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 by them — including byways, bridleways, roads and permissive routes — which may be affected, and on equestrian businesses where horses are kept or trained.

While sympathising with views of local people against change of a rural landscape to fields of solar panels, the Society is aware that retaining the view or the experience of a more natural environment is unlikely to be a 'material planning consideration' with any weight to prevent a development. The Society's work therefore will focus on gains for equestrian access, and mitigation of the development on existing bridleways or byways, during construction as well as in the completed project.

Principles of solar generation

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 is capable of producing levels of electricity for solar farms to be viable even on overcast winter days and now much further north than was previously the case.

A solar farm involves the installation of solar photovoltaic panels on open land, usually that 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. Their height above ground is usually up to 3m, but designs are changing in this rapidly progressing industry.

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 component materials and the angle, the incidence of 'glint and glare' is negligible compared with glass or water and will not be uniform throughout a period of sunlight. 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 reflects a slight sheen rather than glare.

Ranks of linked panels, called arrays, 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 at two to three times their height to avoid shading by the next row at any time of year. The whole site is likely to be fenced for security.

The static panels do not make any noise or movement and require very little maintenance, other than cleaning and vegetation control.

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, but even in a torrential downpour, is no worse than on roofs of a retail or industrial site.

There are no moving parts or machines except for inverters which produce a low humming sound and are housed in small buildings, which can be constructed to minimise transfer of sound.

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 is deliberately managed to increase biodiversity, and there is increasing evidence of a high benefit to nature as a result.

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.

The frames to support the photovoltaic panels 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. As a steady and predictable sound, it is unpleasant, but is unlikely to be particularly distressing to horses, although provision of an alternative route when piling is close to an equestrian route may be needed.

In some circumstances, such as presence of archaeological interest, the frames may be mounted on concrete blocks on the surface, but the cost is likely to make the project unviable so is rare when a survey has revealed archaeology to be protected.

Trenches run between the arrays and carry cabling to an inverter building where the direct current produced by the panels is converted to alternating current and fed to the National Grid. Horizontal drilling may be used to install cables to avoid surface disturbance but may be higher cost.

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. The results and the design for the solar farm will make up the planning application so you can see at that stage whether the impact on rights of way has been accommodated.

The construction phase of an average 40-acre site is likely to be around 16 weeks. Over this period there would be up to 100 lorry deliveries to the site. There will be construction noise, but less than for many other types of developments. 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 be a high impact on equestrians when the route uses 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 is usually 25 years, often with an option to renew for a further period, although some planning permission will specify a return to original use without extension.

Solar farms are usually secured by fencing which may include hedge screening. The most common type of fencing in use is open mesh 1.8 to 2m high, which is the least intrusive and this can be stipulated in the planning permission so as not to feel oppressive if fencing is alongside a bridleway or byway.

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

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

Vehicular access to the arrays will be controlled to prevent theft. Security lighting and cameras may be installed; however, such measures usually use infrared to avoid visible light and light pollution.

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

- Construction, including traffic increase on roads and impact on equestrian safety
- Use of bridleways or byways as construction roads, irretrievably damaging their character if they are 'green' paths
- Disturbance of surface of bridleways or byways to install cables
- Effect on drainage from hard surfaces and increased speed of run off
- Damage from installation of fencing and the effect of fencing on character and enjoyment of adjacent routes
- Security of the site conflicting with public rights where the access to the site coincides with bridleways or byways
- Additional access opportunities that may be achievable for perimeter or cross-development routes

Construction

Traffic Management Plans

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

The impact on residents is often considered but not on other road users, which includes equestrians. This is a point of highway safety which is a Material Planning Consideration. Unfortunately, alternative roads for either the construction or the riders are often impossible, 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 increased traffic period. This is only likely to occur where there is a high number of local riders to justify it.

A Traffic Management Plan should be produced during the planning application which should take into account 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 can be 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 with increased use of roads as the only alternative when those same roads are also more busy with motor traffic because of the construction.

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.

Cabling across or along bridleways and byways

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. This can be avoided by careful planning, and using horizontal directional drilling to minimise damage rather than trenching, which increases damage, even though the cost may be higher for drilling.

Damage from vehicles engaged in the cable-laying can also 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 not reinstated or where replaced by a sealed surface.

[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

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.

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 a criminal 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 temporary nature means it is not usually a material planning consideration, although similar to traffic movements, restrictions are possible to reduce the impact to specific hours and days.

Drainage

Drainage provision for the radically changed surface of a solar farm compared with greenfield land must be taken into account to prevent potentially serious detrimental effects on equestrian routes on and immediately adjacent to the site and for some distance away, depending on drainage patterns, outflow and the terrain.

Hard surfaces create a very 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 significantly 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 not cultivated, heavily grazed or treated with pesticide may be able to absorb more water, therefore reducing speed and immediate volume of runoff 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 carefully 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

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drainage and protection from damage. 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 with material that is vulnerable to crime. They may be fenced to above head height for security. 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 to a corridor, 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.

A minimum **useable** width of 4m between fences is required, which usually means fencing at no less than a 5m corridor, irrespective of any recorded width of the bridleway or byway, with vegetation cut through the full width. This mitigates the enclosed effect of the corridor of the right of way.

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 involved.

Use of open mesh fencing is preferable to close boarding or metal palisade-type fencing with sharp points on top. The latter two are much more intrusive in the landscape so should not be permitted in a rural location; they also create unpleasant and intimidating alleys, even if relatively wide, in any location. Metal palisade fencing with spikes on top should be avoided as its rigidity and sharp edges are dangerous and have safety implications for riders. While it may be above head height for a pedestrian, its top is likely to be at or below chest height for a rider and serious injury is likely should a rider be thrown onto or against such a fence.

Security

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 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 very short links can have important effects 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 could significantly 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.

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.
- Additional opportunities for equestrian access should be considered.

Battery storage

Some solar farms may be associated with battery storage as well as feeding into the National 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 very 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 that avoids bridleways and byways should be provided.

'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, which includes 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.

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 a 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 reasonably 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 and although horses' vision is different from humans, their response does not suggest that they see panels differently.

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