Planning Appeal Reference APP/X1925/V/23/3323321

Land at Graveley Lane and to the East of Great Wymondley, Hertfordshire
Proposed solar farm measuring 88 hectares with associated battery storage containers, transformers stations, storage buildings, fencing etc including means of access (amended plans received 30.05.2022)

Interested Party Statement submitted by Elizabeth Hamilton, Trustee, CPRE Hertfordshire

I object to the above planning proposal. As a geographer and ecologist my focus is on biodiversity issues. I have volunteered for CPRE Hertfordshire since 2004. I am currently a Trustee (for the second time) and lead on biodiversity for the whole of Hertfordshire. I was born and brought up in Hertfordshire and have lived in the county for nearly 50 years. A brief CV is attached at Appendix A.

Biodiversity

1. Biodiversity is a material consideration in all public decision-making pursuant to Section 40 of the Natural Environment and Rural Communities Act 2006, updated by the Environment Act 2021. We need to see this duty taken more seriously and be aware of the species on any site which might be displaced or substantially diminished by development. Nowadays planning is focussed on biodiversity net gain, an entirely artificial construct which takes habitat as proxy for species.

2. In January 2023 the Office for Environmental Protection published its review of progress in 2020/21 towards targets in the 25 Year Environment Plan. The Chair said: 'Progress on delivery has fallen far short of what is needed'. 'Many extremely worrying environmental trends remain unchecked, including a chronic decline in species abundance.' 'Between 2013 and 2018 there was a 17% decrease in the abundance of priority species, comprising part of a chronic decline of 82% between 1970 and 2018.'

3. Also in January 2023 the government published, in its Environmental Improvement Plan, actions proposed to meet the targets required by the 2021 Environment Act. These include halting the decline in species abundance by 2030 and an increase in abundance by at least 10% by 2042, while the number of species on the Red List Index for England must 'improve' i.e. fall. I believe that decisions taken on every site count, if we are going to reverse the chronic decline seen since 1970 and meet current targets.

The Ecological Assessment Report (EAR)(CD7): Birds

4. Analysis of the Breeding Bird Survey, in paragraph 2.5.5, claims that species favouring trees, hedgerows and woodland are not materially affected by the proposed development. This is debatable. Disturbance from the construction operations, including from piling, other noise, human presence and lighting, could impact bird species, including those which use marginal habitats to breed and shelter but open fields to forage. Disturbance during the operational phase from inverter and other machinery noise might also impact on breeding bird species. The Noise and Vibration Assessment (CD8) does not appear to have considered any other receptors apart from residential properties. Species using the site to hunt and forage but which breed elsewhere might also be impacted.

5. Figure 6: The Breeding Bird Survey Plan also shows species which are passing over or present but would not be expected to breed on the site (mallard, red kite, kestrel, hobby). Paragraphs 3.5.2 to 3.5.5. note that 10 notable bird species were considered to be breeding within the site, of which nine are section 41 species, eight are 'Red-listed' species of conservation concern and five are listed as species priorities within the Hertfordshire Local Biodiversity Action Plan (LBAP).[1] These are species 'where Hertfordshire can contribute to achievement of national targets, because the species are characteristic of the area'. For ease of access the LBAP document has been deposited in the Inquiry documents library.

6. Also recorded in Figure 6 are cuckoo, a section 41 and red-listed species, and the red-listed mistle thrush. Local residents in their online objections to the original planning application mentioned in addition to the species noted in the EAR, the amber-listed species of conservation concern tawny owl using the site. Wintering bird species using the site were not recorded, and might be expected to include winter visitors such as redwing (amber-listed) and fieldfare (red-listed).[2]

7. Paragraph 179b of the National Planning Policy Framework requires plans to 'promote the protection and recovery of priority species', otherwise known as section 41 species.[3]

8. Paragraph 3.5.3 concludes that only skylark is a ground-nesting species typically associated with arable fields. However, yellow wagtail and grey partridge, both ground-nesting birds of open habitats[4], had territories recorded on the site in the Breeding Bird Survey.

9. Typically the margins around solar arrays are used for vehicular access, as shown by the aerial view of the Shuttleworth Hall solar array at Gisburn in Lancashire included in Appendix B. This can be expected to cause disturbance and displacement to birds which nest in hedges and forage on the ground alongside such edge habitats, including yellowhammer.[5] This species was recorded as having nine territories on the site.

10. Paragraph 3.5.5 suggests that impacts on 'non-notable' bird species need not be considered. However, given the current parlous state of biodiversity in the UK, as I have set out in my introductory paragraphs, impacts on all species are relevant.

11. Paragraph 4.7.12 concludes that the local breeding bird assemblage is unlikely to be adversely impacted by the proposed development. In my opinion this is not correct: at least one and potentially several ground-nesting breeding species will be negatively impacted and potentially others will be displaced by the construction phase and subsequently due to noise, and disturbance alongside the marginal habitats. Fox (in footnote 4) concludes that 'piecemeal developments have the potential to exacerbate local declines and place greater pressure on remaining habitats to absorb displaced birds'.

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[1] A 50-year vision for the wildlife and natural habitats of Hertfordshire: A Local Biodiversity Action Plan. Revised 2006.

[2] https://www.bto.org/our-science/publications/birds-conservation-concern/status-our-bird-populations-fifth-birds

[3] https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england

[4] Fox, Harry (2022) Blithe Spirit: Are Skylarks Being Overlooked in Impact Assessment? Inpractice 117, 47-51 September 2022. CIEEM.
https://www.clarksonwoods.co.uk/blog/2022/10/12/are-skylarks-being-overlooked-in-impact-assessment/

[5] https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/yellowhammer/

12. There have been alarming recent UK declines in bird species numbers. For example, skylark numbers declined by 75% between 1972 and 1996 and a further 15% by 2020, grey partridge by 92% between 1967 and 2020, yellowhammer by 62% between 1967 and 2020 and yellow wagtail by 69% between 1967 and 2020.[6] The British Trust for Ornithology (BTO) reports that data for yellow wagtails in Eastern England suggest a strong avoidance of grassland, as well as successful breeding in landscapes dominated by winter cereals.[7]

13. The Breeding Bird Survey recorded 19 Skylark territories. As a section 41 species which is a red-listed species of conservation concern, and which as noted above has one of the largest recent declines of typical farmland birds, skylark protection is paramount. Potential impacts of the introduction of solar panels on land used by skylarks can be deduced from research into skylark habitat preferences.

14. *The effects of solar farms on local biodiversity: a comparative study* by Hannah Montag, Dr Guy Parker and Tom Clarkson, published in 2016, reports on a study of 11 photovoltaic solar farms in the south of the UK.[8] Only one confirmed skylark nest was identified within a solar plot. The nest was situated outside the footprint of the array but within the security fencing surrounding the site, in an area of grassland measuring approximately 40 x 90m, importantly in an area with very few hedgerows and trees.

15. Paragraph 4.7.7 of the EAR claims that open-ground nesters such as skylarks will only be displaced on a temporary basis by the construction work, citing unreferenced literature that ground-nesting bird species may nest between and around rows of solar panels, so displacement is unlikely to be permanent. Ground within solar arrays does appear to be used by skylarks for foraging as part of their territories, although the 2016 study by Montag et al found that although there were significantly more skylarks recorded foraging within the solar plots when compared with the control plots at two of the sites, the overall comparison between solar and control was not significant (their paragraph 5.4.25).

16. Research on skylarks for the BTO and reported in Bird Study found that among their least preferred habitats were grazed improved pasture and heavily grazed sheep pasture.[9] This has implications for the management of proposed solar array sites where skylarks are known to be present. Another study found that skylarks avoided fields smaller than 2.5 ha and preferentially selected fields larger than 7.5 ha. Citing other studies this study also stated that skylarks actively avoid proximity to hedges and may avoid shorter swards because these provide little cover from predators.[10]

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[6] https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/ and https://www.bto.org/understanding-birds/birdfacts

[7] https://www.bto.org/understanding-birds/birdfacts/yellow-wagtail

[8] https://www.farminguk.com/content/knowledge/Effects-of-Solar-Farms-on-Local-Biodiversity(4654-8780-3868-4254).pdf

[9] S. Browne, J. Vickery & D. Chamberlain (2000) Densities and population estimates of breeding Skylarks *Alauda arvensis* in Britain in 1997, Bird Study **47,** 52-65 https://www.tandfonline.com/doi/pdf/10.1080/00063650009461160

[10] S. Gillings & R. J. Fuller (2001) Habitat selection by Skylarks *Alauda arvensis* wintering in Britian in 1997/98, Bird Study **48,** 293-307 https://www.tandfonline.com/doi/epdf/10.1080/00063650109461229?needAccess=true&role=button

17. Advice to farmers on the RSPB website states that skylarks occupy open fields to avoid predators and will not be conserved by measures taken within 10 metres of a field boundary. They avoid tall structures such as woodland edges or tall hedgerow trees. They need two or three successful nesting attempts each season between April and August to sustain their population and grassland cut too frequently will prevent successful breeding.[11]

18. To date in the UK no skylark nests have been found within an area of solar panels, most recently confirmed by the report *Solar Habitat: Ecological trends on solar farms in the UK*, published by Solar Energy UK in 2023[12], which summarises results from 37 operational solar sites across the UK surveyed in 2022. Despite breeding bird surveys being undertaken on 22 sites (59% of the sites), no evidence of actual skylark nests were found within the solar farms. The report goes on to comment that there is no conclusive evidence of skylark nests within an active solar farm in the UK to date, a conclusion supported by Fox (footnote 4) based on post-construction monitoring of over 100 solar installations in England and Wales and other observations from the industry.

19. Without nesting habitats skylarks will decline and this is displacement. Skylark plots (referred to in paragraph 4.7.7 of the EAR) are not intended for nesting, but to enhance foraging opportunities, as explained by Fox (footnote 4). The site margins are not likely to meet skylark nesting preferences and while the middle of the 30 metre-wide corridor occupying the gas main route might just meet the RSPB criteria, it would only replicate a fraction of the space for territories currently available across the site. It is also likely to be used for vehicular traffic. Fox (footnote 4) quotes a much wider requirement for fields suitable for skylark nesting, which should have a short axis of 200 metres free of tall structures, based on a study quoted by his article.

20. Skylark compensation measures cannot simply involve specifying an adjoining or nearby field on which to create skylark plots. There needs to be knowledge both of skylark territories being displaced and skylark territories present on the compensatory fields. The latter may already be at capacity with respect both to skylark territories and the ability of those birds present to breed successfully given the food resources available. It requires skilled ecological investigation to establish whether this is the case: it is likely to be so without improvements in those qualities of a habitat which skylarks favour. Simply adding skylark plots into existing territories might lead to displacement or reduced breeding success of the already-present pairs. Adding skylark plots to areas unsuited to skylarks, due to inadequate size or openness, the presence of tall structures or features nearby, unsuitable existing vegetation or some cause of disturbance, will not succeed. In such circumstances any condition in respect of skylark compensation could not be regarded as practical or deliverable.

21. Fox (footnote 4) suggests that, although some degree of absorption of skylark territories into surrounding areas is theoretically possible, in intensive arable landscapes this is less so and an acceleration of a decline of a local breeding success is possible. Addition of foraging plots has been found to increase predation and some introductions of such plots have failed to show

[11] https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/skylark/

[12] https://solarenergyuk.org/resource/solar-habitat-a-look-into-ecological-trends-on-solar-farms-in-the-uk/

benefits. Baseline study evidence is advised with regard to any mitigation/compensatory proposals on adjoining open habitat.

22. I refer to the Appeal decision letter by Mr Cullum Parker dated 11 May 2023 in respect of a section 62A Application, Reference s62A/2022/0011, for a proposed solar farm at Manuden in Essex. Mr Parker concluded that there was no adequate provision for mitigation or compensation for displaced skylarks and in these circumstances paragraph 180 of the Framework indicated that planning permission should be refused. A copy of the decision letter has been deposited in the Inquiry documents library for ease of reference.

Potential impacts on other bird species

23. *Potential ecological impacts of ground-mounted photovoltaic solar panels: an introduction and literature review,* reports on a study carried out by BSG Ecology and updated in 2019.[13] Potentially damaging impacts on wildlife were noted. The research on bird impacts is from non-European sites, but there is a possibility that birds such as swallows which drink from water bodies may be impacted, mistaking panels for water. A US study involving five sites found that bird species diversity was lower within solar array sites when compared with adjacent grasslands. However, at the same sites bird densities within the solar arrays were more than twice those of adjacent grassland, suggesting that some species make use of shade and perching opportunities. The density finding was species-specific, with corvids and raptors less abundant within solar arrays compared with adjacent grasslands. Raptor abundance was found to be higher at one site before construction of the solar array compared with afterwards. It is thought that raptors may avoid solar arrays due to increased human activity and habitat alteration.

The Ecological Assessment Report (EAR): Bats

24. Table 3.4 Target Notes indicate likely bat roosts in several trees on the site. Paragraph 3.5.6 notes Hertfordshire Ecological Records Centre (HERC) records of seven species of bats within 2km of the site. Personal communications from a number of local residents have indicated that bats are frequently encountered within the adjacent Great Wymondley village (with a roost in the church). Paragraphs 3.5.8 and 3.5.9 note the presence of other potential bat roosts as well as commuting and foraging habitat within the site and nearby, with good connectivity to higher value habitat. It should be noted (see Tinsley et al below) that some bat species forage across open arable land as well as along linear and wooded habitats. The EAR concludes that the site has moderate value foraging and commuting habitat.

25. All bats are European protected species and it is essential therefore to be aware of any bat species using a proposed development site for roosting, feeding and commuting. While seven species have been recorded locally, bats are often under-recorded. Section 1.3 of the EAR, in respect of European Protected Species, and in particular in respect of bats, does not refer to the full list of what would constitute an offence under the Conservation of Habitats and Species Regulations 2017, now as amended by the Conservation of Habitats and Species (Amendment)(EU Exit) regulations 2019. There is the same omission in paragraph 4.7.13. As

[13] https://bsg-ecology.com/the-potential-ecological-impacts-of-ground-mounted-photovoltaic-solar-panels-in-the-uk/

well as the offences noted it is also an offence to affect significantly the local distribution or abundance of bat species, and to cause any disturbance which affects a bat's ability to survive, breed, rear young, hibernate or migrate. A bat's ability to survive is heavily dependent on reaching and feeding at foraging areas in safety and free from predation, and also on an abundant food supply.

26. The BSG Ecology study referenced above cites some evidence that bats mistake panels for water and attempt to drink from them, causing collision injuries. This may be a particular problem in juvenile bats. As females usually only give birth to one pup in a year, this might have implications for bat survival.

27. Given the likelihood that bats are using the site, recent research is relevant. Research published on 7th August 2023[14] has significant implications for solar array proposals. The study compared 19 solar photovoltaic (PV) sites with 'empty' matched control sites. Although the study found no difference in bat species richness between the control sites and the PV sites, it recorded more bat activity at the control sites than at the solar PV sites. The authors recommend further research on what factors are lowering bat numbers at PV sites, for example whether prey sources are negatively affected by solar PV developments, or whether panels are creating a collision risk with bats attempting to drink from them. The study found significant statistical evidence that six of eight species/species groups were negatively affected by solar PV panels. Some bat taxa appeared to be significantly affected negatively along the boundary habitats of solar PV sites compared to control sites. Two species were significantly less active in the open habitat at solar PV sites compared to the controls. The study suggests that some bat species are altering their flight paths along boundaries bordering solar PV sites, while solar PV is resulting in habitat loss for some species. It recommends that potential impacts of solar PV sites should be carried out on a species-specific basis.

28. The authors conclude that their findings are significant for bat conservation. Given the protection status of bats and the potential offences which could arise, they conclude that appropriate effort should be given to assess the presence of bats. Where necessary mitigation to support bats should be designed and activity monitored over extended periods, including in the surrounding area.

29. Paragraph 4.7.16 of the EAR states that species rich and structurally diverse grassland habitat creation proposed as part of the development, along with the cessation of agricultural pesticide use, will attract and support a higher number of flying insects compared to the existing arable land, which will in turn increase foraging opportunities for bat species locally present. I refer in more detail in paragraph 38 below to my analysis of the seed mixes proposed in the Planning, Design and Access Statement (DAS)(CD2).

The Ecological Assessment Report (EAR): Assessments of habitat value

30. Paragraph 4.5.1 states that the site primarily comprises arable fields of low ecological value. The semi-improved and poor semi-improved grassland field margins, hedgerows, trees, woodland and

[14] Tinsley, E., Froidevaux, J. S. P., Zsebők, S., Szabadi, K. L., & Jones, G. (2023). Renewable energies and biodiversity: Impact of ground-mounted solar photovoltaic sites on bat activity. Journal of Applied Ecology, 00, 1–11. https://doi.org/10.1111/1365-2664.14474

ditches provide higher biodiversity value at a local geographic scale. Arable soils are rich in invertebrates, as evidenced by the number of birds often seen behind a plough. Farmland is a priority habitat in the Hertfordshire LBAP (see footnote 1), and as I am sure will be discussed by others, should be protected for food production. As the Hertfordshire LBAP points out, a patchwork of farmland fields is probably the dominant image of lowland English countryside, and land under arable cultivation forms 44% of the total land area in England (at the time of publication). Some wildlife has always flourished on arable land, including plants once regarded as arable weeds which are now in decline. Most are annuals and in turn attract a range of fauna including invertebrates. Iconic species like poppies survive in and around arable fields except where herbicide use is excessive.

31. Arable fields support ground-nesting and ground-using birds, as well mammals such as small rodents, which are predated by raptors. Swallows feed over arable crops and where stubble is not immediately ploughed seed-eating birds will make the most of the brief seed bonanza. Wintering birds feed on soil invertebrates in ploughed land.

32. Paragraph 3.5.28 assumes the absence of a significant assemblage of invertebrate species: this is not good ecological practice. The entomologist Robert Wolton found 2,070 species during 2011 and 2012 in an 85 metre-long hedge in Devon, which he describes as 'nothing exceptional', dominated by hawthorn, blackthorn, hazel, and grey willow. Only recording those species visible with the naked eye, 40 were Section 41 species and 83% of the species were insects.[15]

Potential construction and operational impacts on other biodiversity

33. It is claimed in paragraphs 4.5.2 and 4.7.4 of the EAR that the physical footprint of the solar farm and associated land take will be low, with extensive areas of grassland habitat created and maintained. While the contact footprint of structures on the ground might be low, the impact of the panels and associated structures is likely to be considerable, creating shade and drought conditions, and impeding horizontal and vertical visibility. Panels also inhibit the ability to carry out operations designed to enhance the sward plants and associated fauna, while creating conditions for invasive species such as nettles to persist and spread.

34. Avoidance of construction phase impacts relies on successful implementation of the proposed mitigations to protect habitats intended to be retained. This is heavily dependent on adequate supervision of the construction work and regular attendance by ecologists.

35. Paragraphs 4.7.6 and 4.7.7 of the EAR substantially understate the potential impacts of the construction works on those species present on the site in terms of noise (including from piling), ground disturbance, installation of buildings, cabling and fencing, construction of surfaced access tracks and lighting. There would be temporary buildings and storage of materials and machinery, together with frequent arrivals and departures of HGVs and other vehicles. It is likely that many species would be driven away and not necessarily return. Bats could be adversely impacted by lighting used during construction for night working and

[15] Wolton, Robert (2015). Life in a hedge. British Wildlife. Available at https://www.researchgate.net/publication/282237797_Life_in_a_hedge

security, both in any tree roosts and on their foraging and commuting routes. Ground-nesting birds and other ground-using species such as hares will be severely impacted. Raptors such as kites, kestrels, sparrowhawks and owls, used to hunting over the arable crops and around the marginal vegetation, will also be significantly impacted.

36. The prescriptions for mitigation of habitat and species impacts from the operational impacts will be heavily dependent on long-term commitments from site managers and maintenance personnel, and on the long-term provision of ecological advice.

Proposed on-site habitat enhancements

37. Paragraph 4.5.8 sets out the habitat enhancements proposed for the site, which are illustrated in drawing CD24, Landscape Proposals. The Biodiversity Management Plan is referenced but I have been unable to locate this document. Elements include native tree and hedgerow planting, grazed 'diverse' pasture within the fence line and under panels, and species rich grassland buffers.

38. Paragraph 4.7.10 suggesting that the arable fields will be replaced with species-rich wildflower grassland is not correct: the majority of the area (78.15 ha) comprising the land within the security/stock-proof fencing will be sown with a grass mixture with two varieties of just one broadleaved species – white clover, as described in paragraph 3.1.40 and Table 2.1 of the DAS. Suggestions in the Montag et al paper referenced in paragraph 47 below suggest that this seed mix is unlikely to support many pollinators over a long season, and may become dominated by aggressive ryegrass.

39. With much of proposed grazed 'diverse' pasture area under panels, the effects of shade, significantly reduced temperatures and dryer conditions may impact on the successful establishment of this proposed sward.

40. A 2016 study at the Westmill solar park in the UK[16] found that panels reduce temperatures beneath them in summer by up to 5.2°C and the ground under them is also dryer. The study found that both species diversity and biomass were lower under panels, attributed to differences in micro-climate and vegetation management. Under the panels there were significantly fewer species, dominated by grasses with only one broadleaved flowering plant present, being yarrow *Achillea millefolium*. The study attributed this to yarrow's shade tolerance but it is also very drought tolerant as well.

41. The 5.79 ha area outside the site fenceline will be sown with a wildflower and grass mix as set out in Table 2.2. of the DAS. However, as already suggested in paragraph 9, movement of vehicles around the site might be expected in this gap, lying between the security fencing and the hedgerows or other boundary habitat features. This will concentrate wear, potentially impact on the retained arable field margins and hedge bottoms, and inhibit the growth of the

[16] A. Armstrong, N. J. Ostle, and J. Whitaker (2016) Solar park microclimate and vegetation management effects on grassland carbon cycling. Environ. Res. Lett. **11** 074016 https://iopscience.iop.org/article/10.1088/1748-9326/11/7/074016#:~:text=We%20found%20microclimate%20and%20vegetation%20management%20explained%20differences,arrays%2C%20explained%20by%20microclimate%2C%20soil%20and%20vegetation%20metrics.

species-rich grassland proposed for the area, impacting on the ability of these areas to contribute to biodiversity net gain.

42. The site, having been used to grow cereal crops over many years, will retain a high residual fertility even when agricultural cropping of the site ceases. Methods to reduce site fertility include removal of topsoil, or several years of hay cropping. Removal of topsoil is unlikely to be considered in this case as this would impair any return to agricultural use. As a result vigorous grasses and other plant species may quickly come to dominate the sward, with species diversity suppressed. It is possible that invasive plant species will increase on the site and fall within The Weeds Act 1959. They would probably be controlled by herbicide, potentially impacting other plant species.

43. Grazing to enhance plant species diversity requires expertise and a good knowledge of the plant species present and potentially present. Grazing sheep also raise soil fertility. Sheep must be visited daily.

44. An article in Farmers Weekly dated 17 October 2022 describes the experiences of a farmer running sheep on a solar array. This article has been deposited in the Inquiry documents library. The area of 74 ha (183 acres) was previously arable but grass leys were established before the panels were erected. A switch to a smaller breed of sheep was required as the previous flock was too big to graze under the panels. Sheep densities are higher in the summer. The ground is rested altogether for three months from November, so alternative pasture must be available. Handling the sheep can be tricky, with dogs unable to see the sheep due to the panels and a risk of injury due to the structures.

45. The farmer admits that if the grazing is too light the growth cannot be managed by cutting for silage. It is not possible to reseed the land and the shade diminishes the sugar content of the swards. As the feed quality reduces stocking is also reduced and lambs cannot be fattened. Designed for the highest number of panels on the land, there is only access for a quad bike. Fertiliser has been applied using a quad-mounted spinner, but this was dropped in 2022 as the cost outweighed the benefit. If weeds cannot be managed by grazing the land has been sprayed at the beginning of the summer. Management of the narrow strips of land outside the fencing has also been problematic: these are grazed by suckler cows but if left ungrazed what is described as ‘rough grass’ is the end result.

46. Montag et al (footnote 8) states (at their paragraph 7.1.5) that sheep grazing is known to be a good mechanism for grassland diversification where sheep are at lower stocking densities, and especially where grazing is stopped during the flowering season (April to July), as occurs on several sites. However, where sheep grazing is undertaken at higher stocking density, and without a pause for flowering there is little opportunity for the grassland to diversify.

47. At para 7.1.22 they say: ‘Agricultural flowers such as white clover or crops such as oil seed rape may attract an abundance of bees, but this is likely to be short lived (3-4 weeks of the year) and benefit only a few species’, while at para 9.1.1 they recommend: ‘Fine grasses should be used in place of typical agricultural grasses, e.g. rye-grass, which is aggressive and does not encourage diversity’.

48. It is not clear how long supervision of the site will be available from an ecologist. Even if the species-rich grassland is established reasonably well, over time its condition could deteriorate, due to management practices not conducive to its survival, or neglect. For example, aggressive species such as common nettle may invade. When visiting the Folly Farm solar array at Long Marston, near Tring, where the whole site had recently been mown, it was clear that the sward under parts of the panels could not be reached by the mowing equipment and nettles were present here.

49. There is also the likelihood of natural regeneration of shrub and tree species on the site which will need to be controlled in some way to avoid over-shading the panels, probably by mowing, strimming or herbicides.

Biodiversity Net Gain (BNG)

50. The Biodiversity Net Gain (BNG) Assessment described in sections 2.2 and 4.6 of the EAR lacks adequate detail with which to critique the claimed gain. The full metric should have been included alongside the summary which has been supplied in CD109 to enable a full assessment of the habitat descriptions and baseline and target conditions. A biodiversity management plan is also required to ensure that the proposed habitats and their management mirror the details of the metric. Section 3.4 Habitat Survey of the EAR refers to a number of habitat types which do not appear in paragraph 4.6.2 which describes the baseline habitats for the BNG assessment.

51. The potential difficulties of managing the site, as described in the Farmers Weekly article, including restrictions on sowing and loss of sward quality under the panels, suggests that the grassland may from time to time be sprayed or fertilised, which would diminish its habitat value. The Farmers Weekly site was established as a grass ley prior to the panels being erected. It is not clear whether that is the intention here, given that considerable damage could be caused to the ley by the construction operations.

52. Paragraph 4.6.3 of the EAR proposes sowing 'other neutral grassland' throughout the site. It is not possible to reconcile the proposed species mix set out in Table 2.1 of the DAS for the area within the fenceline with the habitat requirements for this grassland type in UKHab[17]. UKHab (v2, July 2023) defines 'Other neutral grassland' as having at least nine species per square metre, and with greater than 20% cover of broadleaved species. Given the species mix specified in Table 2.1 of the DAS, which includes only eight species, and with the only broadleaved species comprising 5% of the mix, this seems unlikely to be achieved.

53. Instead I suggest that the most appropriate type should be modified grassland, a low distinctiveness category which is most likely to be the state of the grassland established on the site, within the fenceline under the solar panels. This is described by UKHab as being on fertile soils, which matches the circumstances of the application site. If modified grassland in moderate condition is substituted in the Metric for the 78.15 ha within the fenceline, the gain in habitat units reduces by 252 units. If this area is classified as being in poor condition, there is a further reduction of 121 habitat units, giving a total gain of 12.29 units, an overall gain of

1. [17] The UK Habitat Classification. Available at https://ukhab.org/ukhab-documentation/ Free to access but requires a password

6.4%. These calculations are estimates only in the absence of the full metric. Had the full metric been available it would also have been possible to assess comparable figures for the remaining site area.

54. The relevant habitat descriptions from UKHab are included in Appendix C.

Noise

55. I observed high-pitched continuous noise emitted by an inverter at the Folly Farm solar array at Long Marston near Tring, while walking the public footpath through the site. This was in June 2023 on a sunny day with almost no cloud. A recording can be found here https://www.youtube.com/watch?v=a2KGnYxNeG8

56. The cumulative noise impact of the 22 inverters and air conditioning of the 22 batteries proposed for this site could impact on wildlife and also disturb neighbouring properties.

Operational traffic

57. Paragraph 5.4.52 of the DAS states that the change in traffic along the local road network will be 'de minimus' and paragraph 5.8.11 states that traffic generation during the operational phase will be minimal and limited to maintenance engineers in small vans and agricultural access for sheep grazing and/or mowing.

58. This appears to ignore the need to clean the huge area of panels on a regular basis and presumably check and maintain the very substantial installation of inverters, batteries, cabling and other equipment. Birds are known to perch on and leave droppings on panels: a build-up of droppings must reduce the efficiency of the panels.

59. The retained habitat, including hedges, field margins and trees, will require regular inspection and maintenance. Internal hedge maintenance will require tractor-mounted cutting equipment. The newly-planted hedges and trees will need regular checking, replacement of failed planting stock, potentially weeding to ensure establishment, and regular management.

60. It is not clear how the proposed grassland outside the security fencing will be maintained. Colonisation by invasive species like nettle, thistle and woody plants could suppress any flowering plants in the grassland. Mowing or grazing would be required on a regular basis. If sheep grazing is introduced under the solar panels, the sheep would have to be inspected daily, and provided with water and potentially supplementary feed.

Decommissioning

61. The proposed restoration of the land to agriculture has not been adequately considered. All the equipment brought onto the site will need to be removed. The 32,000 solar panel mounts will be pile-driven to a typical depth of 1.2 metres and it is not clear how easily such piles can be removed. The equipment required to remove the piles, fencing, 2.1 km of 3 metre-wide stone roads, structures and foundations, and the panels themselves, can be expected to cause considerable damage and compaction to the underlying soil structure. If panels are accidentally broken hazardous heavy metals such as cadmium could be lost into the ground.

The removed piles will leave holes, potentially causing localised subsidence. Buried cabling must be removed. Soil fertility will need to be restored if the land is to be returned to its previous arable use.

62. For all of the above reasons I urge you to dismiss this appeal.

Appendix 1

CV to add to Interested Party Statement submitted by Elizabeth Hamilton

Education

Newnham College, Cambridge: BA Geography (now MA)
Wye College, London University: M Sc Landscape Ecology, Design and Maintenance (Distinction)

Relevant Employment

1977-80: Plymouth Polytechnic. Research Assistant in Historical Ecology
Researched the history, ecology and management of woodlands in the Tamar and Tavy valleys.
Lectured to undergraduates in Environmental Sciences, specifically in vegetation history, ecology, conservation and habitat management.

1980-88: The Woodland Trust. Initially Woodland Officer; Deputy Director from 1983
The first woodland specialist employed by the Trust. Responsible for substantial expansion of the land acquisition and management programme (45 properties/1,000 acres to 350 properties/11,500 acres).
Also responsible for community woodland and tree planting programmes.

1989-1994: Self-employed consultant.
Undertook a variety of assignments for public, private and voluntary sector organisations, in ecology, woodland management, organisational planning and environmental policy.
Co-authored 'Nature conservation and habitat creation in the community forest' in: Advice manual for the preparation of a community forest plan, published by the Countryside Commission, 1990. This followed a contract to carry out preliminary research and planning for the East of London Community Forest (now Thames Chase) and the production of ecological design guidelines for woodland creation and management for the England-wide community forest programme.

Relevant voluntary roles

2004 to date: Volunteer, CPRE Hertfordshire. Working on a wide range of issues including scrutiny of planning applications and draft local plans, and representation at a local plan EiP. I write on a variety of issues. I am currently serving my second term as a trustee, and was Chairman 2009-14, as well as a member of the National CPRE Trustee Board 2011-17. I was the CPRE representative on the National Trust Council 2016-22. Since Biodiversity Net Gain has brought biodiversity into planning I have taken a special interest in this issue. More recently I have appeared at two public inquiries as an interested party, to focus on impacts on biodiversity.

2008-10: Member of the Steering Committee, Chilterns Special Trees and Woods Project, run by the Chiltern Woodlands Project in conjunction with the Chilterns Conservation Board, funded by the Heritage Lottery Fund.
The Project recorded old, interesting, rare, commemorative or otherwise special trees in the Chilterns Natural Character Area, trained volunteers and disseminated the research.
Led training courses and was the author of two chapters in the book of the project: Special Trees & Woods of the Chilterns, published by the Chiltern Woodlands Project, 2010.

I have lived in Hertfordshire for nearly 50 years.

Appendix B

Aerial photograph of the Shuttleworth Hall Solar Array at Gisburn, Lancashire

Source: Energi Generation Ltd (www.peakingplants.com)

Showing marginal areas around the solar panels worn to bare soil, presumably due to vehicular traffic

Appendix C. UKHab Habitats descriptions – Other neutral grassland and Modified grassland

UKHab

Code and Name

g3c Other neutral grassland

Category Type

Primary Level 4

Spatial Feature Type

Area

Definition

A neutral grassland that does not meet the definition of either g3a or g3b AND that meets at least three of these four criteria:

1. >20% cover of broadleaved herbs and sedges;
2. >8 species per m^2 (including forbs, grasses, sedges and rushes, and excluding bryophytes);
3. ≥1 grass species that is not generally sown for intensive agricultural production (ie. Rye-grasses *Lolium spp.*, Timothy *Phleum pratense*, Cock's-foot *Dactylis glomerata*, Meadow fescue *Festuca pratensis*) is at least abundant;
4. Cover of Rye-grasses *Lolium spp.* and White Clover *Trifolium repens, where present, is* <30%.

Separately from the criteria above, a neutral grassland that meets the criteria for waxcap grassland (see 130).

Landscape and ecological context

This is a widespread and commonly encountered grassland of the lowlands that occurs on farmland and in built-up areas. Low input pastures, many verges of roads, paths, tracks, rivers and railways, and the edges of fields are likely to be this grassland. Land that is not farmed but is cut or mown annually often becomes this habitat.

Inclusions

Many of the more species-rich swards that in previous classifications were included within 'semi-improved neutral grassland'. Species-rich swards can be characterised using 18 – Species-rich grassland).

Unmanaged swards on neutral soils, where species richness may be lower.

Surveyors may wish to add detail to this category. (e.g. 60 - long-continuity habitat, 519 – 'abandoned', 521 – 'unmanaged', 501 – 'mesic', 502 – 'seasonally wet', 503 – 'wet', 128 – 'sward type mosaic', 129 – 'tall or tussocky sward').

Exclusions

Species-poor swards that in previous classifications were included within 'semi-improved neutral grassland' (see g4).

Grasslands <2 years old on land formerly cropped (see c~).

Species

Grasses may include Common Bent *Agrostis capillaris*, False Oat-grass *Arrhenatherum elatius*, Yorkshire-fog *Holcus lanatus*, Perennial Rye-grass *Lolium perenne*, Common Bent *Agrostis capillaris*, Crested Dog's-tail *Cynosurus cristatus*, Rough Meadow-grass *Poa trivialis* and Cock's-foot *Dactylis glomerata*. On wetter sites, Velvet Bent *Agrostis canina*, Creeping Bent *Agrostis stolonifera* and Marsh Foxtail *Alopecurus geniculatus* may be frequent, and rushes such as Soft Rush *Juncus effusus* and Hard Rush *Juncus inflexus* are likely to be present.

Herbs commonly found include Yarrow *Achillea millefolium*, Ribwort Plantain *Plantago lanceolata*, Creeping Thistle *Cirsium arvense*, White Clover *Trifolium repens*, Red Clover *Trifolium pratense*, Meadow Buttercup *Ranunculus acris*, Creeping Buttercup *Ranunculus repens*, Common Nettle *Urtica dioica*, Hogweed *Heracleum sphondylium* and Daisy *Bellis perennis*. On wetter sites, herbs commonly found including Silverweed *Potentilla anserina*, Wild Angelica *Angelica sylvestris* and Fleabane *Pulicaria dysenterica*.

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Code and Name

g4 Modified grassland

Category Type

Primary Level 3

Spatial Feature Type

Area

Definition

Species-poor vegetation (<9 species per m^2) dominated by a few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of Rye-grasses *Lolium spp.* and White Clover *Trifolium repens*. Most broadleaved species present will be associated with high fertility.

Landscape and ecological context

This habitat is found in pastures that are used for intensive agricultural production. It is also found in amenity grassland in public parks, on sports pitches and on intensively managed verges. The vegetation normally covers almost 100% of the ground, but in over-grazed or poached pastures bare ground can occur, followed by more abundant broadleaf species such as Creeping Thistle *Cirsium arvense* and Dock *Rumex spp.*.

Inclusions

Hard-wearing mixtures of grasses on sports pitches and golf courses.

Species-poor grasslands that have occurred through natural succession, where cover of rye-grasses *Lolium spp.* is less than 'abundant' on the DAFOR scale (see g3c).

Species

Palatable, productive grasses dominate, mainly Rye-grasses *Lolium spp.*, Timothy *Phleum pratense*, Cock's-foot *Dactylis glomerata*, Crested Dog's-tail *Cynosurus cristatus* and Yorkshire Fog *Holcus lanatus*.

Grass cover is usually >75%.

Broadleaved species are restricted mainly to White Clover *Trifolium repens*, Creeping Buttercup *Ranunculus repens*, Greater Plantain *Plantago major*, Dandelion *Taraxacum officinale agg.*, Broad-leaved Dock *Rumex obtusifolius* and Chickweed *Stellaria media*.

Fertile but wetter situations may support occasional Soft Rush *Juncus effusus* or Hard Rush *Juncus inflexus*, Floating Sweet Grass *Glyceria fluitans*, Creeping Bent *Agrostis stolonifera* and Rough Meadow-grass *Poa trivialis*.

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