Solar Farms and Biodiversity – Some Issues

Potential Impacts on Species

An issue to consider in relation to all potential impacts on species is the cumulative effect of several solar farm proposals in close proximity. If this occurs the harm to species might be greater because unaffected land where displaced species might retreat to (and bearing in mind territorial and food supply limitations) could be substantially diminished. Species populations in the locality could become isolated and threatened. This is especially significant for bats.

Potential impacts on bats

All UK bats are protected species under the Habitats Regulations. It is likely that there will be some bats using farmland in much of the UK, especially if there are hedgerows on or adjoining the site and it is connected to other habitats nearby where bats are likely or known to be present. Some bat species forage across open arable land and pasture as well as along linear and wooded habitats.

Bats are generally very sensitive to artificial light, so if lighting during the construction or operational phases is introduced, bats can be impacted.

A study by BSG Ecology cites evidence that bats mistake solar 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. https://bsg-ecology.com/the-potential-ecological-impacts-of-ground-mounted-photovoltaic-solar-panels-in-the-uk/

A research study published in 2023 https://doi.org/10.1111/1365-2664.14474) 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 solar 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 solar PV sites, for example whether prey sources are negatively affected by solar PV developments. Given the protection status of bats and the potential offences which could arise, the authors conclude that appropriate effort should be given to assess the presence of bats on any site proposed for solar panels. Where necessary mitigation to support bats should be designed and activity monitored over extended periods, including in the surrounding area.

Alarming data from the Gwent Levels SSSI has come to light in the post construction monitoring following the decision to allow a solar farm to be built on this SSSI. The diversity of bat species has decreased markedly, and for the majority of locations, the abundance of species has dropped dramatically (by 95-100%). https://www.gwentwildlife.org/sites/default/files/2022-12/Joint%20letter%20FOGL%26GWT%20to%20Julie%20James.pdf

Conversion of DC to AC current on solar farms generates electromagnetic fields. This raises the question of whether bats are impacted by these. A literature review in the US published in 2021 quotes adverse effects of electromagnetic fields on flora and fauna, including impacts to orientation, migration, reproduction, nest and den building, and 'survivorship'. https://ehtrust.org/science-on-health-risks-of-cell-towers-5g-exposure-small-cell-densification-and-new-wireless-networks/

A 2007 paper describes work which found that bats avoid radar installations. It was carried out to determine whether electromagnetic fields could be used to stop bats colliding with wind turbines. Bat activity was significantly reduced at certain intensities of electromagnetic fields. The wing membranes of bats present a large surface area over which radiation might be absorbed, increasing heat load to the animal. This, combined with the heat energy produced during flight, makes bats particularly susceptible to overheating, which can be fatal in experimental conditions. Furthermore, observations of captive bats have noted their aversion to even a moderate infra-red heat source. This clearly needs further research but could explain why fewer bats are using solar farm land compared with similar open sites. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1808427/#:~:text=Our%20result%20have%20demonstrated%20that,registering%20EMF%20levels%20of%20zero

A study published in 2024 Insectivorous bats alter their flight and feeding behaviour at ground-mounted solar farms - Barré - 2024 - Journal of Applied Ecology - Wiley Online Library provides a useful summary of recent studies of solar farm impacts on biodiversity. This study within the Rhone Valley in southern France assessed the effects of ground-mounted solar farms on bat feeding behaviour. The authors were examining the prediction that bats feed less in and around solar farms because the insect prey resource was expected to be less abundant at sites in which less light reached the ground due to shading by solar panels. Assessment of feeding behaviour involved recording 'feeding buzz' emissions (calls made when bats are feeding), as well as flight speed and sinuosity. Both speed and trajectory were assessed as being predictors of feeding behaviour.

The authors found that insectivorous bats of several species showed strong behavioural responses to ground-mounted solar farms, with faster and straighter flight patterns and fewer feeding buzz emissions. These were taken to show a decrease in bat feeding due to a reduction of habitat quality for bats. Studies have shown a reduction of global biomass, floral abundance and blooms in plant communities underneath solar panels, which could reduce insect prey availability. An alternative hypothesis is that insect prey species are attracted to the smooth surface of solar panels reducing the amount of prey available to bats in the air. A third possibility is that solar panels clutter the foraging environment which is challenging to bats.

The authors conclude that because the behavioural changes observed in bats was strong, this could be impacting on bats' abilities to feed, and causing them to expend more energy finding prey. Such impacts must be avoided or mitigated, especially in areas where bat feeding activity is high.

Potential impacts on birds

Priority species, also known as species of principal importance in England, also known as Section 41 species, are protected under paragraph 192b of the National Planning Policy Framework (NPPF). Paragraph 193a of the NPPF sets out the mitigation strategy required if a planning application is assessed as likely to cause harm to biodiversity. Of the 49 birds which are priority species, a number are associated with farmland and are also red-listed as birds of conservation concern because of declines in their breeding numbers.

Priority bird species typically breeding on agricultural land include ground-nesting skylark, grey partridge, yellow wagtail and lapwing, and potentially ground-using species such as yellowhammer and linnet. These will almost certainly be displaced from areas over which panels are erected during the construction phase and potentially for the lifetime of the solar farm. Harry Fox, writing in the CIEEM Bulletin in September 2022, concluded that 'piecemeal developments have the potential to exacerbate local declines and place greater pressure on remaining habitats to absorb displaced birds'.
https://www.clarksonwoods.co.uk/blog/2022/10/12/are-skylarks-being-overlooked-in-impact-assessment/

The BSG Ecology study referenced above with respect to bats quotes research on bird impacts, from non-European sites. 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 farm sites when compared with adjacent grasslands. However, at the same sites bird densities within the solar farms 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 farms compared with adjacent grasslands. Raptor abundance was found to be higher at one site before construction of the solar farm compared with afterwards. It is thought that raptors may avoid solar farms due to increased human activity and habitat alteration.
https://bsg-ecology.com/the-potential-ecological-impacts-of-ground-mounted-photovoltaic-solar-panels-in-the-uk/

Until recently there was relatively little information about the impact of solar farms on any UK bird species. The only published reference was in *The effects of solar farms on local biodiversity: a comparative study* by Hannah Montag, Dr Guy Parker and Tom Clarkson, published in 2016, which reported on a study of 11 photovoltaic solar farms in the south of the UK. Only one confirmed skylark nest was identified within a solar plot. The nest was situated outside the footprint of the farm 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.
https://www.farminguk.com/content/knowledge/Effects-of-Solar-Farms-on-Local-Biodiversity(4654-8780-3868-4254).pdf

Harry Fox (already referenced above) confirms that skylarks nest in open fields to avoid predators, avoiding tall structures such as trees, buildings and tall hedgerows. Fields suitable for skylark nesting should have a short axis of at least 200 metres free of tall structures, based on a study quoted by his article. In optimal habitat skylarks can have up to four broods a year.

To date in the UK no skylark nests have been found within an area of solar panels, most recently confirmed by Harry Fox based on post-construction monitoring of over 100 solar installations in England and Wales and other observations from the industry. Skylarks seen foraging around solar panels is not evidence of nesting there. At one 60 ha solar site monitored by Harry Fox, birds singing over the site fell from seven in 2015 to none in 2020 and 2021. Without nesting habitats skylarks will decline. Skylark plots have been developed by the RSPB, not to provide nesting locations as is sometimes stated, but to enhance foraging opportunities, as explained by Harry Fox, which can increase the number of skylark territories in a given area and the number of successful broods each year. However, success is not guaranteed, as Harry Fox explains.

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 unlikely 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. Harry Fox 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 population is possible. Addition of foraging plots has been found to increase predation and some introductions of such plots have failed to show benefits. Baseline study evidence is advised with regard to any mitigation/compensatory proposals on adjoining open habitat.

With respect to skylark mitigation/compensation, a planning applicant must demonstrate that it has control of sufficient land on which to deliver the appropriate number of skylark plots (Harry Fox's article provides a tentative formula).

It is impossible to determine whether skylark mitigation/compensation measures proposed will be successful until a period of time has elapsed, by which time it will be too late to rectify matters if the solar panels are in place. Given the uncertainty involved, it is reasonable to argue that the condition cannot be enforced.

The 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, is useful in respect of skylarks, other ground-nesting birds and generally with respect to priority species (see paragraphs 60 to 68 of the decision letter). Mr Parker found 'Mitigation for the loss of the Skylark territory has been suggested in arable fields in the local area through the provision of two 'bird foraging plots' per territory lost and that there is an abundance of open, arable farmland within the surrounding 5km of the site. However, it is unclear as to how such mitigation would be provided given that, as the Ecological Impact Assessment identifies: 'any off-site mitigation would need to be secured via a Section 106 agreement' but no such legal agreement is before me. Nor is there any indication where within the application site itself such areas could be provided. Lastly, it is unclear as to how such provision would also be made for other Species of Principal Importance identified such as Yellowhammer and Yellow Wagtail'.

He concluded that 'the proposal would result in significant harm to Species of Principal Importance and their habitats. This is harm that cannot be avoided, adequately mitigated, and there is no mechanism to secure compensation for. Paragraph 180 of the Framework indicates that planning permission should be refused in such circumstances'. He expands on the biodiversity duty and on the operation of the mitigation hierarchy, and in his paragraph 68 states that although the proposed mitigations in respect of other protected species could potentially be adequately mitigated, 'Nonetheless, this does not overcome the significant harm identified to bird species on or visiting the application site arising from the proposal'. Note that the NPPF paragraph referred to is now 193a.

A copy of the decision letter is here. Other aspects of the decision letter are also useful, for example concerning noise, permanence and heritage assets.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1155982/S62A_2022_0011_Decision_Notice_and_Statement_of_Reasons.pdf

Data from the Gwent Levels SSSI post solar farm construction monitoring has found that no breeding lapwings used the 'Lapwing Mitigation (really compensation) Area'. Numbers of breeding lapwings fell from eight pairs pre-construction to two pairs post-construction, with only one nest found on site. Lapwing is a priority species and red list species with numbers dropping by 80% in Wales in the last fifty years. https://www.gwentwildlife.org/sites/default/files/2022-12/Joint%20letter%20FOGL%26GWT%20to%20Julie%20James.pdf Press reports indicate that meadow pipits have disappeared from the site. https://www.walesonline.co.uk/news/wales-news/quaint-welsh-village-residents-could-27942574

Note the statement that 'Solar farms have minimal impact on the land as the posts that panels are mounted on take up less than 1% of the surface area of the site, with the rest of the area then planted with high quality, diverse grassland meadow'. This may be technically correct but overlooks the impact of shade on grass swards and the impacts of surfaced vehicular access routes, as well as hardstanding areas for inverters and other structures.
Full article: Solar farm management influences breeding bird responses in an arable-dominated landscape

This paper published early in 2025 was described by some press reports as confirming that solar farms can support more bird populations than the land uses they replace. This conclusion should be carefully considered. The solar farm sample sites were small in number, only six. Only two bird surveys were carried out at each site, with none in the winter. Priority species of birds are not identified in the paper, although red-listed and also amber-listed species (birds of conservation concern) are discussed.

The solar farm sites were of two types. The first type, named mixed habitat solar, contained more complex habitat as a result of infrequent cutting or grazing of the grass around the solar panels, which allowed greater sward height and the presence of wildflowers; there were also woody features along the boundaries, such as hedgerows or trees. The second type, named simple habitat, were intensively managed with grass around the solar panels kept short by grazing or mowing, and with no woody boundary features or other habitats present. These sites were compared to comparable arable farmland sites nearby.

For 34 of the 44 species recorded, mean abundance was highest in the mixed habitat sites. The highest abundance of red- and amber-listed species was also in the mixed habitat sites. These findings were statistically significant. A few species were more abundant on the arable land surveyed as control plots, including lapwing and skylark, both priority species which have declined markedly in the last 50 years. Abundance was similar in simple habitat and arable sites, which the authors concluded was due to the simple habitat sites having only marginally greater structural diversity than arable fields.

Bird species richness was highest in the mixed-habitat sites. In the simple habitat solar and arable sites bird species richness was very similar, and marginally higher in the arable sites. These results suggest, albeit for a very small sample size in one part of the country, that ungrazed, or unmown or only infrequently mown, solar farm sites also incorporating woody habitat boundary features, can be beneficial for bird populations. However, as has been found in other research, the ground-nesting priority species skylark and lapwing do not benefit from this approach to management.

A commonly-encountered claim for solar farm proposals is that agriculture, in the form of sheep grazing, will continue on the site once the solar panels are installed. This paper suggests that such sites would result in little improvement in bird abundance and none in bird species richness.

Potential impacts on other protected species

Protected species which may be disturbed or displaced by solar farm developments include other European protected species including great crested newt (known to move up to 500 metres from water bodies), other priority species such as hares, hedgehogs and harvest mice, and badgers (protected under the Protection of Badgers Act 1992).

Planning applications may understate the potential impacts of 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 security, both in any tree roosts and on their foraging and commuting routes. Ground-nesting birds and other ground-using species such as hares could be severely impacted. Raptors such as kites, kestrels, sparrowhawks and owls, used to hunting over the site, could also be significantly impacted.

Applications might state that mammals will continue to have access to areas within deer/security fencing by means of mammal gates. Deer might attempt to jump fencing and become entangled or injured. *Solar Habitat: Ecological trends on solar farms in the UK,* a report published in 2023 by the industry body Solar Energy UK, notes on page 26: 'Mammal gates were recorded as being present on 11% of sites, presumably installed for badgers to use to access the sites. We did not find signs of active use of these gates and most sites provided gaps under fencing which badgers are far more likely to use by either squeezing or digging underneath'. This begs the question as to what mammals which don't dig can do other than be displaced. It is understood that higher-specification security fencing which some insurers may require cannot accommodate mammal gates. *https://solarenergyuk.org/wp-content/uploads/2023/05/Solar-Energy-UK_-Habitat-Report-2023.pdf*

Other mitigations proposed may or may not be successful. Hunter et al presents a general overview of mitigation advice and casts doubt on the efficacy of much of it: https://besjournals.onlinelibrary.wiley.com/doi/epdf/10.1002/2688-8319.12089

Potential impacts on habitats

Construction Impacts will obviously include disturbance to the ground on which the panels will be constructed but also potentially include damage and disturbance to habitats intended to be retained, such as woodland and trees, hedgerows and their associated ditches, hedge bottoms and margins, arable field margins and land bordering public rights of way. Tree roots frequently extend horizontally just below the soil surface far beyond the extent of the canopy.

Hedgerows must be appropriately managed to maintain their biodiversity. Poor management and neglect can be almost as bad as removal of hedgerows. Solar planning applications will normally specify their protection, but it can be argued that their protection is not guaranteed, especially in the long term when ecological supervision is no longer available and the Landscape and Ecological Management Plan (LEMP) is long forgotten. Applications may also state that no hedgerows will be lost during the construction phase. However, access onto the site for large vehicles will be required, often from narrow country lanes. Widening entrances and creating visibility splays could result in hedgerow loss. In addition, roadside vehicle queuing spaces may be needed where local roads are narrow and have poor visibility: these too can require hedgerow removal.

The value of ancient and veteran trees is such that the NPPF classifies them in paragraph 193c as irreplaceable habitats and development resulting in their loss or deterioration should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists. Applicants will normally state that such trees will be protected, but they could be at risk from poor site management, and, despite the wording of the NPPF, compensation for an irreplaceable habitat is not possible.

It is frequently claimed by solar developers 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 piles supporting solar panels on the ground might be low, the impact of the panels themselves is likely to be considerable, creating shade and drought conditions which reduce sward quality including its value as animal grazing, 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.

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.

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

On-site habitat enhancements

In most cases the land under solar farms is proposed to be converted or enhanced to create grassland, in particular species-rich grassland. This is to help achieve high biodiversity net gains and support claims generally that solar farms benefit biodiversity and the wider environment. Loss of often high quality agricultural land is frequently justified by claiming that the land in and around the panels will be grazed by sheep, thus keeping the land in agricultural production and, more ambitiously, maintaining a dual purpose site.

Such plans tend to underplay the known difficulties of establishing species-rich grassland successfully, and display a lack of understanding of the techniques and equipment which will be required to establish and manage grassland at scale, especially in and around solar panels, where access under the panels might be restricted. I have seen references to hand-broadcasting of seed under the panels (over nearly 80 hectares), treading and raking, as well as watering and hand-weeding of substantial lengths of new hedgerow where there is no existing water supply. The maintenance requirements of such sites can also be grossly understated: a typical estimation being monthly site visits.

I have seen contradictory application details, with the ecology documents stating that arable fields will be replaced with species-rich and structurally diverse grassland habitat, which 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 (although neither bats nor invertebrates were surveyed on site). Meanwhile the Design & Access Statement stated that the majority of the area comprising the land within the security/stock-proof fencing would be sown with a solar farm grass mixture comprising six grass species, including ryegrass, with two varieties of just one broadleaved species – white clover. The Montag et al paper already referenced in the impacts on birds section states that white clover will only support pollinators for three to four weeks, while ryegrass is aggressive and does not encourage diversity.

Any grassland lying under solar panels will be impacted by shade, significantly reduced temperatures and dryer conditions, affecting the establishment, quality and diversity of the sward. A 2016 study at the Westmill solar park in the UK 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. https://iopscience.iop.org/article/10.1088/1748-9326/11/7/074016#:~:text=We%20found%20microclimate%20and%20vegetation%20management%20explained%20differences,farms%2C%20explained%20by%20microclimate%2C%20soil%20and%20vegetation%20metrics.

Typically for areas outside the security fence where there are no panels a species-rich wildflower and grass mix may be specified. However, movement of vehicles around the site might be expected over these areas, and local fire safety measures, especially when batteries are included in the proposal, may require construction of hard-surfaced perimeter roads. Where there is a relatively narrow gap between the security fencing and the hedgerows or other boundary habitat features, vehicle wear will be concentrated, potentially impacting on the retained arable field margins and hedge bottoms, inhibiting the growth of the species-rich grassland proposed for the area, and impacting on the ability of these areas to contribute to biodiversity net gain. Considerable damage to vegetation and soils can occur in these locations.

Sites which have 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 cropping. Removal of topsoil is unlikely to be considered for solar farms as this would impair any return to agricultural use. 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.

This Natural England advice note details factors which may inhibit sward establishment, including in addition to 'the weed burden', winter weather, drought, rabbit grazing, soil erosion, slugs and other soil invertebrates, moles and birds. Techniques including creating a fine seedbed and rolling the soil surface after sowing would be tricky under solar panels, while a sward sown prior to the erection of the panels might be substantially damaged by construction operations. The advice also specifically warns against using ryegrass and white clover, considered weeds, as they have large soil seed banks and are difficult to eliminate.
https://forms.tunbridgewells.gov.uk/__data/assets/pdf_file/0014/401216/ID39-Natural-England-TIN067-Arable-reversion-to-species-rich-grassland.pdf

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 and require a water supply.

An article in Farmers Weekly dated 17 October 2022 describes the experiences of a farmer running sheep on a solar farm. 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.

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 with herbicide 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.
https://www.fwi.co.uk/livestock/how-solar-panel-diversification-is-working-for-a-sheep-enterprise

Montag et al already referenced state (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.

Even if 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 farm 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. 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.

Solar Habitat: Ecological trends on solar farms in the UK, the report published in 2023 by Solar Energy UK already referenced, must be treated with extreme caution. It admits that until recently monitoring of solar farms has not been applied consistently. This is a species-counting exercise aimed at building an evidence base to back claims that solar farms promote biodiversity improvements. However, no pre-construction data has been presented, nor any data from control plots (land with no panels in similar locations and with similar characteristics). Botanical information is not presented in the form of average species counts per square metre, which would enable direct comparison with UKHab minimum habitat criteria for grassland, and makes no reference to site conditions, pre-construction vegetation cover or the make-up of any seed mixes used.

Impacts on and reinstatement of soils

This document is a comprehensive account of the impacts of solar farms on soils and the implications of reinstatement works required to restore land to agricultural use:
The impact of solar photovoltaic (PV) sites on agricultural soils and land. Work Package Three. ADAS. March 2023. For the Welsh Government.
https://www.gov.wales/sites/default/files/publications/2023-08/impact-solar-photovoltaic-sites-agricultural-soils-land-spep21-22-03-work-package-3.pdf

The document includes photographs (next page) showing soil damaged during construction works. Such damage may be long-lasting, especially where deep compaction occurs.

The document also states that to date 'there is no known reported experience of pile pull out within the solar industry in the UK'. It sets out in detail the potential risks to agricultural land quality arising from the construction, operation and decommissioning of solar farms. This is in contrast to the statement in the 2024 Solar Energy UK publication Factsheet: Solar Farms and Agricultural Land • Solar Energy UK which states 'Given the temporary and fully reversible nature of solar farm developments, which do not lead to the loss or deterioration of underlying soil quality, and can be maintained in agricultural use, the use of agricultural land will not compromise our national agricultural resource'.

May 2025

Figure 9

Figure 10