Advice on Solar farms near routes used by equestrians

The British Horse Society

The law and management of public access rights vary widely between the four countries of the United Kingdom. Practical elements of the following advice apply in all countries but the legal requirements in Scotland and Northern Ireland may differ from those in England and Wales.

More advice is available on www.bhs.org.uk/accessadvice.

IMPORTANT This guidance is general and does not aim to cover every variation in circumstances. Where it is being relied upon, The Society recommends seeking advice specific to the site.

Contents

Where solar farms are proposed, the potential impact on horses should be considered on any route used with them — including byways, bridleways, roads and permissive routes — which may be affected during or after construction, and premises where horses are kept or trained.

The Society does not have a position on the principle of renewable energy. Whatever the feeling of local equestrians, change from a semi-natural environment by building a solar farm is unlikely to be a 'material planning consideration' with any weight to affect planning permission. Therefore, the Society's work focuses on gains for equestrian access, and mitigation of the development on existing bridleways, byways and roads, during construction as well as in the completed project.

Solar arrays and local effects

Electricity is generated from solar panels by daylight, not just direct sunlight, and, with the improvement in solar panel technology, the intensity of the daylight in much of Britain and Ireland may generate enough electricity for solar farms to be viable further north than was previously the case.

A solar farm involves the installation of solar photovoltaic panels on open land, usually land which is even across the site, to avoid having to compensate for undulations, which would require greater spacing between ranks of panels. Flat land is more likely to be used than a hillside for ease of installation, maintenance and to reduce visual impact.

Standard photovoltaic panels are fixed on frames mounted on vertical supports, called arrays. They are aligned for optimum exposure to sunlight by their orientation and angle to the sun, normally facing south and tilted to around 45 degrees depending on latitude. The arrays will be spaced to avoid shading by the next row at any time of year.

Their height above ground is usually up to 3.5m, but that may change as designs advance in this developing industry. The static panels do not make any noise or movement and require little maintenance, other than cleaning and vegetation control.

Tracker arrays rotate the panels to maximise generation as they follow the sun through the day at an optimum angle to the sun's rays. They may be higher than static arrays. Their higher cost of build, installation and maintenance is only just becoming viable so they are an unknown entity in relation to horses. Some may be proposed for part of a site as a trial or a mixed site. They can increase generation so may become more common.

The frames to support arrays are piled into the ground and can be removed when the site is decommissioned. The piling operation is the most intrusive part of the build project.

Trenches may run between the arrays and carry cabling to an inverter in small buildings where the direct current produced by the panels is converted to alternating current and fed to the national grid.

Battery storage of energy may be incorporated in a large site to improve management of transmission to the national grid.

Panels are designed to absorb and not reflect light for efficiency (reflected light is wasted energy) and although the amount of reflection varies with the materials, the incidence of 'glint and glare' is negligible compared with glass or water and will not be uniform throughout a period of sunlight.

Rain hitting the panels will make a gentle sound which may be lost in the general ambient noise in those conditions, although, obviously, the greater the extent of panels, the greater the cumulative effect of the noise may be, however, even in heavy rain, it is similar to roofs of barns or a retail or industrial site.

Depending on the previous use of the land and its quality, it may become grassland that can be used to graze sheep or poultry to reduce the need for vegetation cutting. Some land of solar farms is deliberately managed to increase biodiversity, and there is increasing evidence of a high benefit to nature.

There is no evidence of widespread contamination of grazing or ground water from toxic minerals. Panels are no longer manufactured with lead, and other minerals are in small quantities, encapsulated within the panels. Breakage of a panel on site could release minerals, but there should be a protocol in place to avoid contamination of the land. End-of-life panels will be removed from site.

Solar farms are straightforward to build, involving erecting the frames which hold the panels, underground cabling and small buildings to house inverters. Tracks may be built to facilitate vehicle movements around the site during construction or for subsequent maintenance.

Considerations for a solar farm development

As part of the planning process, the developer will conduct a range of studies, typically to find out about the existing ecology and other aspects of the site. The effect on public rights of way should be included in these studies, however, it is commonly omitted, particularly the effect on horses may not be addressed.

The results and the design for the solar farm will make up the planning application, possibly a pre-planning local consultation, so the accommodation of equestrians and public rights of way should be clear at an early stage and, if omitted, the effect and desired mitigation pointed out.

The construction phase of an average 40-acre site is likely to be around 16 weeks. Over this period there could be 100 lorry deliveries to the site, possibly more. More recent applications have been for much larger developments, although the site is often broken into ‘fields’ which are not adjacent, so the corresponding traffic volume may be greater. Components are not large so abnormal load vehicles should not be required.

The application should include a Traffic Management Plan for the construction process with details of vehicle type, number of movements per day, and the routes to be taken. The increased traffic and its character can have a high impact on equestrians when the identified route is along roads which equestrians have no choice but to use either because there are no bridleways or to reach bridleways (or other non-motorised routes).

The life of a solar farm has usually been 25 years, sometimes with an option to renew for a further period, however, applications are now being made for a longer initial period. Planning permission may specify a return to original use without extension.

Planning authorities will normally require that a proposal will minimise disturbance to agricultural land and reduce visual impact. As even large solar farms are considered temporary, all the structures and tracks may be required to be removeable.

Summary of factors affecting equestrians (detail follows)

Factors which could affect equestrians and should be considered during the planning phase are:

- Construction traffic increase on roads and impact on equestrian safety should be avoided by careful traffic management and provision of alternative routes for equestrians.
- Bridleways and byways across the site should be retained or diverted with widths great enough to avoid the arrays over-shadowing the routes.
- Use of bridleways or byways as construction roads must be avoided as it will irretrievably damage their character if they are 'green' paths and may close them to the public for the duration of construction.
- Post-construction access roads must not coincide with bridleways or byways because public access is needed at all times which may conflict with security demand for the site.
- Damage or change to surface of bridleways or byways to install cables should be avoided by re-routing cables or by directional drilling if unavoidable.
- Effect on drainage from new hard surfaces and increased speed of run off must be accommodated to avoid poaching of bridleways and byways.
- Damage from installation of fencing must be avoided and the effect of fencing on the character and enjoyment of adjacent routes mitigated.
- Constraining width of bridleways or byways can feel intimidating with the loss of adjacent open space.
- Additional access opportunities may be achievable for perimeter or cross-development routes.
- Inverter buildings near rights of way should be constructed to minimise transfer of sound.
- Tracker arrays should not be adjacent to bridleways or byways until their noise and movement can be assessed for impact in mature developments.

Traffic Management Plans

Construction traffic will create vehicle movements relative to the size of the site, and is likely to be much greater on some days and periods but can be managed to condense vehicle movements to mitigate effect.

The impact on residents and traffic flow or delays for motorists will be considered but not on other road users, such as equestrians. This is a point of highway safety which is a Material Planning Consideration. Unfortunately, alternative roads for either the construction or the riders rarely exist, but an off-road route, most commonly using a field edge alongside the road, may be negotiated for non-motorised users and compensation paid by the developer to the owners of the land over which it passes, for the duration of the unusual traffic period. This is only likely to occur where there is a high number of local riders to justify it, perhaps between a large livery yard and a bridleway. Alternatively, where verges are adequate, mowing and flattening them may provide a refuge strip for equestrians.

Drivers should be reminded of the highway code and BHS guidance to pass horses at 10mph, by at least 2m.

In summary, a Traffic Management Plan should include the safety of users of rights of way both on and adjacent to the site and on roads used in the locality. It may be appropriate for construction traffic to be restricted to:

- Limited hours and / or days of the week so that equestrians have options to avoid increased traffic
- Limited routes, so roads most important to equestrians are avoided.

Use of bridleways and byways for access

Bridleways, byways and unsurfaced roads **should not** be used for site access. If it is unavoidable, and accepted by the highway authority's rights of way service,[1] in consultation with the BHS, every effort should be made to ensure that the surface will be maintained and restored to a surface material suitable for horses after construction of the solar farm.

An alternative route for equestrians should be provided during construction to minimise disruption and to ensure users' safety. It is unacceptable to close off-road routes where roads are the only alternative when those same roads are also busier because of the construction traffic.

Closures without alternative routes should be avoided and, if necessary, construction traffic managed to reduce the length of closures, rather than an automatic blanket closure throughout the period of construction.

[1] The highway authority *rights of way service* is emphasised because the planning department or highways (roads) a service may not be aware of the law that it is an offence to disturb the surface of a public bridleway or byway and cannot authorise disturbance or change to the surface

Cabling across or along bridleways and byways

Grass tracks are the most desirable for most horses and many pedestrians, as well as providing green corridors to benefit nature and human health and well being (rarely achieved by asphalt or hard surfaces). Damage to a good natural resilient surface is commonly a negative impact of a development because it may not be possible to reinstate the surface, and yet another grass track is lost.

Damage from vehicles engaged in the cable-laying can be minimised by using temporary protective tracks on which the vehicles run, and removed to leave minimal effect on the surface.

When responding to a planning application for a solar farm, always consider the cable routing and its impact on bridleways and byways, it is often missed in consultations and the damage to surfaces can badly disadvantage equestrians, especially where reinstatement is not enforced or it is replaced by a sealed surface.

Cables should not cross or be laid along rights of way unless by directional drilling, or unless the surface of the bridleway or byway is historically poor and the development is an opportunity to improve it *for all users, including equestrians*.

Authorisation will be required from the highway authority's rights of way service[2] to disturb the surface of the right of way. Acting without authorisation is an offence. The surface must be reinstated to a firm and safe condition within a set period, which should be as short as possible to minimise inconvenience to users. If the surface is not reinstated, the authority can restore it and charge the cost to the landholder. The finish must be one that is suitable for horse use.

Noise

There will be noise during construction, particularly from pile driving, which is unpleasant and potentially distressing, but its temporariness means it is not usually a material planning consideration. Similar to traffic movements, restrictions are possible to reduce the impact to specific hours and days, and for provision of an alternative route when piling is close to an equestrian route.

Drainage

Drainage provision for the radically changed surface of a solar farm compared with greenfield land must be accommodated to prevent detrimental effects on equestrian

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routes on and adjacent to the site and for some distance away, depending on drainage patterns, outflow and the terrain.

Hard surfaces create a different drainage situation from an open field as run-off is immediate and much higher in volume. The extensive surface area of the panels could change the nature of the drainage. Existing drainage may not be adequate to cope with the changed run-off and a holding pond may be required. New drainage to protect equestrian routes is essential to ensure they are not affected. This must be considered well beyond the site itself so that flash flood damage does not occur.

Equally, land which has a higher density of natural vegetation because it is no longer cultivated or heavily grazed may be able to absorb more water, therefore reducing speed and immediate volume of run-off from the site.

The effect of the construction process and vehicular access on drainage should also be considered. Levelling a site, soil stripping, trenching for cables, compaction and creating access tracks will all affect the drainage of the site and should be provided for in the construction phase so that there is no adverse effect on equestrian routes.

Hard surfacing routes which currently have an adequate natural surface should not be the automatic answer; it is usually better to preserve the existing surface by attention to drainage and protection from damage, perhaps using geogrid products. However, if the existing surface is poor, the opportunity for upgrading the surface with a finish suitable for horse use should be taken if appropriate.

Fencing

Solar farms are valuable investments and are usually secured by fencing which may include hedge screening, although the latter will take years to establish. The most common type of fencing in use is 'deer mesh' type 1.8 to 2m high, which is the least intrusive. It can be stipulated in the planning permission so as not to feel oppressive if fencing is alongside a bridleway or byway.

If bridleways or byways are alongside or through sites, care must be taken not to create a narrow corridor. Fencing can be intimidating, especially at this height, and create a need for vegetation control, or, if solid, create a drainage or poached surface problem by preventing light and air reaching the surface. A narrow corridor may also potentially create conflict from users being confined, with no 'escape space' from a threat as would be the case with an open field. The need to maintain adjacent hedges and surface vegetation so as not to further reduce the available width should also be considered, as well as vehicular access for maintenance if appropriate.

Unless the recorded width of the bridleway or byway is greater, a minimum **useable** width of 4m between fences is recommended, meaning fencing at no less than 5m apart to allow for the strip immediately adjacent to the fence being unusable, and with vegetation cut through the full width. This mitigates the enclosed effect of the corridor of the right of way between high fences.

Where a bridleway or byway has been previously unfenced, it is likely that the used width has been at least 4m as users do not risk passing each other more closely than necessary, particularly on multi-use routes where horses, bicycles, pedestrians and dogs may be present.

Use of open mesh fencing is usual except around inverter housing or battery storage where security fencing may be required. The latter can be intrusive in the landscape and may create unpleasant and intimidating alleys in any location unless the public right of way is given enough width. Metal palisade fencing with spikes on top should be avoided next to equestrian routes as its rigidity and sharp edges have safety implications for riders. Although the standard height is above the head for a pedestrian, its top is likely to be at or below chest height for a rider and will result in injury if a rider is thrown onto or against such a fence.

Security

After construction, traffic to the solar farm will be minimal, with occasional maintenance visits and ground maintenance through mowing or livestock management. If the site is currently farmed, usually it is maintained so that it can revert to agriculture after the life of the solar farm.

Access roads must not coincide with bridleways or byways. There may be a wish to restrict vehicle access to the site to minimise theft or vandalism. Anti-vehicle barriers cannot be authorised on bridleways or byways for the purpose of security, only to control livestock or to safeguard users of the right of way. The site must therefore only be permitted if it can be secured without affecting bridleways, byways or public roads.

On permissive paths, barriers should conform to BHS Advice on gaps, gates and vehicle barriers to ensure safety of users.

Alternative or additional access

Large developments are opportunities for increasing access, particularly those which contribute to community funds. There may be chance to upgrade a footpath to bridleway or to gain an additional route. Even short links can have important benefits by enabling greater or safer use of existing routes in an area.

It should not be necessary to divert a bridleway or restricted byway (a byway open to all traffic cannot be diverted under normal circumstances) as arrays can be arranged around the route. However, this might reduce the number of panels that can be accommodated and there may be a proposal to divert a route to the edge of the site. In some cases, this may be acceptable if it provides a more advantageous route, but not if it is less convenient or attractive to users. Diversions should be avoided, unless the proposal is more desirable than the existing route, as the solar farm is a temporary structure. If it is

essential to divert a convenient route, consideration should be given to it reverting to the original line on expiry of the planning permission for the solar farm.

Battery storage

Some solar farms may include battery storage to allow better management of energy flow to the grid. Siting of batteries should be considered carefully in relation to bridleways and byways because of the fire risk. Apart from the immediate health and safety risk, such fires are difficult to control, produce high levels of toxins, so closure of all public access may be required. In addition, access routes may be severely damaged by operations to attend the fire so access routes that avoid bridleways and byways are essential.

'Glint and glare'

The UK government's National Policy Statement for Renewable Energy Infrastructure. (Nov 2023) says:

> Most commercially available solar panels are designed with anti-reflective glass or are produced with anti-reflective coating and have a reflective capacity that is generally equal to or less hazardous than other objects.

The Society accepts this statement as an accurate description of solar panels as much less reflective than glass, such as vehicle windscreens, roof windows, conservatories or greenhouses at similar angles, all of which are common in the landscape and accepted by horses, who will have seen reflections from glass and water since their birth. If any reflection does occur, it is unlikely to be a direct problem to horses or equestrians because of the angles and distances involved and because the surface has a dull sheen rather than glare even on a bright day.

Increasingly, proposals for solar farms include comment on the impact of 'glint and glare'. The Society has no evidence of 'glint and glare' from solar panels and no evidence of horses reacting to it or of it being detrimental to the health and wellbeing of horses.

Reports from sites with both solar panels and horses, including a solar array beside an arena used for riding horses, indicate no reflection and no reaction from or impact on horse or rider.

Horses may react to a new solar structure as they might to anything different in their environment, but will quickly accept it (when introduced appropriately). Such reaction is simply to a change in their surroundings, it is not likely to be a response to reflection because their handlers report no reflection from panels. Although horses' vision is different from humans, their response does not suggest that they see panels differently.

Planning conditions

Where a solar farm is proposed, conditions can be imposed on planning permission to ensure the points above are included. The primary ones are:

- Routes for constructions traffic should avoid passing along or across equestrian routes, including byways and bridleways. Where such use is unavoidable, provision of safe alternatives for the duration of the development, or protection of the equestrian access, should be in place.
- Existing bridleways, byways or other highways across the land should be provided for at no less than 5m width between fences and ideally greater to preserve a feeling of openness, if that is currently the situation.
- Inverter housing should be constructed to avoid sound transmission and sited away from bridleways and byways to ensure operational noise and maintenance is at a distance.
- Battery storage should be sited away from bridleways and byways to ensure operational activity is not nearby.
- Additional opportunities for equestrian access should be considered.

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