

Submission from Dr Geoffrey Radley MCIEEM (Retired) OBE

I am a retired nature conservation professional. During my career I spent nearly thirty years working on agri-environment schemes. I was awarded an OBE for services to Agri-environment in 2005. Most of the comments in this submission relate to Principal Issue 4, Ecology and Biodiversity, as defined in the Examining Authority's Rule 6 letter dated 13th April 2023. I have also included some comments on related environmental matters covered under Principal issues 8 (land use and soils) and 12 (water and flood risk).

Principal Issue 8: Land use and soils

I am concerned at the loss of productive arable land that would result from the construction of this very large solar array, especially as roughly half the area proposed for the solar panel arrays is 'best and most versatile' agricultural land. I am also concerned about the cumulative effect on agricultural production, given that other large solar arrays are proposed on agricultural land in the East Midlands. I suggest that permission should not be given for this and other large-scale solar arrays on good quality agricultural land unless and until it has been shown that the required energy cannot be generated by installing solar arrays in the built environment. Opportunities exist for this, such as on the roofs of the many large warehouses that exist or are under construction across the East Midlands.

Principal Issue 4: Ecology and Biodiversity

If the Secretary of State concludes that it is in the national interest for this development to go ahead, despite the impact it will have on agricultural production, then the developers' stated aim of achieving biodiversity net gain will not be achieved unless some significant shortcomings in the proposed mitigation measures are rectified. These shortcomings relate to several of the issues identified by the Examining Authority under this Principal Issue:

Implications for statutorily and locally protected sites and effects on roadside verges during construction,

Question 3.05 in ExQ1, issued 23rd May 2023, raises concerns about the environmental impact of the construction of passing places. I do not think this is the main issue. Many of the minor roads in and around the area within the Order Limits are narrow, so that two vehicles coming in opposite directions will often need to mount the verge to pass each other. This is particularly true of HGVs, but can also be the case with lighter vehicles, and even private cars. Despite some mitigation measures proposed by the developers, there is still a risk of damage to the species-rich grasslands of some road verges within and around the Order Limits, especially those included in the Ryhall Pastures and Little Warren Verges SSSI.

There is already evidence of extensive erosion of verge vegetation on some minor roads in the area, particularly the road from Uffington to Essendine, which should be included in the itinerary for a Site Inspection. I am concerned that traffic during the construction phase could exacerbate this. I am particularly concerned about the species-rich grassland of the road verges included in the Ryhall Pastures and Little Warren verges SSSI.

The commitment in the outline Construction Management Plan to restricting HGVs to defined routes is welcome, but I note that it is not proposed to extend this restriction to LGVs. The plan identifies that there will be a greater number of daily LGV trips than HGV trips, so I am concerned that there will still be considerable potential for increased verge erosion.

The proposal to provide a central car park and shuttle bus for the up to 400 staff working on site during the construction period is welcome, but I note that it is not proposed to define how these staff access the car park, so there is still a risk that the increased car traffic in the area will increase damage to species rich road verges in the vicinity.

It would be disproportionate to apply the same level of restriction to cars and vans as to HGVs, but I would strongly urge that use of the road through the Ryhall Pastures and Little Warren Verges SSSI, and any other minor roads with species rich roadside verges should be prohibited for all construction-related vehicle movements.

Effects on specific species and their habitats (including European protected species)

Skylarks

The developers identify that the development will lead to the loss of approximately 30 territories for Skylark nesting. Question 3.08 in ExQ1 asks what measures are in place to determine the optimal option for the creation of Skylark plots and to ensure that the chosen measures will be adhered to and will be effective.

It is important that the developers provide adequate answers to these questions as Skylark plots in the wrong place are likely to be ineffective and can even, by increasing the risk of predation, be counterproductive.

However, the provision of skylark plots in fields that are otherwise subject to normal agricultural management is not, by itself, likely to be effective in mitigating the loss of habitat for skylarks. Populations of many specialist farmland birds, including skylarks have been declining in recent decades and there is a strong body of scientific evidence that this is principally because modern agriculture does not automatically provide for their three requirements, which are:

- A safe place to nest
- Food in spring and summer for their growing chicks
- Food and shelter over the winter

It has been demonstrated by a number of organisations, including the Game and Wildlife Conservation Trust and the RSPB, that introducing conservation management measures that supply all three of these needs can effectively reverse population declines at a local level. See for example the RSPB's Hope Farm website: [REDACTED]

Skylark plots can, if properly positioned and managed, provide safe places to nest, but they do not provide chick food or food and shelter over winter, so they are not, by themselves, likely to be effective.

Land that is set-aside and planted with wild bird seed or cover mix can provide the spring and summer food requirements.

The Cambridge-based Conservation Evidence Team has found through a systematic review that there is good evidence that farmland birds benefit from planting wild bird seed or cover mixture [REDACTED]. For skylarks in particular, they quote a small study of set-aside strips from 1995 to 1999 at Loddington, Leicestershire, UK (Boatman & Bence 2000). This found that set-aside sown with wild bird cover was used by nesting Eurasian skylark and butterflies significantly more than other habitats.

The majority of skylark territories found were within set-aside strips (margins or midfield) sown with wild bird cover (1995: 76%, 1996: 65%, 1997: 71%, 1999: 55%), although the habitat covered only 8-10% of the area. The habitat was also used more for foraging than all habitats, except linseed *Linum usitatissimum*. Wild bird cover was sown with either cereal-based or kale-based *Brassica* spp. mixtures. Skylark territories were recorded in 1995-1997 and 1999 and nests were located in 1999 and foraging trips observed for two 1.5 hour periods.

Overwintered stubble can provide the food that skylarks need over winter. The importance of winter food provision for skylarks was shown by a study that demonstrated enhanced Skylark and Yellowhammer *Emberiza citrinella* abundance when local overwinter-stubble provision exceeds 5%. Initially negative trends showed recovery with 10–20 ha of stubble per 1 km square. (Gillings et al., 2005)

[REDACTED]

In summary, there is very good evidence that to be fully effective, the mitigation measures for Skylarks needs to include measures specifically aimed at providing the food Skylarks need, both to feed their chicks in spring and summer and to overwinter as adults. I would recommend that the Developers be required to engage a competent professional organization such as RSPB or the Game and Wildlife Conservation Trust to advise them on a full suite of skylark conservation measures appropriate to this site.

I also feel that the overall area of these three mitigation measures that it is intended to provide will need careful scrutiny before the Inspectorate can have confidence that they will be adequate to replace the lost territories. A recent study in *Journal of Applied Ecology* has attempted to quantify how much farmland needs to be managed to provide wild bird habitat in order to allow farmland bird populations to recover. This has concluded that there needs to be a greater emphasis on the use of higher tier agri-environment agreements, where 10% of the farmed land needs to be managed for wild birds, and that overall approximately one third of all farmed land needs to be covered by such agreements if overall populations are to recover

[REDACTED]

Wintering birds

I think the developers have under-estimated the importance of the Order Area for wintering birds. The survey on which the Ecology and Biodiversity chapter of the Environmental Statement is based took place over a single winter. This is unlikely to give a true picture of the importance over time of the area for wintering birds, as the use that birds make of arable fields in winter varies considerably from year to year depending on the cropping regime and other factors. In some years, when conditions are right, the area could support much larger numbers of birds, as shown by the surveyors recording a flock of 3000 starling on one occasion, feeding on a freshly ploughed field.

Despite the limitations of the survey, it found that redwing, fieldfares, starlings and yellowhammers all use regularly use the site in considerable numbers in winter. I would add that I have also seen substantial numbers of mistle thrush and flocks of finches and other passerines feeding on arable fields in and around the Order Area in the winter months.

The Ecology and Biodiversity chapter of the Environmental Statement argues that the numbers of wintering birds using the area of the proposed development are only of local significance, I would dispute this. Not only are peak bird numbers likely to be higher than the survey recorded in some years, but the area within the Order Limits is only a short distance from the well-established winter roosts around the former gravel pits to the south and east of the proposed development. I have regularly seen large flocks flying over our property to roost, coming from land to the north west of Greatford and going in the direction of these pits. If the land within the Order Area becomes unavailable to ground-feeding wintering birds they are likely to have to fly further between their roosts and their feeding grounds, with consequent increased energy expenditure.

I am therefore concerned that the measures proposed to enhance the retained arable in the outline Landscape and Ecology Management Plan (oLEMP) do not include measures intended to benefit wintering birds.

Fortunately, there are well-proven measures that could be deployed on the retained arable areas that would help to mitigate the impact of the development on ground-feeding wintering birds. These overlap considerably with the measures needed to maintain the Skylark population, described above. The simplest of these is to leave arable areas fallow on a rotational basis, retaining the previous year's crop stubble through the following winter and spring before recultivating in summer. This form of management has been a standard option under successive Defra agri-environment schemes.

I would strongly argue that the developers should be obliged to include management for ground-feeding wintering birds in the Landscape and Ecology Management Plan as a condition of the consent, both to mitigate the direct impact of this development and to help ensure that there is no cumulative effect should a series of similar solar arrays be given consent on arable farmland in the East Midlands.

Habitat creation/enhancement and biodiversity net gain

The outline Landscape and Ecology Management Plan (oLEMP) states that the areas of wildflower grassland to be established using calcareous species will be cut every two years on rotation in late summer. There has been extensive research on the establishment of

species rich grasslands. This strongly suggests that, on the relatively fertile soils of former arable fields, this cutting regime will not be sufficient to prevent the grasslands becoming dominated by a small number of vigorous grasses, with the other sown plant species being eliminated as a result.

To avoid this, the areas should be cut more frequently (whilst still allowing species to flower and set seed) and/or they should be included in the areas to be grazed by sheep in late summer and winter, using a grazing regime similar to that used on the nearby Barnack Hills and Holes National Nature Reserve.

The oLEMP states that grassland under the solar arrays will either be managed by rotational sheep grazing in autumn and winter to allow for nesting birds or, if no grazing is possible, will be cut twice per year in April/May and September.

Cutting in April/May would be disastrous for any ground-nesting birds, as was found during the early days of agricultural set-aside, so this should be avoided at all costs.

Grazing by sheep is a much better option for managing these areas and I would urge that this should be a condition of the consent. Grazing by sheep would retain some agricultural production from the area and would avoid the considerable labour costs of cutting large areas in and amongst the panels.

Principal Issue 12: Water and flood risk

Surface water run-off implications

As stated above, grazing the areas covered by solar panels would be the best, as well as the most environmentally sustainable, way of managing the grassland in these areas. The stocking density would however need to be relatively low to avoid the risk of soil compaction and consequent increased run-off. Because of this, the grazing period may need to be longer than envisaged in the oLEMP to avoid the vegetation becoming too tall and dense.

I do not have sufficient expertise to be able to comment on whether or not the development is likely to increase surface run-off.

The outline Landscape and Ecology Management Plan envisages establishing wet woodland and constructing shallow scrapes in this river corridor. Whilst this will have some biodiversity benefits, it is likely to have little impact on the hydrology of the West Glen River.

Downstream of the Order Limits, Parts of Greatford have long suffered periods of flooding from the West Glen River during times of peak flow, so I would suggest that there is a case for adopting a precautionary approach in relation to the risk of increased surface run-off. There are well established techniques for slowing the flow of previously canalized rivers such as the West Glen whilst also benefitting biodiversity. These include channel diversification and the creation of washlands.

As mentioned in Question 3.0.16 of ExQ1, the Environment Agency has already done some preliminary studies into the feasibility of increasing flood storage upstream of Greatford. I suggest that the developers, in partnership with the Environment Agency, should be required to build on the work already done to develop a mitigation scheme that increases flood storage as well as benefitting biodiversity. This should help to mitigate against any risk of increased flooding as a result of the development.