersede the previously used Farm Environment Plan (FEP) methodology, which can be difficult to apply in non-agricultural contexts.

Condition categories (area habitat)	
Category	Score
Good	3
Fairly good	2.5
Moderate	2
Fairly poor	1.5
Poor	1
N/A - Agriculture	1
N/A - Other	0

5.3 Habitat connectivity

The focus of the **habitat connectivity component** in the metric is the relationship of a particular habitat patch to other surrounding similar or related semi-natural habitats, which could be facilitating flows of species and ecosystem services. The approach is based upon the 'structural connectivity' model within the National Biodiversity Climate Change Vulnerability Model⁵. The calculation will be automated using a freely available tool to generate output that can be fed into the metric calculation. Where available local or site level data sets can also be entered into tool before the calculation is run. Connectivity is applied both pre and post intervention scenarios.

Guidance will provide advice on taking a proportionate approach to assessing habitat connectivity, recognising that smaller developments will typically result in less significant connectivity impacts.

Habitat connectivity categories	
Category	Score
High connectivity	1.15
Moderate connectivity	1.1
Low connectivity	1

5.4 Strategic significance

The idea of strategic significance works at a landscape scale taking account of published Nature Recovery Areas, local biodiversity plans, National Character Area⁶ objectives and local plans for targeting green infrastructure and biodiversity. This component gives extra value to habitats that are located in optimal locations to meet biodiversity and other environmental objectives. This could include areas identified as suitable for protected species compensation.

⁵ Taylor S, Knight, M. & Harfoot, A. 2014. *National biodiversity climate change vulnerability model*. Natural England Research Report NERR054. Natural England. ISBN 978-1-78354-084-6.

⁶ For more details of National Character Areas see: <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles>

Strategic significance categories			
Category	Score	Point applied to calculation	
		Pre-impact	Post-impact
High strategic significance Within an area formally identified as being of good environmental potential in local policy	1.15	Yes	Yes
Medium strategic significance Good environmental potential but not in an area formally identified as being of good environmental potential in local policy	1.1	Yes	Yes
Low strategic Significance Low environmental potential and not in an area formally identified as being of good environmental potential in local policy	1	Yes	Yes

6 Dealing with risk

There are uncertainties and a risk of failure in any endeavour to create or improve the biodiversity value of a habitat. Where it is not possible to complete the habitat improvements works required to compensate for future losses in advance of the habitat losses occurring, risks need to be mitigated. This is done in the metric by adopting a multiplier to reduce the number of units generated by an area of compensation habitat. The following risks are recognised in this metric.

6.1 Temporal risk

If there is a mismatch between a negative impact on biodiversity and compensation habitat reaching the required quality or level of maturity, there will be a loss of biodiversity for a period of time.

This issue can be managed by the creation of compensation habitat ahead of the impact taking place, either through the setting up of habitat banks or, for projects with a long lead in, by starting the offset work well ahead of the development. However, this is not always possible and even where the management to create compensation habitat starts in advance, the time taken for habitats to mature means that there will almost inevitably be a time lag. Where a time lag does occur, a multiplier is applied to take account of it. This is referred to as the 'Time to target condition' multiplier.

Where time discounting is used in compensation schemes a standard discount rate of 3.5% is used. This is the value recommended in the Treasury Green Book. The maximum multiplier taking account of temporal risk increases the compensation required three-fold, which equates to approximately 32 years.

Time to target condition categories	
Number of years	Multiplier
1 year	0.965
5 years	0.837
10 years	0.700
20 years	0.490
30 years	0.343

6.2 Difficulty of creation and restoration

This component recognises how difficult it is to create or restore a given habitat type and the related uncertainty of outcome this creates. The level of risk will differ between habitat types because of ecological factors and the availability of techniques or know-how to create habitats in a realistic time-frame. Uncertainty in achieving the target outcome for each habitat is addressed by a habitat-specific 'difficulty' multiplier.

Difficulty categories	
Category	Multiplier
Very High	0.1
High	0.33
Medium	0.67
Low	1

6.3 Spatial risk

This component is a simple reflection of the fact that habitat created at a great distance from the site of habitat losses carries a risk of depleting local areas of natural habitats, and of depriving the communities experiencing development of the associated benefits. The multiplier is very simple, and should be applied as a rule but with the discretion of the local planning authority (for example, where a development near to a local planning authority boundary creates compensatory habitat locally, but technically in a separate planning area).

Local risk	
Category	Multiplier
Compensation inside LPA or NCA, or deemed to be sufficiently local to site of biodiversity loss	1
Compensation <u>outside</u> LPA or NCA of impact site but in neighbouring LPA or NCA	0.75
Compensation <u>outside</u> LPA or NCA of impact site and beyond neighbouring LPA or NCA	0.5

7 Additional metric rules

This summary of core rules and principles is not exhaustive and further guidance will be provided in due course to help users in applying the updated metric effectively and consistently.

7.1 Compensation for losses

Compensation for habitat losses can be provided by creation and by restoration or enhancement of existing habitats. Measures taken to improve existing habitats must provide a significant and demonstrable uplift in distinctiveness and/or condition.

7.2 'Trading down' is not permitted

Newly created or restored habitats should result in an improvement in the extent or quality of the habitat affected. New or restored habitats should aim to achieve a higher distinctiveness and / or condition than those lost. At no time should compensation measures result in "trading down", for instance in the replacement of a habitat of high distinctiveness with creation or restoration of a habitat of a lower distinctiveness. Losses of habitat of a high distinctiveness are expected to be compensated on a "like for like" basis.

7.3 Differences in size between impacted site and compensation habitat

A difference between the size of an area of an impacted site and the size of an area of compensation habitat is permitted using this metric. A difference can occur because of a difference in quality between the site impacted and the compensation provided. For example, if a habitat of low distinctiveness is impacted and is compensated for by the creation of habitat of high distinctiveness, the area needed to compensate for losses can theoretically be less than the area impacted.

7.4 Local and special characteristics need to be considered

Those creating and restoring habitats should aim to replicate the characteristics of the habitats that have been lost, to achieve a similar community of characteristic species, and to take account of particular species in a locality that give habitats their local distinctiveness.

Appendix 1: Calculating the biodiversity value of a habitat

The example below illustrates the general approach used to calculate biodiversity value for habitats

PRE - intervention biodiversity calculation

$$\begin{array}{l}
 \text{Size of habitat parcel} \times \text{Distinctiveness} \times \text{Condition} \times \text{Strategic location} \times \text{Connectivity} = \text{Biodiversity units} \\
 10 \text{ (ha)} \times 6 \text{ (high)} \times 3 \text{ (good)} \times 1.15 \text{ (high)} \times 1.15 \text{ (high)} = 238 \text{ units}
 \end{array}$$





POST-intervention biodiversity calculation (for newly created habitat)

$$\begin{array}{l}
 \text{Size of habitat parcel} \times \text{Distinctiveness} \times \text{Condition} \times \text{Strategic location} \times \text{Connectivity} \times \text{Difficulty} \times \text{Time to target condition} \times \text{Spatial Risk} = \text{Biodiversity units} \\
 10 \text{ (ha)} \times 6 \text{ (high)} \times 3 \text{ (good)} \times 1.15 \text{ (high)} \times 1.15 \text{ (high)} \times 0.7 \text{ (med)} \times 0.8 \text{ (5 yrs)} \times 0.75 = 100 \text{ units}
 \end{array}$$

=

The net effect of an intervention (or a series of interventions) on biodiversity is calculated as follows:

$$\begin{array}{l}
 \text{POST units} - \text{PRE units} = \text{Outcome} \\
 100 \text{ units} - 238 \text{ units} = -138 \text{ units}
 \end{array}$$

	Habitat parcel		Risk factor
	Measure of biodiversity quality		Value in biodiversity units