ADVICE ON

Wind Turbines and Horses – Guidance for Planners and Developers

The British Horse Society

The UK is committed to producing 15 percent of energy from renewable sources by 2020 and government strategies incorporate the use of wind energy towards this target. The BHS does not express an opinion on the use of wind energy as its concern is for equestrian safety, however:

The potential effect of turbines on horses should be considered on any route used by them – this includes bridleways, byways, roads and permissive routes – and on businesses where horses are kept or trained.

Horses are most likely to react to the noise made by wind turbines, the movement of the blades, or movement of shadows cast by the blades. Placement of turbines must take account of existing equestrian access in minimising these effects of turbines close to routes used by horses or businesses where horses are kept.

Even though some horses are untroubled by turbines – photographs and film of horses grazing or being ridden near turbines are easily available – there are plenty of reports of horses whose reaction to a turbine has been adverse. There will be many unreported incidents and records of them are much harder to find because they were unexpected.

It cannot be assumed that it is safe to introduce turbines near equestrian routes because there are fewer reports of adverse reactions than of horses accepting turbines.

Most wind farms until recently have been in less populated areas with alternative equestrian routes and many riders have been able to choose to avoid going near turbines if they wish.

Proposals for wind energy projects are now increasing in more populated areas where there is a much higher density of traffic and urbanisation, and a much lower number of off-road routes and quiet roads. Riders may not have a choice of routes, commonly only one off-road route is available – none at all in many areas – so many riders and most carriage-drivers are reliant on quiet roads.

Wind farms can have a very severe and wide-reaching effect on the continued rights of equestrians to use off-road routes, pushing them onto busy roads or causing them to transport horses to less hostile environments for daily exercise, or to give up. All of these responses affect other traffic, the environment and the economy. It is estimated that an owner contributes more than £3,000[1] to the local economy for every horse, and horse riding

[1] British Equestrian Trade Association Survey 2011 found that direct expenditure on upkeep and care was £3,105 per horse per annum

is an activity and sport undertaken by mature women, for whom exercise opportunities should not be reduced.

There have been no formal trials to establish horses' responses to turbines so there is no evidence as such, only anecdotal reports. Funding for such a trial would be difficult to acquire, even if it was considered humane to put animals into a situation that was known to be potentially unsafe or distressing. Reliance has to be on reported experience, which demonstrates, even in a very limited survey[2], that more than 20 percent of riders had experienced an adverse reaction from horses to wind turbines. It is important to note that the horses affected included placid, experienced and well-trained horses accustomed to all sorts of situations, and such as would often be partnered by a particularly vulnerable rider (young, inexperienced or with limited ability to cope) who may be reliant on off-road routes. A high proportion of riders would not risk taking their horses near turbines due to the bad experience of others or their own caution.

It may be argued that the evidence of the survey is poor because of the many variables such as other things the horse could be reacting to and that people's perceptions cannot be taken into account. However, in the absence of trials or surveys to the contrary, it remains that some horses and riders will be affected and the fewer alternatives there are for those people to continue to ride in safety, the less appropriate it is that their right of use of

[2] British Horse Society survey of Wind Turbine Experiences 2012

any route should be jeopardised.

BHS guidance in the 1990s recommended a minimum of 200m separation distance from bridleways, when the maximum height of turbines was around 65m. The distance was soon revised to three times tip height as turbines quickly became larger, although this was too late to include in government planning guidance.

BHS Policy Statement

The BHS strongly recommends that the views and concerns of local equestrians should be recognised and taken into account when determining separation distances and that normally a

> **minimum separation distance of 200m[3] or three times blade tip height (whichever is greater) will be required between a turbine and any route used by horses or a business with horses.**

This minimum separation distance may not be appropriate in all situations. Every site should be considered independently because there are likely to be many interdependent factors involved. A holistic approach is required that considers all of those factors, common ones of which are listed below, although less usual ones may occur in any location and require individual consideration.

The BHS is aware that every site is different and a blanket policy to cover all situations may be excessively restrictive for some sites. Emphasis is therefore placed on consideration of all factors with consultation and negotiation with local riders and carriage-drivers.

A single microgeneration unit, for which three times tip height is less than 200m, will be accepted at the lesser distance provided that there are no other factors that increase the separation distance required.

Factors which affect the separation distance required are:

- Availability of alternative routes and their desirability compared with the affected route. An assessment of routes and use patterns in the location may be needed. The fewer alternatives available, the more the impact on the affected route should be mitigated by increasing separation distances.
- The number of turbines and their location relative to the route:

[3] Includes all classes of highway available to horses – bridleway, restricted byway, byway open to all traffic, general purpose road (surfaced or unsurfaced) – and permissive routes

- One turbine is much easier to cope with than many; the more machines, the greater the threat.
- Turbines to one side only may create an easier situation than to both sides.
- Several turbines to both sides of a route; the longer the corridor, the greater the risk.
- Clear ahead or clear behind is better than turbines visible both in front and behind at the same time. A horse has nearly 350º vision and may react to a threat from behind that a rider cannot see.
- Location north of a route is better than south as it will not cast shadows across the route – turbines east and west of a north-south route is the worst scenario for incidence of shadow cast at any time of day. However, on some sites this instance may be occasional and it may be feasible for a turbine to be turned off in such circumstances but able to generate at all other times.

- Other hazards on the route so that the addition of turbines to existing

hazards creates an unreasonable situation, examples would be a deep ditch, reduced width, barbed wire fence, gate, blind bend or ruts. This is also true for turbines near a road, where an equestrian on the road already has motor vehicular traffic to consider and a horse's reactions may have immediate impact on other road users.

- Undulating ground which alters the height at which moving blades are in view is different from flat ground where all movement is well above eye level from any approach.
- Encountering a moving turbine at close quarters because it was obscured on approach by a hill, wood or building is a greater risk than approaching a turbine clearly in view from several hundred metres.

Depending on local variation caused by prevailing wind and day length, the separation distance to avoid shadow cast will be greater where a route lies north of a turbine between west south west and east south east. Figure 1 roughly shows the area which will be affected by shadows and where the separation distance between route and turbine should be greater. The shaded area also reflects where noise is likely to be more of a problem because the route is downwind of prevailing wind in much of England and Wales.

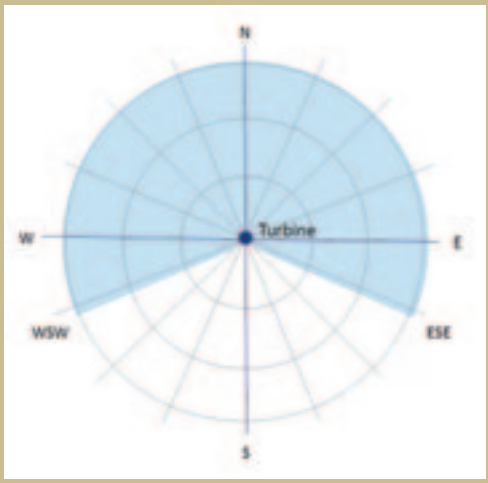

Figure 1: Separation distance between the turbine and route should be greater for routes in the blue area

Provision of alternative routes or improvement of existing facilities may reduce the impact of a wind farm, for example if a path can be provided off-road so that riders are not coping with traffic and tarmac as well as the wind turbines. Even if the separation distance between the turbines and the alternative route is less than to the road, it may be a preferable and safer option for some users.

Anemometers should be located at a distance greater than their overall height from an equestrian route. Cables must not cross an equestrian route,

including during erection of the mast. Their ground points should be at least 3m from an unfenced equestrian route and cables should be wrapped or sleeved to a height of 2m to increase their visibility.

Some anenometers have been found to produce a high pitched bleeping which is evidently distressing to horses. Models emitting noises should be avoided.

Access for construction purposes should avoid bridleways or byways as it is incompatible with equestrian use and routes should not be closed to equestrians so as to facilitate construction. Alternative construction traffic routes may be required.

Why horse riders are concerned

There are reports of horses being frightened by turbines, and equally there are reports of horses being undisturbed by them or quickly becoming accustomed to them. Horse owners are naturally concerned about the possible effect of turbines on their horses and may view them as a very high risk to their safety. Horses are flight animals and if frightened, they may make abrupt unexpected movements or bolt (run out of control), both of which may cause a rider to fall at speed and risk injury to him or herself, the horse, and to anyone in the horse's path.

Equestrians have very few off-road riding opportunities – less than a quarter of paths available to walkers and even fewer to carriage-drivers – so the potential loss of any route is understandably of grave concern. Any route that was previously available to all should not be rendered unsafe for some. In the majority of cases where riders and carriage-drivers are displaced from off-road routes their only alternative will be greater use of roads, with an increased risk to themselves and other road users.

How horses react to turbines

Some horses appear very fearful of wind turbines, others are unconcerned. This does not seem to be related to the ability of the rider or handler, or to the temperament of the horse – bomb-proof veterans have been known to react badly and spooky thoroughbreds to appear oblivious. There are also reports of horses that have previously encountered turbines calmly but on another occasion, with no apparent difference in conditions, have reacted adversely.

From reports of experiences, horses are most likely to be reacting to noise, movement of the blades or movement of shadows cast by the blades.

During the design stage, a wind energy project developer should

communicate with the authority's access officers to ensure that equestrian routes are taken into account and turbines located with maximum separation from horses to reduce the effect of noise, movement or shadows. This applies equally to a microgeneration system as a large commercial wind farm. Businesses with horses should be considered in the same way.

Movement is most likely to have an adverse effect on horses if it starts or changes direction suddenly, or if it is seen suddenly at close quarters, rather than having been visible from several hundred metres. Although sudden movement is very unlikely with commercial turbines, microgeneration units[4] can react quite abruptly to gusts and changes in wind direction and the movement and noise seem much greater because they are closer to the horse. They should be of a design that minimises 'yawing' of the head with changing wind direction.

A turbine's blades sailing over a right of way is found threatening by many people, but may be agreed with the planning authority if it reduces impact on another part of the site. It should be avoided on an equestrian route.

The BHS has received reports of turbines subject to annual testing producing sudden unusual high noise levels, which may be very frightening to horses. This should be avoided and, if it is required, then notification at least five days in advance should be clearly signed on approaches to the site at a distance that will be out of range of the noise. Websites for wind farms should also show the information prominently.

Moving shadows cast by blades are likely to be found more threatening by some horses when they fall on a hard surface than on vegetation. Shadow

[4] Microgeneration is the small-scale generation of heat and electric power by individuals, small businesses and communities to meet their own needs

cast can be predicted and turbines must be sited to avoid casting shadows on equestrian routes. Strategic hedge or tree planting or hedge management may shield an equestrian route from the effect.

Local horses may become accustomed to turbines, but this may not be feasible for businesses which horses visit for short periods. Some horses away from their home environment and accustomed handler may be more sensitive than in a familiar environment. Several planning authorities have taken account of the effect on horses and business in turning down applications for turbines in close proximity to stud farms dealing mainly with highly strung blood horses and other equestrian related businesses dependent on visiting horses. However, many horses do not react to turbines at all and the number of microgeneration projects for rural businesses or at competition venues[5] is rising, which over time is likely to help horses habituate to turbines.

Inclusion of information about turbine locations along with other potential hazards in promotional material for riding routes will help riders consider the risks in advance. Where possible, it may be pragmatic to suggest alternative routes.

Developers, local authority planning officers and the Planning Inspectorate (hearing public inquiries on wind projects) are dependent on evidence for their decisions on whether turbines are appropriate in a certain location. To date, relatively few dangerous incidents involving horses have been reported. As the number of turbines in the country increases and more riders encounter them, there may be more incidents but as turbines become commonplace and people accept them, so too will horses. If the number of incidents reported to the BHS increases and indicates that the safety of horses and riders or carriage-drivers is at risk, then the situation and policies will be reviewed.

Mitigation

There are a number of actions which may benefit riders and carriage-drivers or reduce the effect of turbines on them. They include:

- Provision of new definitive or permissive routes or improvement of existing routes in the locality to provide alternatives for those at risk for the life of the wind energy project.
- Diversion of routes to a greater distance or with increased sightlines to

[5] A demonstration turbine close to the equestrian area at the Pembrokeshire County Show in 2012 caused at least four incidents of horses reacting out of control, presumably to the turbine, and on investigation the Show decided not to permit demonstration turbines near equestrian areas at future events

avoid suddenly coming upon turbines within 500m.

- Consideration of potential impact on riders and/or carriage drivers should they be unable to continue using a route because of turbines, such as availability of alternative routes in the immediate vicinity.
- On many developments it can be identified that a limited number of turbines will affect an equestrian route with over-sail or shadow cast only under certain conditions. It is possible to model those conditions and to programme specific turbines to switch off as required to abate the nuisance.
- Consideration of the nature of the route in terms of space for a horse to shy, spin, jump or be manoeuvred on firm level ground; proximity of and access to roads if a horse was to bolt out of control.
- Notification to equestrians of certain days during construction most likely to be a hazard; for instance, concrete pouring creates many vehicle movements during a short period of time.
- Restriction of construction and construction traffic to 8am-6pm week days only so that routes can still be used during the construction period at the times of highest demand for equestrians.
- Restriction of construction traffic to roads or new tracks. Bridleways or byways must not become access roads. If this is unavoidable, alternative equestrian routes should be provided and the surface of the bridleway or byway restored to one suitable for horses.
- Notification of when turbine blades will be static, prior to commissioning, so that riders can familiarise horses by degrees.
- Notification after commissioning of test days throughout the life of the turbine(s) which may produce increased or unusual noise or speed.
- Familiarisation days organised on site.
- Using microgeneration machines of a design that minimises 'yawing' of the head with the changing wind direction as sudden movements are those most likely to frighten horses and risk an accident.
- Strategic hedge or tree planting or hedge management to shield an equestrian route from the effect of moving shadows on a path or blades at eye level.

This guidance does not apply in Scotland, for which the BHS produces separate guidance. Variation in the two documents arises from very different law relating to access and to patterns of land use between the countries.

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