

Ashland Road West, Sutton-in-Ashfield Appeal

Proof of Evidence on behalf of Ashfield District
Council for Ecology

By

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1. Qualifications

1. I am Andrew Baker and I am Director of the ecological consultancy Baker Consultants Limited, which I established in March 2009. I hold the degree of Bachelor of Science with Honours in Botany from the University of Nottingham (1986). I have been a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) since 1994.
2. I have been a practising ecologist for over 30 years, having worked throughout the UK for organisations such as English Nature (now Natural England), Nottinghamshire Wildlife Trust, the Peak District National Park Authority, large civil engineering consultancies and private ecological firms. Much of my work involves providing expert advice to clients on Environmental Impact Assessments (EIA) and Habitats Regulations Assessments (HRA) of the impacts of proposals on international sites (Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites) and Sites of Special Scientific Interest (SSSI).
3. In my work in private practice my clients come from the public, private and voluntary sectors. Public sector clients include English Nature (as was), the Department of the Environment Transport and the Regions (as was), the Environment Agency and Local Planning Authorities. My work for private clients includes numerous residential projects ranging from small schemes of two or three dwellings to large urban extensions of 2000 plus units. I have also worked on many leisure projects (theme parks, caravan sites and hotels) and large port and airport developments.
4. I am actively involved in the development of the ecological profession. I have published articles on EIA and protected species legislation. I am a member of the United Kingdom Environmental Law Association (UKELA) and a former Convenor of its Nature Conservation Working Group. As Convenor of the working group I was responsible for coordinating comments on emerging wildlife legislation and policy, such as the now superseded Planning Policy Statement 9. In 2003 I was a member of the then Highways Agency's (now Highways England) Translocation Steering Group, which subsequently published a best practice guide on habitat translocation. More recently I was a member of the steering group working with the British Standards Institute and the Association of Local Government Ecologists to produce a 'Publicly Available Specification' that

provides recommendations for the integration of biodiversity conservation into land use and spatial planning in the UK. This was the forerunner of British Standard BS42020.

5. I am currently a standing member on CIEEM's disciplinary board and I am frequently called upon to hear cases that are brought against members of the profession, often chairing the hearings.
6. I have considerable expertise in the practical application of nature conservation law and I have published widely on the subject including (along with Browne Jacobson Solicitors) the 2nd Edition of 'A Manual of Nature Conservation Law' edited by Michael Fry. Through my involvement in the UKELA I have been actively involved in the development of nature conservation law and planning policy that affects ecological issues. I have specific expertise of the practical application of this area of law and I teach on European and domestic nature conservation law and its associated guidance and policy. In 2015 I was made a Fellow of CIEEM in recognition of my contribution to this field of work.
7. I am frequently called upon to give evidence to both local plan examinations and public inquiries into individual planning applications. I have also presented evidence to a Parliamentary Select Committee on the proposed ABLE UK port development on the Humber.
8. It was originally intended that my colleague Mr Mark Woods would be presenting the ecological evidence to this inquiry, however due to circumstance beyond his control Mr Woods was unable to attend the Inquiry dates. In this proof of evidence I have, therefore, been supported by Mr Woods who is employed by my company as a Principal Ecologist. Mr Woods is our most senior botanist and is the Botanical Society of Britain and Ireland (BSBI) joint Vice County Recorder for Nottinghamshire. Mr Woods also has considerable local knowledge of the Ashfield Area having surveyed most of the District on behalf of the County Council and the BSBI. Mr Woods has been a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) since 2000 and a Chartered Ecologist since 2015. Apart from botany, Mr Woods has expertise in habitat creation, management and monitoring, which is delivered to clients of the company. He also delivers professional training and post-graduate lectures in ecology.

9. The part of the evidence provided in this statement with regards to Brierley Forest Park is based on Mr Woods' site surveys and assessment together with his experience of practical management input that goes back to the period when the park was being created. For a previous employer Mr Woods was project manager for an assessment of the wetland areas of Brierley Forest Park that required botanical survey and assessment in support of proposals to protect and enhance wetland areas on the site. To be clear, I have therefore based the section of this proof on Brierley Forest Park on information that Mr Woods has shared with me from his direct experience.
10. The evidence I have prepared and provided to this hearing is true and I confirm that the opinions I express here are my true and professional judgements based on scientific evidence and my professional experience.

2. Background

11. Baker Consultants Ltd were commissioned on behalf of Ashfield District Council (ADC) in June 2021 to review the ecological issues associated with an application for residential development of 300 housing units on a plot of land off Ashland Road West, Sutton-in-Ashfield (ref: V/2020/0184) and the subsequent Appeal (ref.APP/W3005/W/21/3274818).
12. ADC gave three reasons for refusal and reason 2 is relevant to ecology, which states that the “loss of greenfield and associated habitats would also result in significant and irreversible harmful impacts to biodiversity. In addition, the density of the development is considered to be too high and out of keeping with the surrounding area. Accordingly, the proposal would be contrary to Policies ST1.... and EV2. There would also be conflict with Part 15 of the National Planning Policy Framework: ‘Conserving and enhancing the natural environment’. It is considered that these harms would significantly and demonstrably outweigh the benefits of the development.”
13. The site consists of two fields enclosed by boundary features such as hawthorn *Crataegus monogyna* dominated hedgerows, ditches and wide sown grassland margins. The smaller field contains species-poor semi-improved grassland, whilst the larger field contains uncultivated arable habitat that is a mix of grasses, ruderal herbs and former crop plants.
14. The land is not allocated for housing, but as stated in section 5 of the Appellant’s Statement of Case (Ref. NTTS5142/2P) ADC are writing a new Local Plan and Bellway Homes have subsequently promoted the land to be allocated as part of the emerging Local Plan. However, the emerging local plan is at such an early stage that the ‘saved’ policies of the Ashfield Local Plan Review 2002 remain relevant to this appeal.
15. Key legislation and policy that will be referred to in the text includes:
 - Wildlife and Countryside Act, 1981 (as amended);
 - Natural Environment and Rural Communities Act, 2006;
 - The Conservation of Habitats and Species Regulations 2017 (as amended);
 - The Hedgerow Regulations, 1997;

- National Planning Policy Framework (2021) (NPPF);
 - Ashfield Local Plan Review, 2002 (saved policies); and,
 - National Planning Practice Guidance (NPPG)
16. Defra has developed a Biodiversity Metric Calculator in advance of the pending Environment Bill gaining royal assent so that development plans can provide empirical evidence of measurable net gain for biodiversity. Currently the NPPG states: “*The National Planning Policy Framework encourages net gains for biodiversity to be sought through planning policies and decisions. Biodiversity net gain delivers measurable improvements for biodiversity by creating or enhancing habitats in association with development. Biodiversity net gain can be achieved on-site, off-site or through a combination of on-site and off-site measures.*”¹. Although ADC have no particular policy for the use of biodiversity net gain (BNG) in determining planning applications, the Appellant has decided to submit evidence that makes use of the Defra Biodiversity Metric Calculator (Beta version 2.0).
17. The following text summarises the introduction to the Biodiversity Metric Version 3.0 User Guide². Biodiversity Metric 3.0 is the latest version of a Defra commissioned project to develop a metric that began in 2008. Biodiversity Metric 3.0 builds upon the knowledge and experience gained through a pilot scheme, then consultation and feedback from further iterations.
18. Natural England (Panks et al (2021)), paragraph 1.6² states that “*Biodiversity metric 3.0 can be used to measure both on-site and off-site biodiversity changes for a project or development and can be used to measure the change in biodiversity achieved by different land management interventions. The metric also accounts for some of the risks associated whenever new habitat is created or existing habitat is enhanced. The metric calculates the change in biodiversity resulting from a project or development by subtracting the number of **pre-intervention** or ‘baseline’ biodiversity units (i.e. those originally existing on-site and off-site) from the number of **post-intervention** units (i.e. those projected to be provided after the development or change in land management). **It is important to note that achieving gains in biodiversity from the calculation does not necessarily mean a development meets any wider requirements of planning policy or***

¹ <https://www.gov.uk/guidance/natural-environment>: Paragraph: 022 Reference ID: 8-022-20190721

² Panks, S. et al (2021). Biodiversity metric 3.0: Auditing and accounting for biodiversity – User Guide. Natural England. **Letters in bold are Natural England’s emphasis**

law relating to nature conservation or biodiversity. The outputs of this metric are not absolute values but provide a proxy for the relative biodiversity worth of a site pre- and post-intervention.”

19. *“Biodiversity metric 3.0 supports and reinforces the application of the **mitigation hierarchy** which is an important principle of ecological good practice. Applying the mitigation hierarchy means aiming to retain habitats in situ and avoiding or minimising habitat damage so far as possible, before looking to enhance or recreate habitats. This sequential approach is encouraged by biodiversity metric 3.0 because it allows overall biodiversity gains to be achieved more easily through the avoidance of on-site habitat losses, rather than relying solely on the creation of new habitat or the enhancement of existing habitat. It works this way because the metric applies multipliers that are based on the risks inherent in creating or restoring habitat, and which are not applicable when existing habitat is safeguarded.”*

3. Planning and Policy Context

National Planning Policy Framework (2021)

20. Paragraph 174 requires development decisions to “*contribute to and enhance the natural and local environment by: d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*”. Paragraph 180a states that “if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused”. Paragraph 180a is based on the Mitigation Hierarchy³, which is a tool designed to help users limit, as far as possible, the negative impacts of development projects on biodiversity and ecosystem services. Firstly the proposed development has not demonstrated how the Mitigation Hierarchy has been applied in this case, there is no evidence to show that the applicant has considered ways in which they could avoid ecological damage by changes to the design of the proposal. The Appellant needs to provide adequate justification for adopting the ‘*last resort*’ approach and why there is no satisfactory alternative with regards to the provision of on-site ecological avoidance/mitigation. Furthermore the applicant has not demonstrated a net gain for biodiversity through on-site habitat creation and nor has it been demonstrated that the off-site compensation will achieve its stated aims.
21. Paragraph 174a requires that “*Planning policies and decisions should contribute to and enhance the natural and local environment by.....protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)*”. Access by new residents to the adjacent woodland on Brierley Forest Park Local Nature Reserve (LNR) and Local Wildlife Site (LWS) through new access points and the close proximity of housing to the boundary of Brierley Forest Park has the potential for an adverse impact on a site of biodiversity value through increased visitor pressure (trampling for sensitive plants, increased risk of fires, disturbance of wildlife and fly-tipping). Such adverse impacts conflict with paragraph 174a because local wildlife-rich habitats will not be protected and enhanced.

³ As defined by the CSBI (Framework for Guidance on Operationalizing the Biodiversity Mitigation Hierarchy, December 2013), the mitigation hierarchy is: ‘the sequence of actions to anticipate and avoid impacts on biodiversity and ecosystem services; and where avoidance is not possible, minimize; and, when impacts occur, rehabilitate or restore; and where significant residual impacts remain, offset.

22. To date the Appellant has not proposed any off-site compensation. ADC have proposed a sum of money for off-site compensation, based on the Biodiversity Net Gain Impact Assessment⁴ and suggested sites in the local area that could potentially benefit from funding. There has not, however, been any detailed assessment by the Appellant to show that the off-site compensation measures will deliver net gain. The proposed enhancement scheme has a very narrow scope with regards to habitat mitigation and relies on non-measurable gains such as the provision of a limited number of bird nesting boxes and bat roosting boxes. The proposed development is therefore not compliant with paragraph 174d of the NPPF.
23. Paragraph 180a states that permission should be refused “*if significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated..., or as a last resort, compensated for.*” Given the limited area of accessible greenspace within the proposed development for informal recreation, it is obvious that new residents on the Appellant’s site will want to visit Brierley Forest Park. The Appellant’s assessment of Brierley Forest Park (paragraphs 4.4 to 4.8) has one line in paragraph 4.5 stating that there will be a localised minor impact on the woodland as a consequence of visitor pressure. There is no evidence provided within the assessment as to how such a conclusion was determined. Delta-Simonds independent review of the FPCR assessment (10/07/2020, page 2, paragraphs 3 and 4) disagrees and describes the impact as ‘moderate’ and suggested fewer access points to Brierley Forest Park. At this stage, the potential impacts of visitor pressure on the biodiversity of Brierley Forest Park, as a consequence of an additional 300 houses next to the site, remains inadequately assessed and until there is evidence to the contrary the risk of harm to the ecological interest of Brierley Forest Park should be considered as significant.
24. Given the close proximity of the proposed development to Brierley Forest Park one would have expected that the Appellant would have fully considered the suite of impacts that are associated with increased visitor pressure on natural areas such as increased risk of fire and arson, disturbance of wildlife from people and dogs, trampling of vegetation, impacts of dog fouling, etc. Mitigation measures for each of these potential impacts should have been considered. None of these impacts have been considered by the Appellant.

⁴ Defra (2019). Biodiversity net gain and local nature recovery strategies: Impact Assessment (Reference: RPC-4277(1)-DEFRA-EA)

25. Given the lack of consideration of these impacts and the entire absence of any mitigation measures the grant of permission would be contrary to paragraph 180a of the NPPF.

Ashfield Local Plan Saved Policies

26. Policy EV6 states: “*Development which adversely local nature reserves or sites of importance for nature conservation or geological significance will only be permitted where:-*
- A) provision is made within the development for the protection of features of nature conservation or geological significance, or*
- B) the development cannot be located elsewhere. In the case of nature conservation features adequate provision is made for the creation of similar habitats, where feasible, preferably in the locality, negotiated and secured by a planning condition or planning obligation.”*
27. As stated in paragraphs 23 and 24 (and considered further below) there is potential for an adverse impact on Brierley Forest Park, but, as set out above, specific provisions to protect the features of nature conservation significance in Brierley Forest Park are not provided by the Appellant.

4. Scope of Evidence

28. In order to understand the issues underlying reason for refusal 2 I have reviewed:
- a. the FPCR Ecological Appraisal (EA), February 2020;
 - b. the Delta-Simons Environmental Consultants Independent Ecological Review (July 2020);
 - c. the FPCR response to the independent review (August 2020);
 - d. FPCR Biodiversity Metric Calculation (Defra Beta version 2.0)
 - e. the Appellant's Statement of Case (April 2021); and,
 - f. the Pegasus Group's Illustrative Masterplan Reference P19-1014 007 Rev F (February 2021) – see Appendix 2.
29. Mark Woods visited the Appellant's site and the neighbouring Brierley Forest Park on the 29th June 2021. The purposes of his site visit included a review of the Appellant's site in terms of habitats and condition, and a similar appraisal of Brierley Forest Park with particular emphasis on those parts that are adjacent to the Appellant's site.
30. On behalf of ADC this Proof of Evidence (PoI) identifies areas of disagreement with the contents of the Appellant's Statement of Case (SoC), the Ecological Appraisal and the correspondence that responded to ADC's independent ecological review. Evidence is provided that demonstrates that the mitigation proposed by the appellant's site will not create an overall '*betterment*' for biodiversity as claimed by the applicant; because of impacts on the neighbouring Brierley Forest Park, the lack of adherence to the migration hierarchy and the lack of evidence of achieving measurable net gain for biodiversity. In addition, there are potential risks of harm to great crested newt, badger, reptiles, birds and bats, which have not been fully determined by the ecological appraisal.

5. Impacts on Appellant's Site

31. Following the site walkover Mr Woods has confirmed that the site description provided by FPCR's Ecological Appraisal (February 2020), paragraphs 3.22 to 3.51 and 3.55 to 3.56 are accurate and in summary; there are two fields enclosed by hedgerows and/or dry ditches with sown grassland margins. The smaller of the two fields supports species-poor semi-improved grassland, whilst the larger field supports arable land, which was fallow at the time of the site visit and had obviously not been cultivated during the summer of 2021. The arable land supported a mix of common ruderal species typical to the local area, whilst the grassland also supported a range of common species typically associated with semi-improved grasslands. Additional habitats included tall ruderal vegetation, marginal scrub, scattered trees and ditches that were dry at the time of the survey visit, but given the vegetation present were obviously wet for part of the year.
32. The description of the site provides suitable evidence for the baseline calculations that are contained in the FPCR Biodiversity Metric Calculator spreadsheet (Beta version 2.0)⁵. It is considered that the calculations are satisfactory and accurately represent the baseline habitat and linear values for the site. It is worth noting that the use of Biodiversity Metric calculator version 3.0 would not alter the metric calculations and the final results.
33. The FPCR description of the Brierley Forest Park woodland located next to the northern boundary of the site (paragraphs 3.52 to 3.54) is less reliable with regards to the description of species. An experienced botanist should have detected the presence of broadleaved helleborine *Epipactis helleborine* and other field layer species typical of secondary woodlands. The presence of broadleaved helleborine and the implications of development are discussed below in section 6.
34. The Appellant's SoC (paragraph 6.18) states that "[t]he dominant habitat in the application site is intensively managed arable land which limits the value of the site and provides no significant resource for biodiversity locally". Whilst I agree that the management of the grassland field may have limited its ecological value, the margins and hedgerows are not intensively managed and the arable field was uncultivated when

⁵ A new metric is available (Version 3), but given the timing of the assessment, it is considered acceptable to refer to version 2.0. There is also no change to the results from using updated version.

it was inspected by Mr Woods in June 2021. The qualitative judgement is not supported by the Biodiversity Net Gain calculations which indicate that the habitats within the site have a value of 23.69 units and the boundary features have a value of 2.94 units. The biodiversity unit value of the habitats is approximately 2.5 units per ha, which is a relatively low value, but the size of the site is significant and so the loss of 23.69 units is not considered to be insignificant and must be replaced with a net gain (NPPF paragraph 174d).

35. Correspondence from FPCR (Reference 7919/HET/RG/KG, 20 August 2020) includes consideration of housing requirements against biodiversity. It is the task of planning consultants, not ecologists to make the case for housing supply. The mitigation hierarchy emphasises a priority for on-site mitigation rather than off-site compensation and this is supported by scientific evidence such as Watson *et al* 2016⁶ and Lindenmayer *et al* (2017)⁷. Given the size of the site it should be feasible to provide high quality habitat on-site to avoid part of the habitat loss, or mitigate for the impacts of habitat loss. For example 1ha of sown species-rich grassland or planted broadleaved woodland in good ecological condition could create 14.52 biodiversity units. The creation of 2ha of species-rich grassland or broadleaved woodland on site would yield sufficient biodiversity units to achieve a net gain for biodiversity. It is accepted that this reduces the number of housing units, but the application of the mitigation hierarchy requires the Appellant to demonstrate that there is justification for adopting the ‘last resort’ approach of off-site compensation for biodiversity.
36. When considering the application, ADC planning officers had suggested a payment from the Appellant for off-site compensation, should that be considered as a justifiable option, but there has been no agreement between the parties that the proposed compensation payment is acceptable and whether the payment would achieve the net gain required. Without specific detail as to how such a payment would be spent there is no guarantee that the compensation would be sufficient to offset the impact of development. The Appellant should provide details of a compensation scheme that demonstrates compliance with paragraph 174d of the NPPF through the use of the Biodiversity Metric calculator and delivers a net gain for biodiversity.

⁶ Watson J , Shanahan D, Di Marco M, Allan J, Laurance W, Sanderson E, Mackey B, Venter O. 2016b. Catastrophic declines in wilderness areas undermine global environment targets. *Current Biology* 26: 2929–2934.

⁷ Lindenmayer DB , Crane M, Evans MC, Maron M, Gibbons P, Bekessy S, Blanchard W. 2017. The anatomy of a failed offset. *Biological Conservation* 210: 286–292.

37. In terms of what is proposed for onsite mitigation the illustrative masterplan (Ref. P19-1014 007 Sheet No: 1 Rev: F, dated 05/02/2021) and FPCR's ecological appraisal and correspondence provide no indication as to the characteristics of the open greenspace; how it will be created and managed, and how this will contribute to achieving biodiversity net gain. FPCR's ecological appraisal Paragraph 4.22 states that "*Suitable mitigation for the minor loss of poor semi-improved grassland will be provided via the establishment of higher quality native species rich neutral grassland around the attenuation basin area of the new development, and via the implementation of a long-term site-specific ecological management scheme.*" Given that the modified grassland⁸ as stated on the Biodiversity Metric Calculator spreadsheet does not comply with the definition of species-rich neutral grassland there is no clarity as to what will actually be created and subsequently, whether the calculations for habitat enhancement are reliable. Whilst it is accepted that a detailed habitat creation scheme can be provided as a planning condition, it is considered to be more appropriate to provide sufficient and accurate detail at this stage in the process in order to support the biodiversity net gain calculations and comply with paragraph 174d of the NPPF. A more detailed masterplan is essential to support the biodiversity net gain calculations.
38. Development of the site without sufficient on-site mitigation could also result in significant harm to biodiversity through loss of habitat for protected and notable species. Badger has been recorded on the site; Schedule 1⁹ bird species such as barn owl *Tyto alba*, other notable bird species, great crested newt GCN *Triturus cristatus* and reptiles have been recorded in the local area.

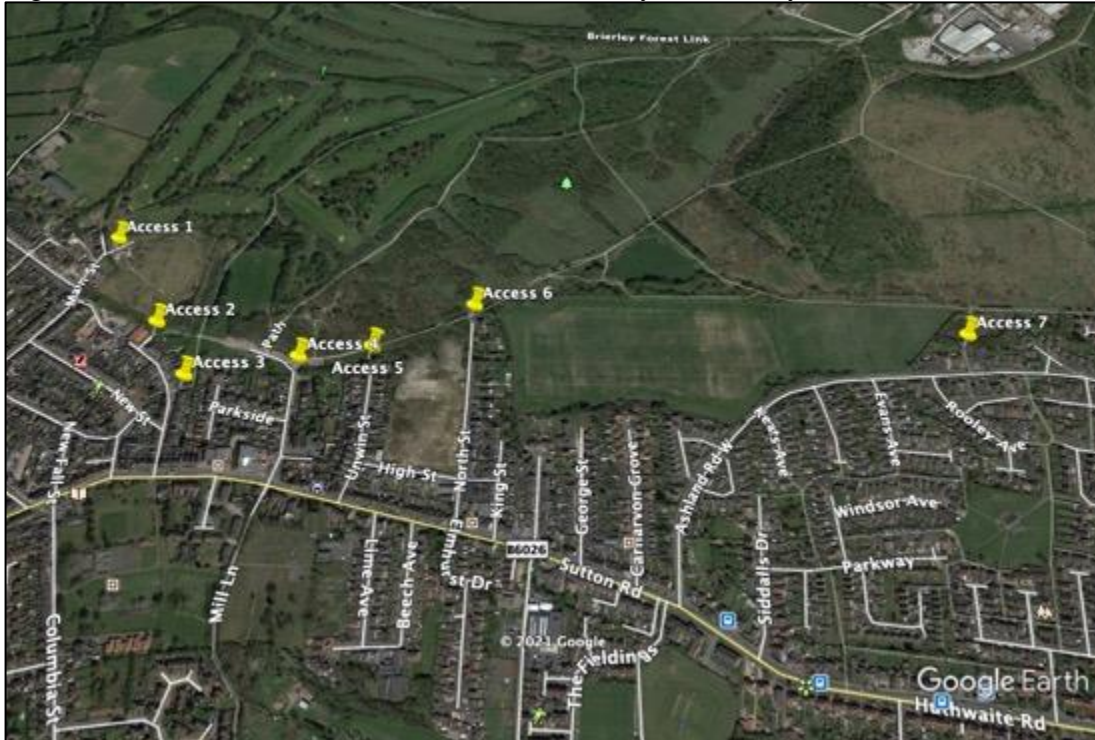
⁸ UK Habitat Classification Working Group (2018). UK Habitat Classification – Habitat Definitions V1.

⁹ Wildlife & Countryside Act, 1981 (as amended).

6. Impacts on Brierley Forest Park

39. As stated in paragraphs 23 and 24 there was insufficient assessment as to the impact of the proposed development on the ecological interest of Brierley Forest Park. The visit by Mr Woods concluded that Brierley Forest Park was in good condition but there were numerous desire lines and trampled areas of species-rich grassland that were caused by human activity. The Appellant has not provided any information regarding the number of visitors to Brierley Forest Park and whether the site is able to cope with further visitor numbers. An additional 300 houses in the vicinity of (i.e. next door to) Brierley Forest Park is likely to generate a significant additional number of visits because the greenspace within the proposed development is of insufficient size to provide for informal recreation activities such as dog walking. In addition to the potential for increased visitor numbers and the as yet undetermined ecological impact of such an increase, there is also potential for specific adverse impacts, which are set out in the paragraphs below.
40. It is recognised that the Appellant's latest masterplan (P19-1014 007 Sheet No: 1 Rev: F) has reduced the number of footpath links from the development site into Brierley Forest Park (from four to two) following concerns raised by the Delta-Simons Independent Ecological Review (project No. 20-0995.01).
41. I agree with Delta-Simons that there was a lack of justification for the four linkages to Brierley Forest Park. However, I would go further than this and ask why any new direct linkages are needed between the development and the Park?
42. There are already seven entrances along the southern boundary of the Park (see Figure 1). These are located in places that do not significantly impact on the integrity of the woodland habitat - present on parts of the south boundary - because they were installed when the Park was being created. The closest access to the Appellant's site is an entrance off Ashland Road West that is located less than 100m from the development site (see Figure 1: Access 7).

Figure 1. Access Locations on the South Boundary of Brierley Forest Park



43. The section of Brierley Forest Park woodland outlined in red below (Figure 2) contains a population of broadleaved helleborine *Epipactis helleborine*, which has spread eastwards and westwards over a twenty year period (Mark Woods pers. obs., 2021) and is expected to continue to spread into suitable habitat.

Figure 2. Broadleaved helleborine population distribution (red-line)



44. Nationally, the species is considered to be of 'Least Concern', but in Nottinghamshire it is uncommon, being found at only 49 sites that are scattered across the county. It is usually found in dense woodland with a sparse field layer and experience in Nottinghamshire suggests that it is very susceptible to disturbance.¹⁰
45. The two proposed access points will significantly increase the risk of trampling generally; the required habitat loss to create the access (see Figure 1) will result in the loss of individual plants, and the proposed mitigation of planting 'thorny' shrubs to control access, will render the habitat unsuitable where planting has occurred, because the shrubs will outcompete the field layer vegetation including broadleaved helleborine.
46. For ancient woodlands, government advice states that a buffer zone of at least 15m should be provided between the woodland edge and a development in order to protect the root zone of the trees¹¹. Whilst the woodland to the north of the development is not ancient the principal of a buffer zone that protects the root zone of the woodland and hedgerow shrubs and trees should still apply, because of the potential for this development to have an adverse impact on neighbouring habitats. A buffer zone will promote the future health of trees and shrubs in the woodland and protect the broadleaved helleborine population.
47. What is shown on the Illustrative masterplan (P19-1014 007 Sheet No: 1 Rev: F) appears to indicate that private drives will be located within the rooting zone of the adjacent woodland habitat. It is not feasible to be able to estimate the width of the buffer strip from the masterplan, but it appears to be a single line of shrub or tree planting, which will be of insufficient width to cover the rooting zone of the adjacent woodland and hedgerow in Brierley Forest Park.
48. Furthermore, it is highly unlikely, that the thin line of shrubs and trees, when young will be a sufficient barrier to control fly-tipping of garden waste into the adjacent Brierley Forest Park. It is very common to see garden waste fly-tipped into areas of greenspace including habitats such as woodland and scrub. Mr Woods worked on Nottinghamshire Nature reserves for more than a decade and was frequently having to remove garden waste that had been fly-tipped from neighbouring residences. When challenged, fly-tippers were not aware of the ecological damage associated with such activities. Fly-

¹⁰ Felling of trees from several woodland sites (eg. Strelley and Newstead) has resulted in the loss of populations of broadleaved helleborine *Epipactis helleborine*. Mark Woods has monitored several populations of broadleaved helleborine and supervised an undergraduate dissertation at Nottingham Trent University (2002) that reviewed the distribution and abundance of broadleaved helleborine in Nottinghamshire.

¹¹ <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

tipping of garden waste risks the introduction of non-native invasive species (as listed on Schedule 9 of the Wildlife & Countryside Act, 1981) such as variegated archangel *Lamium galeobdolon* subsp. *argentatum*, montbretia *Crocsmia x crocosmiflora*, three-cornered galic *Allium triquetrum*, cotoneasters *Cotoneaster* spp. and Japanese rose *Rosa rugosa*, as well as a range of other vigorous garden species such as green alkanet *Pentaglottis sempervirens*, dotted loosestrife *Lysimachia punctata* and greater periwinkle *Vinca major*. All of these species are capable of rapid spread at the expense of native species, particularly in areas where field layer vegetation is sparse. The species that are mentioned above are regularly fly-tipped in Nottinghamshire woodlands and recognised by GB Non-native Secretariat as problematic¹². Systematics surveys of Nottinghamshire between 2000 and 2020 by Mr Woods, on behalf of the Botanical Society for the British Isles, have verified the magnitude of the problem, particularly in urban and semi-urban woodlands. Garden waste can also cause localised increases in soil nutrient levels, which promotes the growth of more vigorous species such as docks *Rumex* spp. and common nettle *Urtica dioica* at the expense of less competitive species.

49. Finally, whilst it is recognised that control of street lighting can be achieved within the development¹³¹⁴, there will be no way of controlling house and security lighting in close proximity to the northern boundary where housing and private drives are located. Research indicates that artificial lighting is likely to have an adverse impact on nesting birds¹⁵ and bat activity¹⁶ in the adjacent woodland of Brierley Forest Park.
50. Given the impacts described above the proposed development has not safeguarded local wildlife-rich habitats and a locally designated site of importance for biodiversity. The proposed development does not, therefore, comply with paragraph 174d of the NPPF nor EV6 of the local plan.

¹² <http://www.nonnativespecies.org/index.cfm?pageid=640>

¹³ FPCR Ecological Appraisal, paragraph 4.8 proposed “a site-specific sensitive lighting scheme should be designed and implemented as part of the detailed scheme to minimise light spill onto any created and retained habitat on the site boundaries,”

¹⁴ Bat Conservation Trust. Guidance Note 08/18: Bats and Artificial Lighting in the UK. Bats and Built Environment Series.

¹⁵ Kempenaers, B., Borgström, P., Loos, P., Schlicht, E. and Valcu, M. (2010) Artificial Night Lighting Affects Dawn Song, Extra-Pair Siring Success, and Lay Date in Songbirds Current Biology, 20, Issue 19, Pages 1735-1739.

¹⁶ Stone, E.L., Harris, S. & Jones, G., Impacts of artificial lighting on bats: a review of challenges and solutions. Mammalian Biology Volume 80, Issue 3, May 2015, Pages 213-219

7. Impacts on Fauna

Reptiles and Amphibians

51. The independent ecology review suggested that a cessation of management of the site during the construction phase could make parts of the site more suitable for reptiles and amphibians (page 3, paragraphs 3 to 5). The response from FPCR, dated 20 August 2020, confirmed that there is potential for harm to reptiles and amphibians should there be a cessation of cultivation. In that response, FCPR stated:

‘Following concerns about the cessation of habitat management within the site and the increasing suitability of terrestrial habitat and dispersal of reptiles and GCN, we can confirm that within the intervening period between the sale of the land and commencement of construction the site[sic] that agricultural practices will continue and the site will remain arable and cut pasture.

In the event that management could not be continued across remaining areas of the site between each phase, further habitat and protected species surveys will be carried out at the appropriate time of year to assess any risk to these species and further mitigation required.’

52. If cultivation had continued, as stated, it would be expected that Mr Woods on his site visit on 29th June 2021 would have encountered a ripening crop in the arable field. As Figure 3 confirms, there is no arable crop and therefore it is clear that the management of the site (as arable land) has ceased. Consequently, the suitability of the arable field for both reptiles and amphibians has increased. Obviously, this means that the risk of harm to amphibians and reptiles has already begun to increase, less than one year after the FPCR correspondence. The longer the relaxation period, the more suitable the site will become and the greater the risk of disturbance, and/or harm, and/or habitat loss.

Figure 2. Uncultivated Arable Field, June 2021



53. The independent ecological review identifies a risk to great crested newt (GCN) *Triturus cristatus*, in light of local records and the fact that suitable habitat for this species exists within Brierley Forest Park and the periphery of the development site. The 29th June 2021 site visit confirmed that the unmanaged hedgerows and scrub associated with the central, west and east boundaries of the development site are good quality terrestrial habitat for GCN and the grass margins are of moderate value to GCN (if GCN are present in the local area).
54. GCN are recorded 600m to the north of the Appellant's site, linked by excellent terrestrial habitat within Brierley Forest Park, which is connected to the suitable peripheral habitat in the development site and given that there is a suitable breeding pond within Brierley Forest Park that is less than 20m from the boundary of the site. It is, therefore, based on the ecology of GCN¹⁷, my professional view that there is a significant risk of harming GCN unless there is evidence to prove that the species is absent from and up to 500m from the Appellant's site.
55. This assessment is supported by the European Protected Species Licence risk calculator (see Table 1 below¹⁸). On behalf of a client, the calculator is used by an Ecologist,

¹⁷ English Nature (2001). Great crested newt mitigation guidelines for developers. English Nature, Peterborough.

¹⁸ See Appendix 1 for extracted text from Great Crested Newt European Protected Species Licence Application: Method Statement Template

before applying for a European Protected Species Licence to determine whether there is a risk of an offence arising from a particular development project. For any given development the extent of habitat that could be harmed or damaged within three distance bands from a known breeding site for GCN is entered onto Table 1. The result of the risk assessment is provided as red, amber or green, with red being a likely risk of an offence and green being no risk. If the pond at Brierley Forest Park is found to support GCN Table 1 indicates that there will be a need for a licence under the Conservation of Habitats and Species Regulations 2017 (as amended). This is because terrestrial habitats that could support GCN, within and beyond 250m from the pond, will be disturbed, damaged or destroyed.. Given the risk it is necessary to discount GCN by providing eDNA or survey evidence.

Table 1. Great Crested Newt European Protected Species Licence Risk Assessor (as applied to the Appeal Site)

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.05
Land 100-250m from any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.005
Land >250m from any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.0005
Individual great crested newts	Obstructing dispersal of newts	0.8
Maximum:		0.8
Rapid risk assessment result:	RED: OFFENCE HIGHLY LIKELY	

56. If GCN were found to be present in the nearest pond Risk Avoidance Measures would be inappropriate; a European Protected Species (EPS) Licence will be required and compliance with the legal tests set out in the Habitats Regulations 2017 will be necessary. An EPS licence will normally require bespoke on-site mitigation. The provision of an attenuation basin and modified grassland habitat is not intended to mitigate for the potential loss of GCN habitat, but even if it was, it would not be acceptable as replacement for the loss of scrub, rough grass margins, tall ruderal and ditch habitats, which are more suitable terrestrial habitats for GCN. The provision of hibernacula and habitats that will remain relatively undisturbed (woodland, scrub and rough grassland) would be more likely to be acceptable.

Badger

57. The FPCR correspondence, dated 20 August 2020 (Ref. 7919 / HET / RG / KG), suggested that further checks for badger will be carried out prior to commencement of the construction phase. The correspondence does not, however, explain what will happen should the sett be re-occupied by badger and, in fact, states that *“the current layout would not provide sufficient space and connectivity to suitable foraging habitat to retain a viable main sett at this location.”*
58. Given that there were five holes present in July 2019 it is feasible to suggest that it may have been a main sett at the time of the survey and the status could have been resolved through the deployment of remote cameras. Badgers can abandon a sett for numerous reasons and equally can re-occupy setts at any time, so on the basis of current information, there is a real risk that badgers could be present when any suggested pre-commencement checks are carried out. There is no provision within the correspondence or the ecological appraisal as to what will be done should badger presence be confirmed. FPCR’s ecological appraisal (paragraph 4.14) states that *“Should an active sett be present within 30m of proposed groundworks a licence may be required from Natural England to allow works to proceed. Specific mitigation would be agreed as part of the terms of the licence.”* Work within 30m of an active sett will be necessary to deliver the illustrative masterplan layout. If the existing sett needs to be destroyed, a licence will require a new artificial sett of equivalent size and within the site boundary. Placing an artificial sett in the only area of greenspace within the development would not be acceptable because of the potential disturbance arising from the activities of site users and the likely size that the sett will occupy in terms of tunnels and chambers.
59. Furthermore, FPCR’s ecological appraisal (paragraph 3.70) states that *“the three hedgerows on the site provided commuting corridors with reasonable connectivity to suitable badger habitat occurring in the wider landscape, such as that within Brierley Forest Park LNR/LWS to the north of the site.”* However, like other colliery spoil tips in Nottinghamshire, Brierley Forest Park is considered to be sub-optimal for badgers because it was created on a colliery spoil tip that contains a thin layer of topsoil applied where necessary to establish trees and shrubs, which is also waterlogged in many places, with frequent spring-lines. The whole site is also heavily used by local people. Consequently, the availability of earthworms (the main food source for badgers) is likely to be significantly lower than on the development site fields and significant areas of the colliery site will not be suitable for a sett, because of the substrate and

disturbance from people. The evidence of the ecology study confirms that a sett was found on the development site in 2019, but searches of Brierley Forest did not find any signs of badger setts or any signs of badger activity within Brierley Forest. Tracks leading into Brierley Forest Park as described in paragraph 3.71 (FPCR ecological appraisal) were considered to be mammal runs, but were not confirmed as badger and could equally be made by other mammals such as fox *Vulpes vulpes*.

60. If badgers proved to be present within Brierley Forest and the setts on the development site were active again there would be no option but to retain the sett on-site. Displacement of a main sett would not be feasible because they may be competing with a neighbouring clan. Further population studies across a wider geographical area will be necessary to understand the distribution and abundance of local badger clans.
61. Overall, at this stage, the Appellant has provided insufficient information to conclude that badger will not be present on site and there is a high risk that the appellant will not be able to provide the necessary mitigation should badger be present on the development site.

Birds

62. Bird surveys were not carried out by FPCR despite the presence of suitable habitat such as arable field margins, grassland and hedgerows. Such habitats could support species identified by the FPCR ecological appraisal desk study (paragraphs 3.14 to 3.17) such as barn owl, yellowhammer *Emberiza citrinella*, bullfinch *Pyrrhula pyrrhula* and kestrel *Falco tinnunculus*. FPCR (paragraph 4.28) stated that arable habitat is well represented in the wider local area, but if the Appellant's site was developed, farmland birds such as those species mentioned above would have to travel more than 0.5km to find alternative arable land. Arable land can be an important winter foraging resource for many farmland bird species. Having to fly greater distances to access foraging resources could have an adverse impact on farmland birds, particularly passerines, because of the additional energy requirements.
63. Without an assessment to demonstrate otherwise it is not known what the impacts of habitat loss will be on notable bird species¹⁹ and the overall bird assemblage, and thereby what mitigation will be required. Yellowhammer, bullfinch and kestrel are

¹⁹ Species that are of conservation concern, rare, scarce or declining either locally or nationally

Birds of Conservation Concern (BOCC)²⁰ because of significant population declines. Yellowhammer and bullfinch are also Species of Principal Importance (SPIs) under the provisions of the Natural Environment and Rural Communities Act, 2006²¹.

²⁰ Eaton, M.A. et al (2015). Birds of Conservation Concern 4: The population status of birds in the UK, Channel Islands and the Isle of Man. *British Birds* 108, pp708-746.

²¹ Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on every public authority to have regard to conserving biodiversity. Section 41 of the same Act requires that the Secretary of State must publish a list of the living organisms and types of habitats that are of 'Principal Importance' for the purpose of conserving biodiversity. The Secretary of State must take steps, as appear reasonably practicable, to further the conservation of those living organisms and habitats in any list published under this section.

8. Conclusions

64. Biodiversity metric calculations indicate a loss of 23.69 habitat units and a gain of 0.55 hedgerow units. The Appellant has provided no detail as to how off-site compensation will be delivered and whether it will be sufficient to compensate for the loss of habitat units. Until such evidence is provided, the proposed development fails to comply with the requirement to demonstrate a net gain for biodiversity (NPPF, paragraph 174d).
65. The Appellant has not demonstrated how the mitigation hierarchy has been applied and how ecological impacts have been avoided or mitigated and then '*as a last resort*', compensated as required by paragraph 180a of the NPPF.
66. The Appellant has not demonstrated how the neighbouring Brierley Forest Park and its features of nature conservation interest will be protected. There is no justification for the footpath linkages to Brierley Forest Park. There is a risk that the county uncommon broadleaved helleborine population will be negatively affected because of habitat loss and disturbance. There is also insufficient buffering of the northern boundary of the development to minimise risks from fly-tipping (introduction of invasive species), light spillage (impacts on bats and birds) and habitat damage (impacts on trees and shrubs). The Appellant has not demonstrated that Brierley Forest Park will be safeguarded, as required by the NPPF, paragraph 179a and local plan policy EV6a.
67. Despite reassurances in 2020, the arable field has not been cultivated in 2021 and has become more suitable for reptiles. Consequently the risk of harm to reptiles has increased.
68. Without establishing the presence of GCN at Brierley Forest Park the GCN risk calculator indicates a high risk of an offence being committed if there is habitat loss and disturbance within the Appellant's site. As such, the proposed Risk Avoidance Measures for GCN during the construction phase are inappropriate and mitigation should be re-considered or the presence or absence of GCN at Brierley Forest Park should be confirmed.
69. As with GCN, there is a risk of an adverse impact on badger, because the impacts of development cannot be fully determined without a more thorough and widespread investigation of badger activity within and beyond the Appellant's site.

70. The impact on nesting and over-wintering birds has not been determined because surveys were considered to be unnecessary. The assessment does not justify, given the results of the desk study, why bird surveys were not carried out. At this stage it is not feasible to determine the impacts on local bird populations.
71. On the basis of the information put forward by the Appellant, it is not known what the impacts on biodiversity will be. The Inspector, therefore, cannot be satisfied that the Appellant has proposed sufficient mitigation and/or compensation to address the potential harm.
72. There is, however, enough information to know that there will be significant harm to biodiversity and that the Appellant has not justified either (i) why compensation should be offered (and not on-site mitigation/avoidance) nor (ii) why the level of compensation offered is sufficient and what it will cover.
73. The lack of application of the Mitigation Hierarchy; lack of net gain for biodiversity; the potential harm to the Brieley Forest Park LWS, and the lack of assessment with regards to the impacts on legally protected fauna means that the proposed application is not compliant with the NPPF paragraphs 174a, 174d and 180a and Local Plan Policy EV6. Based on the evidence it is my professional judgement that reason for refusal 2 is entirely justified.

Appendix 1: Core Documents

The following list of documents are listed in the order of the footnotes in this document. Where appropriate, abstracts are provided for research papers, but key texts are available in full.

Ref. No.	Title	Source
1	https://www.gov.uk/guidance/natural-environment : Paragraph: 022 Reference ID: 8-022-20190721	Referenced in full in main text
2	Panks, S. et al (2021). Biodiversity metric 3.0: Auditing and accounting for biodiversity – User Guide. Natural England.	Core document
3	Biodiversity Consultancy. (2013). Cross Sector Biodiversity Initiative: A cross-sector guide for implementing the Mitigation Hierarchy: Executive summary and Overview	Core document
4	Defra (2019). Biodiversity net gain and local nature recovery strategies: Impact Assessment (Reference: RPC-4277(1)-DEFRA-EA)	Core document
6	Watson J , Shanahan D, Di Marco M, Allan J, Laurance W, Sanderson E, Mackey B, Venter O. 2016b. Catastrophic declines in wilderness areas undermine global environment targets. <i>Current Biology</i> 26: 2929–2934.	Abstract – Appendix 1
7	Lindenmayer DB , Crane M, Evans MC, Maron M, Gibbons P, Bekessy S, Blanchard W. 2017. The anatomy of a failed offset. <i>Biological Conservation</i> 210: 286–292.	Abstract – Appendix 1
8	UK Habitat Classification Working Group (2018). UK Habitat Classification – Habitat Definitions V1.	Core document
9	Wildlife & Countryside Act, 1981 (as amended).	Abstract – Appendix 1
11	https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences	Abstract – Appendix 1
12	http://www.nonnativespecies.org/index.cfm?pageid=640	Abstract – Appendix 1
14	Bat Conservation Trust. Guidance Note 08/18: Bats and Artificial Lighting in the UK. Bats and Built Environment Series.	Core document
15	Kempenaers, B., Borgstr m, P., Lo s, P., Schlicht, E. and Valcu, M. (2010) Artificial Night Lighting Affects Dawn Song, Extra-Pair Siring Success, and Lay Date in Songbirds <i>Current Biology</i> , 20, Issue 19, Pages 1735-1739.	Abstract – Appendix 1
16	Stone, E.L, Harris, S. & Jones, G., Impacts of artificial lighting on bats: a review of challenges and solutions. <i>Mammalian Biology</i> Volume 80, Issue 3, May 2015, Pages 213-219.	Abstract – Appendix 1
17	English Nature (2001). Great crested newt mitigation guidelines for developers. English Nature, Peterborough.	Core document
18	Great Crested Newt European Protected Species Licence Application: Method Statement Template	Abstract – Appendix 1
20	Eaton, M.A. et al (2015). Birds of Conservation Concern 4: The population status of birds in the UK, Channel Islands and the Isle of Man. <i>British Birds</i> 108, pp708-746.	Abstract – Appendix 1

Footnote 6: Summary

Humans have altered terrestrial ecosystems for millennia, yet wilderness areas still remain as vital refugia where natural ecological and evolutionary processes operate with minimal human disturbance, underpinning key regional- and planetary-scale functions. Despite the myriad values of wilderness areas—as critical strongholds for endangered biodiversity, for carbon storage and sequestration, for buffering and regulating local climates, and for supporting many of the world’s most politically and economically marginalized communities — they are almost entirely ignored in multilateral environmental agreements. This is because they are assumed to be relatively free from threatening processes and therefore are not a priority for conservation efforts. Here we challenge this assertion using new comparable maps of global wilderness following methods established in the original “last of the wild” analysis to examine the change in extent since the early 1990s. We demonstrate alarming losses comprising one-tenth (3.3 million km²) of global wilderness areas over the last two decades, particularly in the Amazon (30%) and central Africa (14%). We assess increases in the protection of wilderness over the same time frame and show that these efforts are failing to keep pace with the rate of wilderness loss, which is nearly double the rate of protection. Our findings underscore an immediate need for international policies to recognize the vital values of wilderness and the unprecedented threats they face and to underscore urgent large-scale, multifaceted actions needed to maintain them.

Footnote 7: Abstract

Biodiversity offsetting is widely applied but its effectiveness is rarely assessed. We evaluated the effectiveness of a nest box program intended to offset clearing of hollow-bearing trees associated with a freeway upgrade in southern Australia. The offset targeted three threatened vertebrates: squirrel glider (*Petaurus norfolcensis*), brown treecreeper (*Climacteris picumnus*) and superb parrot (*Polytelis swainsonii*). Clearing led to the loss of 587 tree hollows and the offset was the placement of an equivalent number of nest boxes in nearby woodland (1:1 ratio). Of these, we monitored 324 nest boxes in six sample periods between 2010 and 2013, yielding 2485 individual checks of nest boxes.

Footnote 9: Text

Wildlife & Countryside Act, 1981 (as amended), Schedule 1 - Part I

Birds and their young, for which it is an offence to intentionally or recklessly disturb at, on or near an ‘active’ nest:

Footnote 11: Text

<https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

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

Footnote 12: Text

<http://www.nonnativespecies.org/index.cfm?pageid=640>

What are invasive species and why are they a problem?

Over 2,000 plants and animals have been introduced to Britain from all over the world by people.

These are known as non-native species. Most are harmless, but around 10-15% spread and become invasive non-native species which harm:

Wildlife and the environment

Invasive species are one of the top five direct drivers of biodiversity loss worldwide. In Britain they harm native wildlife by damaging habitat, preying on or out-competing other plants and animals, and spreading disease. Our natural world is already under pressure from other factors including climate change and habitat destruction, and invasive species reduce the ability of native wildlife to cope with these pressures and vice versa.

The economy

Invasive species cost the British economy over £1.7 billion a year. Examples of costs include damage to buildings and infrastructure, interference with the production of food and materials, delays to work, and high management costs for established invasive species.

Our health and way of life

Some invasive species are irritants of our skin or respiratory system, cause road traffic accidents, or are pests in our homes. Others increase our risk of being flooded, or prevent us from enjoying recreational spaces and activities.

What's the urgency?

The number of new species being introduced to Britain is already increasing rapidly. Climate change may increase the ability of new species to establish, and allow currently benign species to become invasive. Unlike some other serious environmental problems, such as pollution, the impacts of invasive species are not a one-off event. Once a species has been introduced the problems persist and escalate as it spreads further. If we don't act, the problem of invasive species will continue to escalate at an ever increasing rate, causing us to feel more of the impacts and incur more cost every year.

How are invasive species spread?

Some invasive species have been deliberately introduced to the wild, while others have been accidentally spread, for example as 'hitch-hikers' on equipment used in a waterbody, or from garden waste which has been disposed of irresponsibly.

Footnote 15: Abstract

The ecological effects of light pollution are becoming better understood, especially in birds. Recent studies have shown that several bird species can use street lighting to extend activity into the night

during the breeding season. However, most of these studies are correlational and little is known about the effects of artificial night lighting on the timing of activities outside the breeding season. During winter, low temperatures and short days may limit foraging opportunities and can negatively affect survival of resident birds. However, night lighting may allow them to expand the time niche available for foraging. Here, we report on a study where we repeatedly manipulated the amount of night lighting during early winter at automated feeding stations in a natural forest. We used video-recordings at the feeders to determine the time of the first (at dawn) and last (at dusk) foraging visits for six songbird species. We predicted that all species, and in particular the naturally early-foraging species, would advance their daily onset of foraging during the mornings with night lighting, but would show minimal or no delays in their daily cessation of foraging during the lighted evenings. We found that two early-foraging species, the blue tit and the great tit, started foraging earlier during the experimentally lighted mornings. However, in great tits, this effect was weak and restricted to nights with inclement weather. The light treatment did not have any effect on the start of foraging in the willow/marsh tit, the nuthatch, the European jay, and the blackbird. Artificial night lighting did not cause later foraging at dusk in any of the six species. Overall, our results suggest that artificial light during winter has only small effects on timing of foraging. We discuss these findings and the importance of temperature and winter weather in shaping the observed foraging patterns.

Footnote 16: Abstract

Light pollution is a major emerging issue in biodiversity conservation, and has important implications for policy development and strategic planning. Although research is now addressing the negative impacts of anthropogenic noise on biota, less attention has been paid to the effects of light pollution. Changes in lighting technology have led to a diverse range of emerging low energy light types and a trend towards the increased use of white light. Light pollution affects ecological interactions across a range of taxa and has adverse effects on behaviours such as foraging, reproduction and communication. Almost a quarter of bat species globally are threatened and the key underlying threat to populations is pressure on resources from increasing human populations. Being nocturnal, bats are among the taxa most likely to be affected by light pollution. In this paper we provide an overview of the current trends in artificial lighting followed by a review of the current evidence of the impacts of lighting on bat behaviour, particularly foraging, commuting, emergence, roosting and hibernation. We discuss taxon-specific effects and potential cumulative ecosystem level impacts. We conclude by summarising some potential strategies to minimise the impacts of lighting on bats and identify key gaps in knowledge and priority areas for future research.

Footnote 18: Extract from Great Crested newt European Protected Species Licence Method Statement Spreadsheet

(1) "Do I need a licence?" - rapid risk assessment

Background

In recent years there has been a trend towards increasingly precautionary applications, resulting from a risk-averse approach to mitigation. Whilst considering potential risks to great crested newts is laudable, many recent mitigation schemes were designed for developments that actually had very little or no effect on the newt population. In part this is because it can be difficult to assess whether newts will be affected by certain activities, especially when they take place at some distance from breeding ponds. Newts tend to be present at increasingly low density the further one looks from ponds, and the task of detecting and capturing them becomes more problematic. Further from ponds, there is a corresponding reduction in the scale of impact on populations. Given that great crested newts can disperse over 1km from breeding ponds, the potential for offences may seem vast, yet the probability of an offence outside the core breeding and resting area is often rather small, and even if an offence takes place, the effect on the population may be negligible.

Natural England is concerned about the trend for increasingly risk-averse mitigation for several reasons. Primarily, there is no legal need, and little benefit to great crested newt conservation, in undertaking mitigation where there are no offences through development. Even where there technically is an offence, such as the destruction of a small, distant area of resting place habitat, it is arguable that impacts beyond the core area often have little or no tangible impact on the viability of populations. Mitigation in such circumstances is of questionable value in conservation terms. There are, however, substantial costs: developers delay projects and spend large sums on mitigation. Sometimes the mitigation project itself has environmental costs, especially when it entails substantial lengths of newt fencing. In some cases long newt fences are employed with no justification. Natural England wishes to see newt fencing used more appropriately, i.e. only where there is a reasonable risk of capturing, containing and/or excluding newts. Natural England recognises that the two key factors leading consultants to adopt this risk-averse approach are: (a) uncertainty over the presence of newts and whether there will be an offence in areas distant from ponds; (b) undertaking mitigation under licence "just in case", so that there is no perceived risk of litigation for their client. Natural England wishes to see mitigation planning shift away from such a highly risk-averse starting point. The domestic legislation protecting great crested newts arises largely from the Habitats Directive, which has a central aim to restore scheduled species to a favourable conservation status. A more proportionate approach to mitigation, addressing tangible impacts on populations whilst giving lower priority to negligible effects, is consistent with the aims of the Directive. The loss of the "incidental result" defence from the legislation may create a tension with this approach, but it is hoped that the guidance here will assist.

This simple risk assessment can inform the decision as to whether to apply for a licence. It remains the responsibility of the developer - normally acting through their consultant - to decide whether to apply. Early consideration of options can often result in no licence being required - see **Non-licensed avoidance measures** tool, later in the Instructions section. A sound survey and careful comparison with development plans will often be the best guide to whether a licence should be obtained.

Guidance on use

The rapid risk assessment is done by **completing the table later in the instruction section**. Consider the impacts of the development **without any licensed mitigation**. For each "component", select a likely effect from the drop-down menu. It may help to produce a map of the land marked with 100m and 250m radii around each great crested newt breeding pond, overlaid with the development boundary. The land categories refer to all land, not just that used by newts. N.B. this risk assessment is not part of your application, and there is no obligation to use it; it is a tool to help you decide whether to apply for a licence. Each effect is assigned a notional probability of leading to an offence. Note that these are purely notional for the purpose of this generic assessment, and should not be taken as definitive in a given real case. The score takes into account that some activities (e.g. killing newts) are not entirely predictable. The maximum notional probability is then used to derive a conclusion, which is displayed as red (probability ≥ 0.65), amber (0.3-0.65) or green (<0.3) in the "risk assessment result" box. Further information on interpreting the result is given below the table. Following this, you may wish to amend details of the development, and include additional precautions (see tool later in instructions), in order to avoid impacts on newts. You can then re-select the likely effects, to re-calculate the assessment based on the modified development, in order to see whether the risk has been reduced further. This process is in line with the general approach of avoiding offences wherever possible.

*Remember you should enter the likely effects as if the development were to proceed **without any licensed mitigation** - i.e. no trapping or fencing, etc. This may mean, for instance, that killing newts is likely as the development would destroy areas they use (though we have taken into account in the probability score that it is often uncertain as to whether newts would be killed by development in a given location away from ponds). You should **consider likely effects after taking any appropriate unlicensed precautions to reduce risks** - e.g. groundworks during daylight only. Further guidance on this is given in the **Non-licensed avoidance measures** tool, later in the Instructions section.*

Caveats and limitations

This risk assessment tool has been developed as a general guide only, and it is inevitably rather simplistic. It has been generated by examining where impacts occurred in past mitigation projects, alongside recent research on newt ecology. It is not a substitute for a site-specific risk assessment informed by survey. In particular, the following factors are not included for sake of simplicity, though they will often have an important role in determining whether an offence would occur: population size, terrestrial habitat quality, presence of dispersal barriers, timing and duration of works, detailed layout of development in relation to newt resting and dispersal. The following factors could increase the risk of committing an offence: large population size, high pond density, good terrestrial habitat, low pre-existing habitat fragmentation, large development footprint, long construction period. The following factors could decrease the risk: small population size, low pond density, poor terrestrial habitat, substantial pre-existing dispersal barriers, small development footprint, short construction period. You should bear these mitigating and aggravating factors in mind when considering risk.

It is critical that, even if you decide not to apply for a licence, you ensure that any development takes account of potential newt dispersal. Where great crested newts are present, landuse in that area must ensure there is adequate connectivity. Retaining and improving connectivity will often involve no licensable activities.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
Maximum:		0
Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

Guidance on risk assessment result categories

"Green: offence highly unlikely" indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed. Therefore, no licence would be required. However, bearing in mind that this is a generic assessment, you should carefully examine your specific plans to ensure this is a sound conclusion, and take precautions (see **Non-licensed avoidance measures tool**) to avoid offences if appropriate. It is likely that any residual offences would have negligible impact on conservation status, and enforcement of such breaches is unlikely to be in the public interest.

"Amber: offence likely" indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, the best option is to redesign the development (location, layout, methods, duration or timing; see **Non-licensed avoidance measures tool**) so that the effects are minimised. You can do this and then re-run the risk assessment to test whether the result changes, or preferably run your own detailed site-specific assessment. Bear in mind that this generic risk assessment will over- or under-estimate some risks because it cannot take into account site-specific details, as mentioned in caveats above. In particular, the exact location of the development in relation to resting places, dispersal areas and barriers should be critically examined. Once you have amended the scheme you will need to decide if a licence is required; this should be done if on balance you believe an offence is reasonably likely.

"Red: offence highly likely" indicates that the development activities are of such a type, scale and location that an offence is highly likely. In this case, you should attempt to re-design the development location, layout, timing, methods or duration in order to avoid impacts (see **Non-licensed avoidance**

measures tool), and re-run the risk assessment. You may also wish to run a site-specific risk assessment to check that this is a valid conclusion. If you cannot avoid the offences, then a licence should be applied for.

Footnote 20: Abstract

This is the fourth review of the status of birds in the UK, Channel Islands and Isle of Man. Using standardised criteria, 244 species were assessed and assigned to the Red, Amber or Green list of conservation concern. The assessment criteria include conservation status at global and European levels and, within the UK, historical decline, trends in population and range, rarity, localised distribution and international importance. The findings are alarming, with 20 species moving on to the Red list and only three leaving it. Three formerly regular breeding species are considered to have ceased breeding in the UK (Temminck's Stint *Calidris temminckii*, Wryneck *Jynx torquilla* and European Serin *Serinus serinus*). Some 67 (27.5%) of the UK's regularly occurring bird species are now on the Red list. As well as reinforcing existing conservation concerns, such as for birds of woodland and lowland farmland and for long-distance migrants, this assessment should heighten concern for other groups. Five upland species, including Eurasian Curlew *Numenius arquata* and Dotterel *Charadrius morinellus*, have moved to the Red list. Declines in the UK's internationally important breeding seabird populations are emphasised here by the Red-listing of Shag *Phalacrocorax aristotelis*, Kittiwake *Rissa tridactyla* and Puffin *Fratercula arctica*. Yet the effect of well-targeted conservation action is demonstrated by the recovery of Eurasian Bittern *Botaurus stellaris* and European Nightjar *Caprimulgus europaeus*, with both moving from Red to Amber.

Appendix 2: Development Layout





baker*consultants*