

DEADLINE 7 SUBMISSION

Post Hearing Submission - LIME DOWN SOLAR PARK - EN010168

January Farrington – West Park Farm - IP Reference: [REDACTED]

This submission follows the evidence given at ISH 8 and should be read alongside all my previous submissions. I use West Park Farm throughout because it is the business I know and can give first-hand evidence about but it should not be mistaken for the extent of the equine issue.

The evidence already submitted shows a much wider and interconnected equine environment surrounding the scheme which includes thoroughbred studs, other commercial yards offering livery for all different types of disciplines, top class competition horses, private households with horses, veterinary practices, farriers and supporting businesses, all relying upon many of the same roads, existing setting, routes and services. My Deadline 4 evidence demonstrated that this receiving environment extends considerably beyond any one facility. West Park is therefore a useful test of how the Applicant's assessment works when applied to a real business. It is not the only equine enterprise which will be affected.

1. THE EVIDENCE HAS CHANGED, WHY HASN'T THE CONCLUSION?

West Park Farm was incorrectly understood. More equine businesses have been identified. The Applicant has produced an Equine Business Report and questionnaire. New veterinary evidence has been submitted. Important assumptions about distance and habituation have been challenged and client confidence has now translated into an actual client looking to move mares and their foals (**Appendix 5**). Yet, the applicant's conclusion remains no significant adverse effect. That is the issue at the heart of this submission.

At the Open Floor Hearing I asked a simple question:

Where is the site-specific, real-world evidence?

The Applicant has since produced considerably more material but producing more material is not the same as answering that question. The EBR repeatedly relies upon assumptions about mitigation, habituation, management and the ability of equine businesses to adapt.

Confidence that those measures will work is not evidence that they will.

The Applicant's own comparator evidence does not resolve this. Gooromon Park at Wallaroo has confirmed directly to me that construction has not started and that it therefore has "no firsthand experience" of operating alongside either construction or operation. (**Appendix 6**)

At ISH8, Ms Powell also referred to having seen similar concerns on other DCOs where, with mitigation, they did not amount to significant adverse effects. When asked for those examples and the monitored outcomes supporting that statement, Ms Powell clarified that the information was primarily Lime Down specific. I look forward to seeing this supporting evidence submitted by the Applicant at Deadline 7. If completed DCO schemes are relied upon as evidence that these concerns do not materialise, where is that evidence? If they are not relied upon, they cannot provide reassurance for the EBR's conclusion.

My question therefore remains:

Where is the real-world evidence demonstrating that commercial thoroughbred businesses immediately adjoining construction and tracking solar arrays of this nature can continue without significant adverse effects?

2. WEST PARK FARM IS A HIGH-SENSITIVITY RECEPTOR

I disagree with the Applicant's continued classification of West Park Farm as medium sensitivity. It is a specialist commercial thoroughbred breeding stud and, in my experience, is a high sensitivity receptor.

The Applicant originally assessed West Park as a “livery and equestrian care” business. It now understands that West Park is a commercial thoroughbred stud caring for broodmares, foals and youngstock, including valuable horses belonging to third-party clients. Horses continually arrive and leave. Foals are born here. Youngstock develops and is prepared for public auction here. Veterinary and reproductive work takes place here. The business also depends upon owners being confident that this is an appropriate environment in which to place such valuable bloodstock. This was not information which only became available during the Examination.

In **April 2024** my husband wrote directly to the Applicant explaining that he owned and ran a Thoroughbred stud adjoining the proposed scheme. He identified approximately 30 horses, five full-time employees, seasonal employment, international clients and high-value horses. He expressly raised construction noise, client confidence and the viability of the business. (Appendix 3)

Despite this, the Applicant's D5 response confirms that West Park was assigned medium sensitivity because equine businesses were treated as medium-sensitivity receptors. That generic classification is part of my concern. A commercial thoroughbred breeding operation cannot properly be understood simply by putting it into an “equine business = medium sensitivity” category. Dr Green accepted at ISH8 that thoroughbreds can be more sensitive than some other breeds. Dr Farrington's post hearing evidence now provides published evidence relevant specifically to thoroughbred reactivity. For all the reasons I have given throughout the Examination, I consider West Park to be a **high sensitivity receptor**.

This is now independently supported by the Thoroughbred Breeders' Association, the representative body for Thoroughbred breeders in Great Britain. The TBA considers the commercial Thoroughbred breeding operations should not simply be treated as generic equestrian receptors. It identifies their particular characteristics, including broodmares, foals and youngstock, continually changing horse populations, third party ownership and substantial bloodstock value. It also identifies safe turnout, appropriate paddocks and stabling, tranquillity and safe handling conditions, suitable access and client confidence as matters with commercial as well as welfare significance. (Appendix 1)

More importantly, the Applicant now has a materially different understanding of West Park from the one upon which its original assessment was based, yet the ultimate conclusion remains the same.

If correcting the identity and characteristics of the receptor does not change its sensitivity or the significance conclusion, what difference did understanding the receptor actually make?

The combined effect on West Park

There is also a simple point which risks becoming lost amongst separate technical assessments. **We chose to buy this farm because of what it is.** West Park combines good transport connections with an exceptionally rural setting, tranquillity, quiet roads and land suitable for breeding and raising thoroughbreds. Those characteristics are part of the reason owners place valuable broodmares, foals and youngstock here.

A great deal of the equine discussion has understandably concentrated on the panels. West Park will also directly face major electrical infrastructure. The combined operational environment includes the substation, inverters and tracking arrays, together with noise, lighting, movement, maintenance and the permanent change in setting.

Where is that combined operational effect on West Park Farm immediately adjoining it assessed and what happens when they are experienced together? The commercial question is not simply whether each component can separately be classified as insignificant. It is whether the combined change alters the characteristics which make this location suitable and attractive as a commercial Thoroughbred stud.

3. WHAT HAVE THE EBR AND QUESTIONNAIRE ACTUALLY ESTABLISHED?

I struggle to see what either the EBR or questionnaire has established that supports the confidence being placed in the applicant's conclusions.

The EBR is much better at identifying the concerns than resolving them. It now recognises pathways including noise, traffic, horse welfare, client confidence, investor deterrence, business reputation and effects upon the wider equine supply chain. But these are substantially the issues local businesses have been explaining throughout the Examination. The important question is what evidence then demonstrates that those acknowledged pathways **will not result in significant effects.**

I have the same difficulty with the questionnaire. The Applicant has acknowledged that its identification of equine facilities was not comprehensive. The questionnaire was sent to "around 30" businesses (many not in close proximity to the sites) but its existence does not itself demonstrate that the equine environment surrounding this scheme has been understood. We have been unable to establish:

- Who actually received it.
- How many responded.
- What types of businesses responded.
- How many immediately adjoining businesses responded.
- What the responses actually showed.
- What changed in the assessment because of those responses.

Previously known local equine Interested Parties and obvious local businesses such as Grant Barnes & Son in Malmesbury have told me that they did not receive the questionnaire. The Applicant's project lead spoke directly to Andrew Pivars about completing the questionnaire during the ASI – yet he didn't even receive a copy. If the questionnaire is relied upon as evidence supporting the EBR's conclusions, its evidential value should be capable of being

understood. **If it did not materially inform the assessment or change any conclusion, what useful evidential purpose did it serve?**

Who provides the relevant expertise?

I am also unclear where the specialist expertise supporting some of the EBR's conclusions actually sits.

The EBR is jointly authored by Dr Suzanne Green, Alison Powell and Stephen Flynn. Ms Powell has socio-economic assessment and planning experience. Mr Flynn's identified expertise is planning, socio-economics and human health. Dr. Green provides the identified equine veterinary expertise but with limited thoroughbred experience. I do not question their professional qualifications, my concern is whether the evidence relied upon is sufficiently specific to the specialist commercial equine businesses actually affected by this scheme.

The Examination now has evidence from people working daily in precisely this environment including commercial stud operators, thoroughbred veterinary professionals and other local equine specialists. The issue is not who has the better job title, it should be which conclusions are supported by evidence relevant to the horses, businesses and circumstances actually affected by this Scheme.

None of the EBR's three authors, the applicant's equine specialist or any other Applicant expert has visited West Park Farm. During the ASI, the Applicant's project manager asked Dermot about visiting West Park Farm, Dermot indicated that he was available, but no site visit or further contact followed. We have never said No as suggested at ISH8. Detailed conclusions have nevertheless been reached about the sensitivity of our horses, their likely response, our ability to mitigate those responses and the resulting effect upon the business. It is difficult to reconcile that with describing West Park as having been individually assessed.

4. WHERE IS THE EQUINE EVIDENCE SUPPORTING THE ASSUMPTIONS?

Dr Farrington's post hearing veterinary evidence deals directly with several of the assumptions discussed at ISH8. The important question is what this evidence now means for the EBR's conclusions. **30 metres: The source relied upon by the Applicant does not establish 30m as a safe distance from construction disturbance.**

The EBR relies upon an approximate 5–30m equine so called “flight zone”. Dr Farrington has now examined the Canadian source cited by the Applicant. Her evidence is that it describes a flight zone in the context of an approaching handler. The source does not contain the 5–30m figure attributed to it, does not establish 30m threshold and does not address noise. That is important because 30m has moved beyond being an academic reference and is being used within the Applicant's thinking about mitigation. A handling flight zone does not answer an acoustic question.

Staff safety

The 30m assumption is not only about horse welfare. It has direct implications for the safety of the people handling them. A Thoroughbred can weigh around 500kg. Our staff routinely lead, hold and handle broodmares, foals and youngstock in paddocks and around the farm. If

a horse reacts suddenly while being handled, the person holding it is directly exposed to that reaction.

Construction will introduce unfamiliar heavy machinery, vehicle movements, sudden noise and activities such as post installation immediately beside an environment in which horses are being handled every day. I cannot test the Applicant's 30m assumption in advance with a horse and a member of staff to find out whether it works.

If 30m is being relied upon as part of the basis for protecting horses from construction disturbance, what evidence demonstrates that it also provides a safe working environment for the people required to handle those horses? This is not simply a question of whether a horse will eventually habituate. A single unexpected reaction while a member of staff is holding or treating a horse can create a serious safety risk.

This concern is now independently supported by [REDACTED] MRCV, a local equine veterinary surgeon with 27 years' experience. She explains that most veterinary work is carried out in close contact with the horse, often while it is sedated but still conscious and that a sudden fright can cause a violent reaction putting the vet and the other staff at serious risk. Importantly, she confirms that in her own clinical practice it is not unusual for her to ask for tractors, machinery or other nearby activity to be stopped because a horse is becoming unsettled or because she considers it necessary for safety. **(Appendix 2)**

Habituation

A horse looking calmer does not establish that the effect has disappeared.

Dr Farrington's post-hearing evidence identifies a 2026 study in which visible reactions to motorway noise diminished while horses continued to show altered grazing, avoidance, increased vigilance and elevated heart rate.

That evidence matters because the EBR places considerable reliance upon habituation. It also does not address the particular reality of commercial studs. West Park does not contain a fixed population of horses repeatedly exposed to the same stimulus until every animal becomes accustomed to it. Broodmares arrive. Foals are born. Youngstock develops. Horses arrive for preparation and leave again. Habituation in an individual horse does not turn a continually changing commercial population into a habituated population.

This is also independently supported by both the TBA and Tomlinson Equine. The TBA explains the continually changing population and that habituation of horses already present does not address young horses or new arrivals encountering a stimulus for the first time. Tomlinson Equine similarly cautions against assuming habituation means an individual horse will not react to a new, sudden, continued or unpredictable disturbance, and emphasises that in clinical practice horses are treated as individuals rather than as an "average" horse.

Construction noise

The Applicant has quantified a substantial construction noise change at the West Park residential receptor (furthest away from the development), while horses in some of our adjoining paddocks will be materially closer to the works.

Where is the equivalent site-specific assessment for those horses?

The Applicant's own figures identify an existing baseline of 45 dB at residential receptor R14 and predicted construction noise of 56 dB. An increase of 11 dB. The farmhouse is not where the horses are. I am not attempting to extrapolate a noise level for the paddocks. That requires proper acoustic assessment. That is precisely the point. The Applicant has quantified construction noise at the human residential receptor but I cannot identify an equivalent receptor specific assessment of the construction noise actually experienced by the closest horses.

I also remain unclear about the existing baseline data being relied upon for West Park. Monitoring equipment was previously placed on our fencing without our permission and was removed. I therefore remain unclear whether that equipment produced any data subsequently relied upon by the Applicant.

The basic questions therefore remain - **when was the baseline relied upon for West Park actually measured, where was it measured, for how long, and what actual monitoring data supports it?**

Tracking panels

I have still not seen a real world comparator demonstrating the response being assumed for thoroughbreds immediately adjoining tracking arrays of this nature. At ISH8 the Applicant confirmed that tracker motors make noise and described larger repositioning movements in the morning and later in the day.

The issue is not simply whether an individual motor is loud. The operational stimulus will consist of movement and sound across a large field of structures which did not previously exist, experienced by a continually changing population of horses. The EBR describes tracker movement as slow and predictable and relies upon screening, distance and habituation.

What equine evidence demonstrates that those assumptions are valid for this particular environment?

Wallaroo (included as a case study in the EBR) cannot provide that evidence because it has not been constructed. (Appendix 6)

Construction disturbance is not limited to noise. The Applicant has referred to it's general construction dust assessment and proposed dust control measures. My concern is more specific. Horses will remain living and grazing outside in paddocks immediately adjoining disturbed land. I cannot identify where the potential exposure for those horses has been assessed as an equine receptor, or where it has been demonstrated that the general construction controls are sufficient in these circumstances.

Where has the potential effect of construction dust on horses immediately adjoining the works actually been assessed?

5. MOVING THE RECEPTOR IS NOT REMOVING THE EFFECT

Much of the proposed mitigation requires the horse or the existing business to adapt to the scheme. Those adaptations will themselves have consequences.

Suggested measures include advance warning, altered turnout, moving horses, keeping horses further from works and additional supervision. West Park does not have spare paddocks

waiting to absorb displaced horses.

Different categories of thoroughbred cannot simply be combined. Broodmares and foals, colts, fillies and youngstock have different management requirements. Paddock use and rotation are part of the planned operation of the stud.

Alex Frost has now explained the same problem at Ladyswood which is operating at capacity, paddock rotation and resting pasture are planned well in advance and there is no spare pasture available to accommodate random short-notice requests to move mares.

Dr Farrington's post-hearing evidence adds an important point. Where a horse responds to disturbance by avoiding part of its paddock, that reduces the area it is actually using. **The fact that a horse can move away from disturbance does not establish that the effect has been mitigated. It may demonstrate the effect occurring.**

The same applies to management. Advance warning will tell us noisy activity is coming but it will not remove the noise. Moving a horse requires somewhere suitable for it to go. Keeping horses indoors changes their normal management and may not be the safest option. Additional supervision requires additional staff. Changing turnout changes the operation of the business and some activities simply cannot be arranged around construction. Foaling and colic are not appointments. Veterinary emergencies cannot be rescheduled.

Dr Farrington has also explained why routine reproductive scanning follows the mare's reproductive cycle and covering arrangements and cannot simply be moved around a construction programme. If the Scheme requires an existing business to reorganise turnout, restrict its use of paddocks, employ additional staff or otherwise change its normal operation, **those are consequences of the scheme.** They should not disappear from the assessment because they are described as mitigation.

The TBA now independently supports this point. It confirms that advance notification and liaison may be helpful but do not necessarily remove the underlying effect. It identifies altered turnout, relocation of horses, changes to established management routines and additional supervision as measures which may themselves have practical and commercial consequences. It also explains that moving horses can be constrained by age, sex, breeding status, temperament, paddock availability and established groups. Tomlinson Equine similarly confirms that advance notice may assist with some routine veterinary work but cannot solve unplanned emergencies such as injuries, foaling and colic

“Where practicable”

What does “where practicable” actually mean if the Applicant has not established whether the affected business has the practical capacity to implement the mitigation being assumed?

- Who decides that a horse should be moved and on what equine basis?
- Where does that horse go?
- What happens to the horses already occupying that land?
- Who carries the additional staffing and management cost?

These are not theoretical questions for businesses already operating within finite land and staffing constraints.

Equine specialist

Specialist equine involvement if the scheme proceeds might seem helpful but timing and authority matter. An equine expert who helps design mitigation is mitigation. An equine expert who becomes involved after something has gone wrong is principally liaison. It is therefore important when that specialist is appointed, whether they influence the final construction and traffic-management measures before works commence and what authority their advice carries. For horses, the first evidence that mitigation has failed can be an incident.

A complaints led approach cannot undo that first incident.

6. CLIENT CONFIDENCE IS NO LONGER HYPOTHETICAL

The EBR treats client confidence as difficult to quantify. At West Park it is no longer hypothetical. Alex Cole of Whatcombe Estate wrote to Dermot following a discussion about Lime Down. He said that if the Scheme proceeds he cannot see how his mares and foals can “thrive and be safe next to such a huge development”. More importantly, he wrote “Unfortunately and with regret I have started to look for another boarding farm.” This concerns ten mares and their foals and represents just one of our clients. He explained that finding a suitable alternative for that number of horses is not easy and that he wants his mares settled at a new farm well before they begin foaling. He concluded “we simply can't take the risk.”

This is precisely the commercial pathway I have repeatedly described. No horse has been injured. No horse has had to spook. Construction has not started. The commercial effect begins with the owner's assessment of risk.

For a boarding stud, an existing client actively looking for another home for ten mares and their foals because of the scheme is already a real commercial concern. If those horses are placed elsewhere, that is not mitigation. **It is lost business.**

This evidence also demonstrates why describing the likely effect simply as temporary disruption does not answer the commercial question. There is no evidence that a client who establishes their horses and relationship with another stud before construction begins would automatically return when construction ends. **The duration of the construction activity and the duration of the resulting business effect are not necessarily the same.**

The TBA's evidence independently explains why this is a legitimate commercial effect. It states that owners of valuable bloodstock have choices about where their horses are boarded and that an owner does not necessarily wait for an accident or adverse welfare outcomes before deciding another location is preferable. It identifies horse placement, client confidence and the continuing commercial attractiveness of the establishment as relevant considerations when assessing business viability.

Commercial loss does not require business failure

I also remain concerned that the EBR places too much emphasis upon whether an equine business ultimately continues to function. A business can remain open while losing clients, reducing horse numbers, incurring additional staffing and management costs, restricting its use of land, postponing investment or contracting.

The insurance evidence illustrates the same distinction. Dan Bovington of Bridge Specialty International, an experienced bloodstock insurance broker, did not suggest that proximity to

solar development makes bloodstock uninsurable. His evidence was more nuanced and, in my view, more useful. He confirmed that standard mortality insurance covers mortality, not loss of use or value. He also said that from a mortality perspective he would probably keep more valuable stock away from the nearest boundary if noise could cause a horse to spook and injure itself.

He further confirmed that he has never seen a specific 30m distance established in a bloodstock policy or heard it discussed as an industry threshold.

The point is not that horses will become uninsurable. It is that **commercial loss does not require a dead horse or an insurance claim.**

A horse can remain alive and insured while its owner chooses to place it elsewhere.

The pathway is straightforward:

environment → professional judgement → client confidence → horse placement → operational change/cost → revenue and investment → business effect. (Appendix 4)

The Whatcombe email now demonstrates that pathway beginning in reality.

7. HAS THE ACTUAL CONSTRUCTION ENVIRONMENT BEEN ASSESSED?

Construction traffic

The EBR accepts that larger vehicles are more likely to cause a response in horses and that restricted spaces increase negative responses. **Has its conclusion actually been tested against the latest construction traffic assumptions and the roads those vehicles will use?**

Dr Farrington's post-hearing road-safety evidence addresses the published evidence on HGVs, close passing, startle and the potential severity of equestrian road incidents. There is also a practical point which no amount of driver training can resolve. **Driver training cannot make a narrow road wider.** (*N.B, Operation Close Pass launched to improve horse rider safety on Wiltshire's roads – September 2026*)

The Highway Code requires vehicles passing horses to do so slowly and to allow at least 2m of space. On some of these rural roads, an HGV, a horse and appropriate separation cannot comfortably coexist. These roads are not used only for recreational hacking. They are part of the infrastructure upon which equine businesses depend, staff, horseboxes, vets, farriers and other service providers use them. Veterinary emergencies cannot be arranged around construction traffic. Tomlinson Equine's evidence provides direct local veterinary support for this concern. The veterinary team uses the roads around the proposed scheme for routine and emergency calls and explains that delays to emergencies can be extremely detrimental to animal welfare, identifying colic and foaling as time-sensitive examples where delay can mean the difference between life and death.

The relevant question is therefore not simply whether an HGV can physically travel along the road. It is whether the latest HGV numbers, construction duration, road widths, passing opportunities and equestrian use have actually been brought together within the EBR's conclusion.

The same applies to retained or diverted riding routes.

Where retained or diverted equestrian routes are constrained between fencing and scheme infrastructure, where is the assessment of the space available to a rider to regain control and move away from a source of disturbance?

A conclusion about whether an equine business remains economically viable does not answer a horse and rider safety question.

Gauze Brook and construction runoff

West Park's experience of the construction environment also cannot be separated from the Gauze Brook. Our adjoining paddocks have direct experience of flooding. Our adjoining paddocks have direct experience of flooding, which we have documented photographically and provided to the applicant. Construction will involve substantial disturbance of land and topsoil immediately within this catchment. I do not suggest that construction runoff or displaced soil will inevitably enter West Park. My concern is that I have not seen site-specific evidence demonstrating what will happen under the flooding conditions we actually experience. **What evidence demonstrates that construction, exposed soils and the scheme's drainage measures will not increase the movement of water, sediment or disturbed soil onto neighbouring paddocks along the Gauze Brook during significant flood events?**

“No increase in runoff” is the Applicant’s conclusion. What matters to us is the evidence demonstrating that conclusion under the conditions actually experienced here. Local experience isn't a substitute for technical evidence, but neither should technical modelling be used as a substitute for understanding the place being modelled.

BESS

I will keep this point deliberately short because specialist evidence has been submitted. (Appendix 7 & 8)

The Applicant has demonstrated predicted BESS concentrations below the human emergency benchmark it selected. It has not established an equine no-effect threshold because no such threshold has been identified. Those are different conclusions.

Hugh Dillon MVB Cert ESM MRCVS has provided specialist equine veterinary evidence addressing the different exposure circumstances for horses. Importantly, he does not invent an alternative safe distance where the evidence cannot support one. In my view that is the appropriate evidential approach. **The absence of an established horse-specific threshold is an uncertainty. It is not evidence of the absence of an equine effect.**

8. WHAT EVIDENCE WOULD ACTUALLY HAVE CHANGED THE CONCLUSION?

This is ultimately my greatest difficulty with the EBR.

West Park Farm was incorrectly described.

The conclusion remained no significant adverse effect.

The Applicant subsequently developed a materially better understanding of the business.

The conclusion remained no significant adverse effect.

West Park remains classified as medium sensitivity despite the evidence about the characteristics of this specialist thoroughbred operation. The TBA confirms the particular characteristics which distinguish commercial thoroughbred studs from generic equine receptors.

The conclusion remains no significant adverse effect.

Additional equine businesses and a much wider interconnected equine environment have been identified.

The conclusion remains no significant adverse effect.

The 30m proposition has been challenged by specialist post-hearing evidence demonstrating that the Applicant's cited handling source contains no 5-30m figure, establishes no 30m threshold and does not address construction noise.

New evidence shows that visible habituation does not necessarily mean the absence of continuing physiological effects.

The continually changing population of a commercial stud means repeated first exposure will continue.

The Applicant's own noise assessment predicts an 11 dB construction-noise increase at the West Park residential receptor while some horses will be significantly closer to the works.

No directly comparable operating example of a commercial Thoroughbred stud immediately adjoining tracking arrays of this nature has been identified.

Wallaroo/Gooromon Park has now been confirmed not to provide first-hand experience of either construction or operation.

The questionnaire has not demonstrated that the local equine environment was comprehensively understood or what difference its results made to the assessment.

Client confidence is no longer theoretical. An existing client has already started looking for another boarding farm because they are not prepared to take the risk if the scheme proceeds.

Further mitigation relies heavily upon affected businesses changing how they operate and is repeatedly qualified by what is practicable.

Yet the overall conclusion remains essentially the same. I am not suggesting that every uncertainty should automatically be resolved against the Applicant, **but neither should every uncertainty be resolved in its favour.** That leaves the question which has run through my involvement in this Examination from the beginning:

What evidence would actually have been capable of changing the Applicant's conclusion?

If materially different evidence about the receptor, the science, the impact pathways and the mitigation continues to produce the same assessment outcome, there needs to be a clear explanation of how sensitive that outcome really is to the evidence.

Deadline 7 Appendices

Appendix 1: Submission from Thoroughbred Breeders Association (TBA)

Appendix 2: Veterinary submission from Tomlinson Equine

Appendix 3: Email from Dermot to IGP notifying them of our stud farm, number of horses, concerns, employees in April 2024. This is just one example of evidence in response to the Applicants claims during ISH8. I confirm we have never said no to a site visit. An equine expert has never visited our farm on behalf of the applicant.

Appendix 4: Email from Dan Bovington of Bridge Speciality International who are the leading broker for International Bloodstock insurance on the London market

Appendix 5: Email received from Whatcombe

Appendix 6: Email with Gooromon Park at Wallaroo – A case study used in the EBR by the Applicant

Appendix 7: BESS report by Celia Marr

Appendix 8: Report by Hugh Dillon MVB Cert ESM MRCVS

Appendix 9: Vet submission by B & W Vets

Appendix 10: A Review – Large Scale Infrastructure Projects and their Impacts on Stud Farms.

Lime Down Solar Park – Examination of Development Consent Order Application

Submission from the Thoroughbred Breeders' Association

The Thoroughbred Breeders' Association (TBA) is the representative body for Thoroughbred breeders in Great Britain. The TBA has been asked to comment upon matters concerning the Thoroughbred breeding sector arising during the Examination of the proposed Lime Down Solar Park.

The TBA does not seek to comment upon the merits of the proposed development as a whole, nor upon technical matters outside its expertise. Our comments are intended to assist the Examining Authority in understanding the particular characteristics of the Thoroughbred breeding industry and the factors relevant to the operation and commercial viability of Thoroughbred breeding businesses.

The local Thoroughbred breeding industry

The area affected by and surrounding the proposed Lime Down Solar Park contains an established concentration of equine activity, including a number of commercial Thoroughbred breeding and bloodstock operations.

This should not be regarded simply as recreational equestrian activity. Thoroughbred breeding and bloodstock businesses form part of a specialist rural industry, involving breeders, owners, stud staff, veterinarians, farriers, transporters and other supporting businesses and services.

Where assessing potential effects upon such businesses, the TBA considers it important that their particular operations are understood rather than treating all equestrian establishments as equivalent receptors.

The particular characteristics of a Thoroughbred stud

Commercial Thoroughbred breeding operations may accommodate pregnant broodmares, mares with young foals, weanlings, yearlings and other young or breeding stock. Many horses may belong to third-party owners and can represent substantial financial and bloodstock value.

Unlike a static population of horses, the population of a commercial boarding stud can change throughout the year as mares and youngstock arrive and leave for breeding, boarding, veterinary treatment, sales preparation and other purposes. Individual horses will differ in age, temperament, experience and management requirements.

These characteristics are relevant when considering disturbance and the practicality of mitigation. An assumption that horses already present at a particular location may become accustomed to a stimulus over time does not necessarily address the circumstances of young horses or new arrivals encountering that stimulus for the first time.

Environment and management are part of the commercial proposition

The physical and management environment offered by a Thoroughbred stud is an important consideration for owners deciding where valuable breeding stock should be kept.

Factors including safe turnout, appropriate paddocks and stabling, tranquillity, safe handling conditions, suitable access and confidence in the management environment can therefore have commercial as well as

welfare significance.

Owners of valuable bloodstock have choices about where their horses are boarded. Stud operators similarly have professional responsibilities when determining whether they consider their premises suitable for particular horses.

For that reason, the commercial consequences of environmental change cannot necessarily be assessed solely by asking whether horses are ultimately capable of habituating to particular stimuli or whether physical injury is predicted to occur.

Client confidence and business viability

For businesses caring for horses on behalf of third-party owners, reputation and client confidence are important commercial considerations.

An owner does not necessarily have to wait for an accident or demonstrated adverse welfare outcome before deciding that another location is preferable for their bloodstock. Similarly, a stud operator may consider changes to management necessary before an accident occurs.

The TBA therefore considers that, where the viability of a commercial Thoroughbred business is being assessed, it is appropriate to consider not only predicted physiological or behavioural effects upon horses but also the potential consequences for horse placement, client confidence, management requirements and the continuing commercial attractiveness of the establishment.

The TBA is not in a position to predict whether any particular client would remove a horse from any individual business affected by Lime Down. Our point is that these are legitimate features of the commercial operation of a Thoroughbred stud and should form part of any assessment purporting to determine effects upon business viability.

Mitigation in a working Thoroughbred environment

The practical operation of a breeding establishment should also be considered when assessing proposed mitigation.

Measures such as advance notification of potentially disruptive activity and liaison with neighbouring businesses can be helpful. However, notification does not necessarily remove the underlying effect.

Measures requiring a stud to alter turnout, relocate horses, change established management routines, provide additional supervision or reorganise movements may themselves have practical and commercial consequences.

The ability to move horses is also constrained by the circumstances of the animals concerned. Matters such as age, sex, breeding status, temperament, paddock availability and established groups may affect where horses can safely be placed. Foaling and veterinary emergencies cannot necessarily be scheduled around neighbouring construction activity.

Where reliance is placed upon such measures, the TBA considers it appropriate to establish whether they are practically achievable for the affected business and whether any additional management, staffing or commercial burden has itself been taken into account.

Conclusion

The TBA does not seek through this submission to reach a conclusion on the overall planning merits of Lime Down Solar Park or to predict the effects upon any individual establishment.

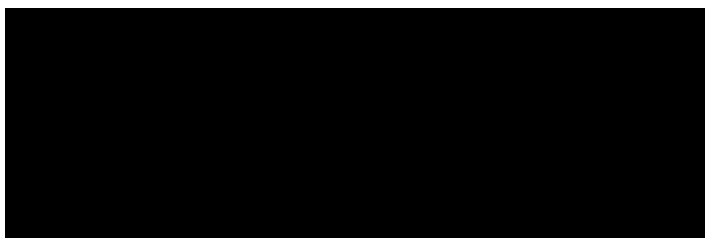
We do, however, consider it important that commercial Thoroughbred breeding operations are not treated simply as generic equestrian receptors.

The Thoroughbred breeding sector has particular characteristics arising from the nature and value of the horses involved, continually changing horse populations, the management of broodmares and youngstock, third-party ownership, and the importance of reputation and client confidence.

Accordingly, where effects upon the viability of Thoroughbred businesses are being assessed, consideration should extend beyond whether an individual horse may eventually habituate to a particular stimulus. It should also consider the practical operation of the stud, the management of changing and potentially inexperienced horse populations, the feasibility and consequences of proposed mitigation, and the commercial considerations which influence where owners and breeders choose to place valuable bloodstock.

The TBA hopes that these observations assist the Examining Authority in its consideration of the equine evidence before it.

Signed



Chief Executive – The Thoroughbred Breeders' Association

Lime Down
Statement Emma Tomlinson
Interested Party Reference number: F9CB0EF36

1. Experience and local practice

I am an [REDACTED], 27 years qualified from Cambridge University vet school [REDACTED] I have practiced locally all my career and am a business owner of Tomlinson Equine Limited (ambulatory performance horse and referral reproduction practice) and Tomlinson Equine Stud established in 2002. Tomlinson Equine Ltd treats a range of performance horses including hunting horses, polo ponies, dressage horses, event horses, show jumpers, and thoroughbred racehorses. Our veterinary team travels to our clients' premises across the surrounding area to provide first-opinion, referral and performance equine care, including routine and emergency work. Clients also travel to our premises to make use of the stud veterinary services. Having lived and worked in this area for the best part of my life I am very familiar with local roads and the equine community around the proposed scheme.

2. Veterinary access

Myself and other vets in the practice use the roads around the proposed Lime Down scheme to reach clients, in both emergency and routine situations. Delays on the roads in our area can affect my business and the businesses of my clients, even with routine appointments. Furthermore, delays affecting emergency call-outs can be extremely detrimental, not only to my practice's ability to provide veterinary care for the animal owner, but also to the welfare of the animal itself, sometimes making the difference between life and death. Examples include colic and foaling, which are both extremely time-sensitive.

3. Treating horses around disturbance

I understand that the proposed Lime Down project will involve significant disturbance around the affected area. It is well known in the veterinary industry that unexpected activity and increased noise cause stress in horses, resulting in them being more difficult to examine and treat, and resulting in sedation, including higher than standard doses of sedation becoming necessary. This can result in a sub-optimal clinical examination or treatment. Where possible, activities producing increased noise or unexpected disturbance should be stopped during a clinical examination or treatment if they are affecting the horse. Most veterinary work is carried out in close contact with the horse, often while it is sedated but still conscious; a sudden fright can cause the horse to react violently, putting the vet and other staff at serious risk of injury.

4. The Applicant's proposed mitigation

Whilst advance notice of construction may help with some routine work, if the applicant is willing to periodically cease activities that are negatively affecting the vet's ability to work, in unplanned emergency work, for example injuries, foaling and colics, this mitigation will not help at all.

5. Your embryo/reproductive work

The lime down proposed project associated excess noise and heavy traffic will negatively affect the stallions, young animals and pregnant mares we have on site, which could easily lead to reduced pregnancy success rates, unexpected foaling patterns due to disturbance and reduced stallion performance which in turn hugely negatively affects our business as well as the clients' desire to use our businesses. It also increases the risk that the horses will react to this noise and behave in a dangerous unpredictable way that is dangerous for our staff and the animals themselves (especially in the case of fragile young foals). In my clinical experience, a horse that appears outwardly calm or habituated isn't necessarily always sufficiently settled for safe veterinary examination.

6. The hearing evidence

From my experience in equine practice, horses can certainly become accustomed to familiar and repeated stimuli, but I would be cautious about assuming that habituation means an individual horse will not react to new, sudden, continued or unpredictable disturbance. Horses vary considerably in temperament and response, and in clinical practice we deal with individual animals rather than an 'average' horse.

I would also be cautious about relying upon a fixed distance such as 30 metres as an indication that a horse will not react to disturbance further away from this. In my clinical experience, the distance at which a horse responds to noise, machinery, movement or other activity will depend upon the individual horse and the nature and suddenness of the stimulus. I would not use a handling flight-zone distance clinically to predict whether a horse will respond to external noise, machinery or disturbance.

Young or inexperienced horses can learn and become accustomed to new experiences, but they can also be highly unpredictable in their response to something unfamiliar or unsettling them.

From a veterinary perspective, disturbance can also be important during examination and treatment. It is not unusual in equine practice for me to ask for a tractor, machinery or other nearby activity to be stopped because a horse is becoming unsettled, or because I consider it necessary for the safety of the horse, handler or veterinary surgeon. This can be particularly important where a procedure requires the horse to remain still, or where the horse is already stressed, painful or unwell.

For those reasons, I would not personally assume that advance warning, habituation or a generic stand-off distance of 30m would in every case be sufficient to manage the practical veterinary consequences of construction activity. In my clinical experience, a horse that appears outwardly calm or habituated is not necessarily settled enough for safe veterinary examination. The appropriate response would depend on the individual horse, the clinical situation and the nature of the disturbance.

----- Forwarded message -----

From: [REDACTED]
Date: Thu, 25 Apr 2024 at 13:46
Subject: Lime Down Solar Park / Island Green Power
To: info@limedownsolar.co.uk <info@limedownsolar.co.uk>
Cc: <info@islandgp.com>

Dear

Lime Down Solar Park / Island Green Power staff and owners/ directors.

I totally oppose the attempts to build a Solar Park on my fence line. I own and run a Thoroughbred Horse Stud in Corston, Malmesbury that will border the proposed new Solar Park.

I don't claim to be an expert on Solar Farms, but from my reading and the meetings I have attended, I am very concerned that the noise of the construction and machinery in the vicinity of my farm would pose a serious and obvious risk to my staff and to my horses. One only has to see yesterday's news in London to see the near tragic effects that building work can have on horses and their riders. I may add that the Horses of the Household Cavalry live in London and are expertly trained to deal with noises and building work, the ones on my farm are not and are used to quiet countryside.

Once constructed, unfortunately I can't see any of my clients wishing to have their horses next to what will basically look like an industrial area. One has already contacted me and stated that they are not prepared to risk their animals when there are other farms who can guarantee their horses safety. My clients hail from the four corners of the World and there's no doubt after spending many £100,000s on their horses they won't want them living next to a Solar Park.

This is clearly incredibly depressing as over the years my businesses and I via West Park Farm and Dermot Farrington Bloodstock have injected many millions of pounds into the UK economy, but this is severely threatened if we cannot continue on a viable home farm or hub.

Currently we have around 30 horses on the farm, that employs 5 full-time staff and depending on the season up to 10 extra part time staff. We also utilise many local businesses such as feed and hay merchants, equine vets, other local stud farms, racehorse trainers, contract farmers, hotels, restaurants and taxi firms. All of these are small businesses that create the fabric of the local rural economy and therefore I am just one of many businesses in the area that will be negatively impacted.

I attended two consultation meetings and to be honest they didn't provide much information at all. They felt like we were just part of a box ticking process as not one person from Lime Down made any comment until they were asked a question. Surely they should provide clear uncomplicated information and talk the local community through their proposal. Instead "solar laymen" were left to ask trained Lime Down personnel questions and considering we had a week's notice how would we know what questions to even ask? In my opinion and it's an opinion commonly shared the consultations were not fit for purpose. The information boards were more like advertisements than something to assist local people in understanding what is proposed. Most people found it particularly difficult to follow the maps that looked doctored to soften the blight proposed on our countryside. I also find it very hard to believe that Lime Down don't know where their cable routes are?

Clearly marking a vast area on the map to keep us all guessing with no mention at the public consultation about potential compulsory purchase orders is extremely vague and unhelpful. Pictures of a few sheep wandering around some random solar panels doesn't convince me that you've any interest in using the land for anything else?

As the consultations weren't good enough please can we be sent more detail regarding the proposal to include where exactly it's intended with a proper map. If successful I'd like to know how long construction takes and exactly what machinery will be used and the times of the day they will be used. I'd also like to see all technical reports that you've already carried out regarding land quality, noise, glare, wildlife and the water table to enable me to see what are the actual benefits to the countryside rather than just another rubber stamp required. At what point are you intending to contact the people who actually directly join your project? You have left the onus on us to find out information when you who want to change the face of this landscape and my farm forever.

Kind Regards

[REDACTED]

Ní hiasc é go dtí go bhfuil sé ar an mbanc

[REDACTED]

Subject: RE: Lime Down Solar Park – bloodstock insurance implications

Date: 29 September 2026 at 10:58

To: January Farrington [REDACTED]

Cc: [REDACTED]

DB

Hi [REDACTED]

Have spoken with some of the leading Mortality, Property and Liability insurers and currently there are no exclusions on either property or liability policies in relation to solar farms, nor mortality. Interestingly, they had received similar enquiries from customers regarding a proposed site for a large one just north of Newmarket.

In answer to your specific questions, a leading underwriters' thoughts are below. Regrettably, they are probably not the answers you were hoping for in the main.-

- Would the presence of a major consented construction project immediately adjoining a commercial Thoroughbred stud potentially be relevant when assessing the risk presented by horses kept at that premises?

Not really, unless we felt there was a potential pollution risk. We had some objections to the massive strip mines in the Hunter Valley but that didn't result in any cover not being granted.

- Could that affect premiums, exclusions, excesses, conditions of cover or willingness to insure particular horses/activities, either during construction or operation?

Again, unlikely unless we felt there was a direct physical consequence to the animals.

- If a horse were injured or killed as a result of an incident associated with construction or operation of a consented infrastructure project, would you ordinarily expect the insurer, having paid the insured claim, to consider recovery from the party responsible through subrogation?

Yes

- If the developer/contractor had acted entirely within the powers and controls granted by the DCO and no negligence or breach could be established, how would that affect an insurer's ability to recover its payment?

Hard to answer this as not sure how a horse would be killed following direct action of a 3rd party without them being found negligent. Perhaps a loud bang might spook a horse and they run into a fence is an example where we would struggle to recover.

- If recovery through subrogation were unavailable or materially more difficult in those circumstances, is that something which could itself be relevant to underwriting the risk or setting the terms on which cover was offered?

If we were made aware that the project posed a direct risk to animal health and we had no prospect of recovery, then yes that would be an issue

- How would an insurer approach a claim where an adverse outcome was thought to result from stress or disturbance over time rather than a single identifiable accident, particularly where establishing causation may be difficult?

High stress in mare/youngstock populations is likely to affect performance rather than mortality so it would be hard to envisage a claim under this, unless we were covering prospective foal and had a spike in abortion rates.

- More generally, are there any insurance implications you would expect a commercial stud to consider where valuable third-party bloodstock is being kept immediately beside a major infrastructure construction site?

From a mortality perspective I would probably keep the more valuable stock away from the nearest fence bordering the site just in case noise pollution causes them to spook and cause injury.

Sorry to have not been more help. If I can do anything further, please let me know.

Very Best,



[Redacted]
Senior Executive Director

[Redacted]
The Corn Exchange 55 Mark Lane, London, EC3R 7NE

bridgespecialtygroup.com

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[Redacted]
Sent: 25 September 2026 14:36

[Redacted]
Subject: Lime Down Solar Park – bloodstock insurance implications



Dear 

Many thanks again for agreeing to look into this for me.

Just to give you a little more background, Lime Down is a proposed 500MW solar development immediately adjoining our thoroughbred stud at West Park Farm and Alex Frost's Ladyswood Stud. It would involve a substantial construction period (2 years) followed by large areas of 4.5m high tracking solar panels and associated electrical infrastructure. There is also a large battery energy storage system proposed elsewhere within the scheme (within 1km).

The project is being considered as a Nationally Significant Infrastructure Project through a Development Consent Order (DCO). As part of the Examination, there has now been quite detailed consideration of the potential effects on the local Thoroughbred industry, including horse safety, construction disturbance and the commercial implications for studs caring for valuable bloodstock on behalf of clients.

One issue our legal team has suggested we investigate is insurance. Their preliminary view is that where works have been lawfully consented under the DCO and are being carried out in accordance with the approved control documents, there may be circumstances in which an insurer paying a claim would have limited or no ability to recover that loss from the developer through a subrogated claim. I don't want to put words into an insurer's mouth, however, which is why your view would be particularly useful.

Another point raised at the hearing this week was that an effect on bloodstock would not necessarily involve an obvious accident or immediate injury. Veterinary evidence discussed more subtle responses to disturbance, particularly in broodmares, foals and youngstock — for example changes in behaviour, reduced grazing, stressed mares pacing or gate-guarding and disruption to normal nursing or resting patterns in foals, with potential consequences which may only become apparent later. I wondered whether this also creates an insurance issue where establishing a direct causal link to the neighbouring works may be much more difficult.

From a bloodstock insurer's perspective, I wondered whether you could help with the following:

- Would the presence of a major consented construction project immediately adjoining a commercial Thoroughbred stud potentially be relevant when assessing the risk presented by horses kept at that premises?
- Could that affect premiums, exclusions, excesses, conditions of cover or willingness to insure particular horses/activities, either during construction or operation?
- If a horse were injured or killed as a result of an incident associated with construction or operation of a consented infrastructure project, would you ordinarily expect the insurer, having paid the insured claim, to consider recovery from the party responsible through subrogation?
- If the developer/contractor had acted entirely within the powers and controls granted by the DCO and no negligence or breach could be established, how would that affect an insurer's ability to recover its payment?
- If recovery through subrogation were unavailable or materially more difficult in those circumstances, is that something which could itself be relevant to underwriting the risk or setting the terms on which cover was offered?
- How would an insurer approach a claim where an adverse outcome was thought to result from stress or disturbance over time rather than a single identifiable accident, particularly where establishing causation may be difficult?
- More generally, are there any insurance implications you would expect a commercial stud to consider where valuable third-party bloodstock is being kept immediately beside a major infrastructure construction site?

I appreciate that some of this may depend upon the particular policy and circumstances of an individual claim, so I'm certainly not looking for an absolute answer where one can't properly be given. What would be particularly helpful is an explanation of how a specialist bloodstock insurer would approach these issues in practice.

The Examination is now approaching its final evidence deadline (2nd October). If, having looked into it, you were comfortable putting your views into a short email or note that could potentially be submitted to the Examining Authority, that would be extremely helpful. Obviously we would only use anything with your agreement and I wouldn't want you to say anything beyond what you can properly support from an insurance perspective.

Once again many thanks again for taking the time to look at it.

Best wishes


[REDACTED]

Subject: Fwd: Mares
30 September 2026 at 13:21

[REDACTED]

DF

[REDACTED]

----- Forwarded message -----

From: [REDACTED]
Date: Wed, 30 Sep 2026 at 13:20
Subject: Mares

[REDACTED]

Dear [REDACTED]

Following on from our recent conversation please keep me posted regarding the progress of the proposed Solar Farm next to your stud farm.

If successful I can't see how our mares and foals can thrive and be safe next to such a huge development. Unfortunately and with regret I have started to look for another boarding farm. Perhaps the project won't happen but I need to be ahead of the curve as finding a suitable place for ten mares and their foals is not an easy task. I'd also like my mares to have settled into a new farm well before they start foaling.

I understand this will be a huge blow to your business and to your family but I'm sure you understand that we simply can't take the risk.

Kind Regards

[REDACTED]

From: January Farrington [REDACTED]
Subject: Fwd: Yes and No Please!
Date: 29 September 2026 at 11:43
To:

JF

Begin forwarded message:

From: Gooromon Park <info@gooromonpark.com.au>
Subject: Re: Stud farm in the UK needing help with equestrian impacts from Solar
Date: 23 September 2026 at 11:21:27 BST
To: January Farrington [REDACTED]

Hi January,
No construction has been undertaken near us; it's hard to really answer the questions. Therefore, we have no first hand experience.
Regards

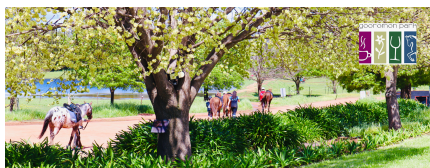


Gooromon Park Riding Centre
Business Manager
Ph: (02) 6230 2230 - Visit: www.gooromonpark.com.au
Begin forwarded message:

From: Gooromon Park <[REDACTED]>
Subject: Re: Yes and No Please!
Date: 20 September 2026 at 18:21:00 BST
To: January Farrington [REDACTED]

Yes

Regards



Gooromon Park Riding Centre

On Mon, 21 Sep 2026 at 2:50 am, January Farrington [REDACTED]

Thank you so much, that is really helpful and very much appreciated.

Just one final yes/no if you don't mind:

Do the concerns you raised in your 2024 submission, particularly around traffic, noise, horse/rider safety, horse welfare and the potential impact on your business, still remain?

Many thanks again for taking the time to reply.

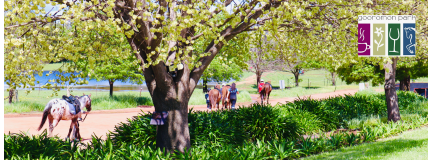
Best wishes,
[REDACTED]

On 20 Sep 2026, at 17:45, Gooromon Park <info@gooromonpark.com.au> wrote:

Hi January,

1. No it hasn't started
2. Yes that's correct

Regards



Gooromon Park Riding Centre

Business Manager

Ph: (02) 6230 2230 - Visit: www.gooromonpark.com.au

On Mon, 21 Sep 2026 at 2:13 am, January Farrington [REDACTED] :

Hi [REDACTED]

Sorry to chase you again, I promise this is my last nudge! We have our equine hearing this Tuesday and the developer is specifically relying on Gooromon Park/Wallaroo as a case study, so even just a **yes/no answer to these two questions** would be incredibly helpful:

1. **Has construction of Wallaroo Solar Farm actually started?**
2. **If not, am I right that Gooromon Park therefore has no first-hand experience yet of living/operating alongside its construction or operation?**

No explanation needed at all, literally two one-line answers would be hugely appreciated.

Many thanks,

January

Begin forwarded message:

From: January Farrington [REDACTED] >
Subject: Re: Stud farm in the UK needing help with equestrian impacts from Solar
Date: 10 September 2026 at 11:18:38 BST
To: Gooromon Park <info@gooromonpark.com.au>

Hi [REDACTED],

Many thanks again, and please don't worry about trying to dig out your old submission. I've now found your 2024 submission on the NSW Independent Planning Commission website, so I hope that saves you some work.

We have an important hearing here on 22 September and the developer is relying on Gooromon Park/Wallaroo as one of its equine case studies. I appreciate what a bore this must be but if you had five minutes, even very short answers to the following would be enormously helpful:

1. **Has construction of Wallaroo Solar actually started? If not, am i right that Gooromon Park has no first hand experience yet of construction or operation of the solar farm?**
2. **Roughly how close is Gooromon Park to the nearest proposed panels/construction area?**
3. **Are the Wallaroo panels fixed or tracking/moving and do you know approxmiately how hight they are?**
4. **Do the concerns you raised in 2024, particularly traffic, noise, horse/rider safety. client confidence/business loss and horse welfare still remain?**
5. **Has any specific mitiagion actually been agreed with you? If so, what, if not, a simple "none" is absolutely fine.**
6. **From your knowledge of your own business and the proposal, do you think Gooromon Park is a fair real world comparison for throughbred breeding farms immediately adjoining a much larger (500MW) solar development?**

Please don't feel you need to write anything lengthy, one-line answers would be incredibly useful as I'm very conscious you are busy.

Many thanks again for helping us.

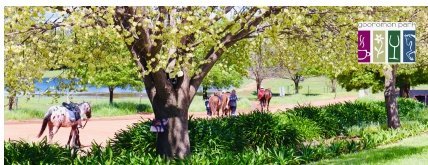
Best wishes,
January

Below is a link to my latest Lime Down submission:

https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010168-002522-January_Farrington_Combined.pdf

On 2 Sep 2026, at 04:40, Gooromon Park <info@gooromonpark.com.au> wrote:

Hi January,
sorry I have been really busy, I will get back to you before the end of the week, I will have to go through and find my submissions information as well.
Regards



Gooromon Park Riding Centre
Business Manager
Ph: (02) 6230 2230 - Visit: www.gooromonpark.com.au

On Wed, Sep 2, 2026 at 3:06 AM January Farrington [REDACTED] wrote:

Sending again just in case you didn't see my last message.

From: January Farrington [REDACTED]
Date: 12 August 2026 at 15:43:44 BST
To: info@gooromonpark.com.au
Subject: Stud farm in the UK needing help with equestrian impacts from Solar

Hi [REDACTED]

I hope you don't mind me getting in touch. My name is January Farrington and I live and run a thoroughbred stud farm in Wiltshire in the UK. We are currently involved in the Planning Inspectorate Examination of **Lime Down Solar Park**, a proposed 500MW solar and battery development which would cover a very large area of countryside at the southern gateway to the Cotswolds.

The proposal comprises five separate solar areas, with tracking panels up to **4.5 metres high**, a large battery storage facility, substations and an approximately **22km underground 400kV cable connection**. It would affect a number of small rural Cotswold villages and a particularly horse-dense area containing thoroughbred studs, competition yards, liverys, private horses and an extensive network of lanes and riding routes.

Interestingly, the developer has just submitted a new Equine Business Report and has used **Wallaroo Solar Farm and Gooromon Park as one of its international case studies**. Your concerns about construction traffic, horse and rider safety, noise, client confidence and the potential effect on your business are specifically referred to.

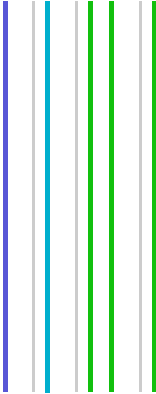
There is another rather extraordinary connection: **Macquarie is behind our project too**, having acquired the UK developer, Island Green Power. This made us particularly interested to understand the Wallaroo situation properly rather than relying solely on the account presented in their report.

Our farm, West Park Farm, is a commercial thoroughbred breeding operation and parts of the proposed works would be immediately beside us. We manage valuable broodmares, foals and youngstock, and our concerns extend beyond the reaction of individual horses to the wider question of whether owners will continue to consider this an appropriate environment in which to keep valuable bloodstock.

I wondered whether you might be willing to help us understand what Wallaroo and the surrounding area are actually like on the ground. Even a brief reply would be incredibly helpful. In particular, we would be interested to know:

- how close Gooromon Park is to the actual panels and construction areas;
- the type/height of panels proposed at Wallaroo and whether they track;
- whether construction has started and, if so, what your experience has been;
- whether your original concerns remain and whether any meaningful mitigation has been agreed;
- how horse-dense the surrounding area actually is – particularly whether there are other riding centres, studs, breeding/racing yards or private horse properties;

how extensively horses use the area, riding routes;

- 
- how extensively horses use the surrounding roads,
 - what the landscape is like and how prominent the existing transmission infrastructure already is; and
 - whether, from your knowledge of the area, you think Wallaroo could reasonably be used as evidence of how a much larger development might affect an established equestrian and thoroughbred area.

I appreciate this is an unexpected email and don't want to take up too much of your time. We have unfortunately been given another very short turnaround to respond to the Applicant's report, so even your immediate impressions would be extremely useful. Anything you are comfortable sharing would be greatly appreciated. If there is anything you would prefer us not to quote or attribute publicly, please just let me know and of course we will respect that.

Many thanks, and I hope you don't mind me contacting you.

Best wishes,

January Farrington
West Park Farm
Wiltshire, UK

20 August 2021

Kildare County Council Planning Authorities

Dear Sirs,

I have been asked to comment as an Equine Internal Medicine specialist on the Proposal to develop a 212 MW Battery Energy Storage System in Dunnstown, Co. Kildare (Kildare County Council planning application 21608 and An Bord Pleanála case number 310841-21).

Specifically, I have been asked to comment on the danger of inhalation of toxic gases to horses in the event of a hazardous incident. I have also been asked to comment on the negative impact on the thoroughbred breeding and racing industry to the immediate locality around Dunnstown and to the bloodstock industry in Kildare.

As documented in reports by Fordham, Allison and Melville [1] and Larsson et al [2], during a Li-ion “battery fire,” multiple toxic gases including Hydrogen Fluoride (HF), Hydrogen Cyanide (HCN) and Phosphoryl Fluoride (POF₃) are produced. The most important is Hydrogen Fluoride (HF), which may be evolved in large quantities (up to 200 mg per Wh of energy storage capacity). HF is toxic in ppm quantities and forms a corrosive acid (Hydrofluoric Acid) in contact with water. It is toxic or lethal by inhalation, ingestion and by skin contact even in small quantities. Major emissions of HF would form highly toxic plumes that could easily threaten nearby population centres.

The release of HF from a Li-ion battery fire can therefore be considered a severe risk to horses: lithium-ion battery fires generate heat and considerable amounts of gas and smoke and generate significant amounts of HF, ranging between 20 and 200 mg/Wh of nominal battery energy capacity, were detected from the burning Li-ion batteries. Larsson’s team [2] showed that the measured HF levels, verified using two independent measurement methods, indicate that HF can pose a serious toxic threat, especially for large Li-ion batteries. The immediate dangerous to life or health (IDLH) level for HF is 0.025 g/m³ (30 ppm) [3] and the lethal 10 minutes HF toxicity value (AEGL-3) is 0.0139 g/m³ (170 ppm) [4] and a major fire at the proposed facility appears to be capable of generating such quantities of HF.

My specialist field is Equine Internal Medicine. I have a particular interest in cardiopulmonary conditions affecting horses of all ages. Horses are athletic animals and have proportionately higher lung surface area than humans. This means they are particularly exposed to the pathological effects of inhalation of toxins. Inhalation of Hydrogen Fluoride, Hydrogen Cyanide and Phosphoryl Fluoride at the higher levels are either likely to be severely debilitating or life threatening. Research on the effect of environmental pollutants is currently relatively sparse in horses in comparison to knowledge from human medicine. However, this is a growing field and it is known that particulate matter of any chemical origin can negatively impact equine airway health. Even low-level exposure can damage the lining of the alveoli in the lungs and the mucosal lining of the bronchioles, bronchi and trachea. This damage makes affected horses more prone to developing Inflammatory Airway Disease (IAD), asthma and exercise-induced pulmonary haemorrhage all which are performance limiting by reducing respiratory function while galloping. Indeed, respiratory diseases represent one of the two most common performance-limiting condition in racehorses, (musculoskeletal disorders being the other main cause). Furthermore, there is considerable evidence that smoke inhalation can induce life-ending interstitial pneumonia (also known as acute lung injury & acute respiratory distress syndrome).

Many of the horses being reared in Kildare are kept at pasture: there is real danger to these horses if frightened by fire, smoke and the attendant fire brigade services. Being injured in a fire is a horrible and life-threatening experience for a horse, just as it is for humans. However, it is well recognised amongst equine vets and horsemen that often more of the major injuries which result from fires involving horses are due to panicked horses sustaining musculoskeletal injury while galloping blindly than occur from direct burns. Groups of horses at pasture simply cannot be controlled safely if the herd instinct for flight is triggered by fear.

Kildare is home to a large number of Thoroughbred breeding farms, supporting Ireland's role as a major international producer of Thoroughbred racehorses. A facility which impacts the health of the animals on these farms has serious implications for owners, breeders and trainers in area surrounding Dunnstown. This is highlighted by the fire in Geelong, Victoria, Australia recently where the HF vapour cloud resulted in a stay in order all people and animals within a 7 km radius of the burning facility. It was fortunate that it was in an isolated location. A similar occurrence in Dunnstown would be devastating for the epicentre of thoroughbred horse breeding in Kildare.

Although based in Newmarket, UK, I am very familiar with some of the very important studs in the area and I have visited the area frequently, for example to consult on medical disorders in horses at Juddmonte's New Abbey Stud and His Highness The Aga Khan's Giltown Stud and Sallymount Studs which are all in close proximity. As a veterinary consultant, I would have serious concerns in having valuable horses such as Sea The Stars in Giltown Stud or youngstock related to Frankel who was reared in New Abbey Stud. In my opinion that the potential for a hazardous incident so close to over twenty of the top breeding establishments in Kildare is likely to lead to significant loss of confidence in keeping horses there. Many of the UK studs send mares to Kildare each year for covering by stallions based in Ireland. A BESS facility, which will be one of the largest in the world located in Dunnstown, will be a disincentive to locate their valuable stock close to it.

If helpful in your committee's deliberation, I would be happy to provide a more detailed report on the concerns for equine health that this proposal raises.

Yours faithfully,

RCVS and European Specialist in Equine Internal Medicine.

References:

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2. Larsson, F, Andersson, Blomqvist, Mellander, B-E, (2017) Nature Scientific Reports, 2017; [REDACTED]
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LIME DOWN

Solar Farm and Battery Energy Storage System

VETERINARY EVIDENCE AND BESS SAFETY ASSESSMENT

Document type:	Technical Evidence for Planning Inspectorate Submission
Subject:	Equine welfare and BESS safety risks arising from the Lime Down development, including thermal runaway, toxic gas release, vapour cloud explosion hazard and environmental contamination from firefighting runoff
Location:	Lime Down, proximate to Badminton Estate, Gloucestershire/Wiltshire border
Prepared for:	Planning Inspectorate Inquiry / Community Objectors
Date:	April 2026

1. Introduction and Scope

This report sets out the veterinary and equine welfare evidence relevant to the Planning Inspectorate inquiry into the Lime Down Solar Farm and Battery Energy Storage System development. It has been prepared to address two significant gaps in the Environmental Impact Assessment submitted by the developer: first, the complete absence of any equine-specific assessment; and second, the inadequacy of the hazard assessment for the BESS component, which represents a development almost four times the scale of the Dunnstown BESS in County Kildare that prompted a formal expert response from Rosssdales Equine Hospital in 2021.

The Lime Down site sits within one of the most active equestrian landscapes in England. The surrounding area supports a high concentration of stud farms, professional competition yards and everyday private equine use. Despite this, the developer's assessment concludes in effect that there is no material impact on horses. That conclusion is not supportable.

More than 400 of the nearly 5,000 public representations submitted specifically raise equine concerns. This volume of objection from people with direct professional knowledge of the equestrian environment is not merely anecdotal. It reflects an informed community's assessment that the development poses real and unmitigated risks to horses, riders, breeding operations and equine businesses.

The BESS component adds a further dimension that the developer's documentation does not adequately address. A lithium-ion battery fire at a facility of this scale is capable of producing toxic gas clouds, vapour cloud explosions, extensive environmental contamination from firefighting water runoff and long-duration thermal events that cannot be extinguished by conventional means. These are not theoretical concerns. They are the documented outcomes of real incidents at facilities a fraction of the size of what is proposed at Lime Down.

This report draws on the expert opinion of Professor Celia Marr BVMS MVM PhD DEIM DipECEIM FRCVS, RCVS and European Specialist in Equine Internal Medicine, provided in the context of the smaller Dunnstown BESS proposal in 2021. The risks she identified at Dunnstown apply with proportionally greater force at Lime Down.

2. Expert Opinion: Professor Celia Marr FRCVS

2.1 Qualifications and Standing

Professor Celia Marr holds the degrees BVMS, MVM and PhD from the University of Glasgow and has been a recognised RCVS Specialist in Equine Internal Medicine since 1998 and a European Board Veterinary Specialist since 2003. She is a Fellow of the Royal College of Veterinary Surgeons, an Honorary Professor at the University of Glasgow Faculty of Veterinary Medicine and Editor-in-Chief of the Equine Veterinary Journal, the leading peer-reviewed publication in the discipline. She has practised as an Associate in the Internal Medicine Service at Rosssdales Equine Hospital and Diagnostic Centre in Newmarket since 2003 and has published more than 50 original research articles in the peer-reviewed literature.

Professor Marr has particular expertise in cardiopulmonary conditions affecting horses of all ages and has extensive clinical experience with horses in high-value racing and breeding environments, including visiting Juddmonte's New Abbey Stud and the Aga Khan's Giltown and Sallymount Studs in County Kildare. Her opinion on the Dunnstown BESS proposal was provided in August 2021 to Kildare County Council Planning Authorities and An Bord Pleanála. That opinion is reproduced in summary below and its conclusions applied to the Lime Down proposal.

2.2 Expert Opinion on BESS and Equine Health: Dunnstown 2021

Professor Marr was asked to comment on two matters in relation to the proposed 212 MW BESS at Dunnstown, County Kildare: the danger of toxic gas inhalation to horses in the event of a hazardous incident, and the negative impact on the thoroughbred breeding and racing industry in the surrounding area.

On the question of toxic gas, Professor Marr noted that lithium-ion battery fires produce multiple toxic gases including Hydrogen Fluoride (HF), Hydrogen Cyanide (HCN) and Phosphoryl Fluoride (POF₃). She identified HF as the most significant, noting that it may be evolved in large quantities, up to 200 mg per Wh of energy storage capacity, and that it is toxic or lethal by inhalation, ingestion and skin contact even in small quantities. The immediate dangerous to life or health (IDLH) level for HF is 0.025 g per cubic metre (30 ppm) and the lethal 10-minute toxicity value (AEGL-3) is 0.0139 g per cubic metre (170 ppm).

Professor Marr observed that horses are athletic animals with proportionately higher lung surface area than humans, making them particularly vulnerable to inhaled toxins. She noted that even low-level particulate exposure can damage the alveolar lining and the mucosal lining of the bronchioles, bronchi and trachea, predisposing affected horses to Inflammatory Airway Disease, asthma and exercise-induced pulmonary haemorrhage. Smoke inhalation can also induce life-ending interstitial pneumonia, also known as acute lung injury and acute respiratory distress syndrome. Respiratory disease represents one of the two most common performance-limiting conditions in racehorses.

On the flight risk, Professor Marr was direct: it is well recognised among equine veterinarians and horsemen that more of the major injuries arising from fires involving horses result from panicked horses sustaining musculoskeletal injury while galloping blindly than from direct burns. Groups of horses at pasture cannot be controlled safely if the herd instinct for flight is triggered by fear.

Professor Marr cited the fire in Geelong, Victoria, Australia, where an HF vapour cloud resulted in a stay-in-place order for all people and animals within a 7 km radius of the burning facility. She concluded that a similar occurrence near the epicentre of thoroughbred breeding in Kildare would be devastating, and that the potential for a hazardous incident close to over 20 top breeding establishments was likely to lead to significant loss of confidence in keeping horses in the area.

2.3 Application to Lime Down

The Lime Down BESS proposal is reported to be approximately four times the scale of the Dunnstown facility that prompted Professor Marr's 2021 opinion. The hazard scales with the quantity of stored energy. A larger installation means more battery cells capable of thermal runaway, more flammable and toxic gas available for release, a larger potential vapour cloud, a greater volume of contaminated firefighting water and a more prolonged and difficult incident for any emergency response.

The equestrian context at Lime Down is at least as concentrated as at Dunnstown. Badminton Horse Trials is an international event of the highest significance, and the stud farms, competition yards and riding establishments in the surrounding landscape represent a concentration of equine value and welfare responsibility that is exceptional even by the standards of prime horse country. Professor Marr's reasoning in 2021 applies with proportionally greater force at Lime Down in 2026.

3. BESS Safety Hazards: Evidence from Real Incidents

The BESS component of the Lime Down development is not a passive storage installation. It is a large-scale industrial facility storing enormous quantities of chemical energy in a form that can release that energy rapidly, uncontrollably and with serious consequences for surrounding land users, wildlife and water bodies. The following section sets out the four principal hazard categories identified in the scientific literature and documented in real-world incidents, drawing on the EPRI BESS Failure Incident Database, which represents the most comprehensive public record of BESS safety events in existence.

3.1 Thermal Runaway and Cascading Failure

Thermal runaway is the foundational hazard of lithium-ion battery systems. It occurs when the heat generated inside a battery cell exceeds the rate at which it can be dissipated, triggering a self-sustaining exothermic reaction that does not require oxygen and cannot be stopped by conventional suppression. As one cell enters thermal runaway it releases heat, flammable gases and toxic compounds that raise the temperature of adjacent cells, triggering further runaway in a cascade that can propagate through a module, a container and ultimately an entire installation.

The process is well characterised. Thermal runaway in a single cell can be caused by electrical short circuit, overcharging, mechanical damage, manufacturing defect or thermal abuse. The initiating event may be minor. At the 2019 McMicken facility incident in Surprise, Arizona, a single cell failure triggered a sequence that filled a BESS container with flammable gas. When firefighters opened the door to investigate, an explosion occurred, causing serious injuries. The EPRI database records that at the time of a comprehensive 2022 review, at least 48 fire incidents and 8 explosion incidents had occurred across industrial and residential BESS installations globally.

The scale of the Lime Down proposal means that the quantity of energy stored in a single row of containers is sufficient, if released in thermal runaway, to produce a fire event of very considerable duration and intensity. Lithium-ion battery fires are notoriously resistant to extinguishment. At Moss Landing, California, in January 2025, the fire at the world's then-largest BESS was managed by allowing it to burn out rather than attempting suppression, a process lasting several days and requiring closure of Highway 1 and evacuation of approximately 1,200 residents.

3.2 Vapour Cloud Explosion

During thermal runaway, lithium-ion cells vent flammable gases including hydrogen, carbon monoxide, methane, ethylene and other hydrocarbons. In an enclosed or partially enclosed space, these gases can accumulate above their lower flammability limit before ignition occurs. The result is a vapour cloud explosion (VCE), also described as a deflagration, which can generate damaging blast overpressure extending well beyond the immediate installation.

Research using computational fluid dynamics modelling of full-scale BESS containers has demonstrated that when 48 batteries undergo simultaneous thermal runaway, explosion overpressure at 5 metres outside the container hatch can exceed 40 kPa, sufficient to cause serious injury to persons in the vicinity. At closer range, pressures of up to 583 kPa have been modelled at the hatch itself. These are not marginal values; they represent blast loads capable of causing structural damage and lethal injury.

The VCE hazard is distinct from the fire hazard and requires separate assessment. A suppression system that prevents a sustained fire may nonetheless fail to prevent a deflagration if flammable gases have already accumulated. This was precisely the sequence at the 2021 Beijing incident, where a 25 MWh BESS on a shopping mall roof produced a vapour cloud explosion that killed three people and injured one. The EPRI database and Professor Paul Christensen's technical

analysis, which is available in the published literature, both document the VCE pathway as a distinct and significant hazard at BESS installations.

The Lime Down application does not appear to include a hazard methodology assessment that addresses the VCE risk at the proposed scale. This is a fundamental gap in the safety case.

3.3 Toxic Gas Release and Plume Hazard

The toxic gas hazard from BESS fires is primarily driven by hydrogen fluoride, which is formed from the decomposition of fluorine-containing battery components including the LiPF₆ electrolyte salt and the PVDF binder (Polyvinylidene Flouride). HF generation has been measured between 20 and 200 mg per Wh of nominal battery capacity in experimental studies. For a large-scale BESS installation, the total potential HF release in a major fire is measured in tonnes.

HF is acutely toxic by inhalation, ingestion and skin absorption. At the IDLH (immediate danger to life and health) concentration of 30 ppm it represents an immediate threat to life. At 170 ppm it is lethal within 10 minutes. It does not require direct contact with flame or even visible smoke at lethal concentrations; under certain atmospheric conditions a plume of HF at harmful concentration can travel significant distances downwind before diluting to safe levels.

The Moss Landing fire of January 2025 produced a confirmed plume of HF that Monterey County officials acknowledged at a public briefing. A shelter-in-place order was issued. The Geelong, Victoria, incident produced an HF plume requiring a 7 km radius stay-in-place order for both people and animals. The Dunnstown BESS against which Professor Marr provided her 2021 opinion was 212 MW. The Lime Down proposal is reportedly nearly four times this scale. The potential HF release in a major fire at Lime Down is correspondingly greater.

For horses, the consequences of HF exposure are severe. Professor Marr's evidence identifies the particular vulnerability arising from the horse's proportionately large lung surface area, the propensity for even sub-lethal respiratory insult to cause Inflammatory Airway Disease and exercise-induced pulmonary haemorrhage, and the risk of acute lung injury and acute respiratory distress syndrome from smoke inhalation. Horses at pasture in the path of a toxic plume cannot be moved quickly or safely, particularly if they are already distressed by fire, smoke and emergency services activity.

Beyond HF, thermal runaway also releases hydrogen cyanide, carbon monoxide, Phosphoryl Fluoride and a range of organic compounds. The combined toxicological profile of a major BESS fire is poorly characterised in relation to horses specifically, and no equine-specific toxicological assessment has been provided in the developer's submission.

3.4 Environmental Contamination: Firefighting Water Runoff

Lithium-ion battery fires require very large volumes of water for management, even when the primary strategy is containment rather than suppression. This water, once in contact with burning or thermally degraded battery materials, becomes contaminated with a range of hazardous substances including lithium, cobalt, nickel, manganese, boron and aluminium in ionic or particulate form, together with organic carbonates from the electrolyte and other complex organic compounds. Research measuring the composition of firefighting runoff from NMC lithium-ion battery fires has confirmed that the resulting water can be highly toxic to aquatic species.

A comparison with predicted no-effect concentrations (PNEC) established by the European Chemicals Agency shows that several metal contaminants in BESS firefighting runoff, in particular nickel with a PNEC as low as 0.0017 mg/L, can exceed ecotoxicity thresholds at concentrations plausibly present in runoff water. The potential for interaction between multiple contaminants further increases the toxicological risk.

The Moss Landing fire of January 2025 provided a real-world demonstration of the environmental contamination hazard. Research published in Scientific Reports documented that approximately

25 metric tonnes of heavy metals, principally nickel, manganese and cobalt, were deposited across roughly half a square mile of wetland at Elkhorn Slough adjacent to the facility. These metals were detected at hundreds to thousands of times the pre-fire concentrations and continue to be remobilised in the environment. Cleanup was estimated to take up to two years. The area affected was approximately 480 hectares of protected wetland.

The Lime Down site sits within the headwater catchment of the Bristol Avon, a river whose Sherston branch rises at Acton Turville and drains the Badminton estate via the Luckington Brook before flowing through Sherston and on to Malmesbury. The BESS, located within Lime Down D near Hullavington, drains to the same catchment. Wiltshire Council noted in its own planning assessment that the development sits within the Bristol Avon Corridor as defined in the Wiltshire Green Blue Infrastructure Plan, and that the proposal could affect Avon catchment ecology. The Environment Agency flood alert area for this region covers the Bristol Avon, Sherston Avon, Tetbury Avon and Dauntsey Brook, with Badminton itself among the listed locations.

Firefighting water runoff from a major BESS fire at this location would enter the upper Bristol Avon system, a watercourse of ecological significance flowing through settled agricultural and equestrian landscape before reaching the Severn Estuary. The volume of contaminated runoff from a facility of this scale, its metal and organic compound loading, and the capacity of any proposed bunding to contain it all require specific modelling and assessment against the watercourse ecotoxicology standards applicable to the Bristol Avon catchment. The developer's submission does not demonstrate that this has been adequately addressed.

3.5 Documented BESS Incidents: EPRI Database and Other Sources

The following table summarises selected significant BESS incidents drawn from the EPRI BESS Failure Incident Database and public records. This is not an exhaustive list. The EPRI database, which is the most comprehensive public record in existence, records dozens of incidents across jurisdictions.

Facility / Location	Date	Capacity	Incident Type	Consequence / Notes
McMicken, Arizona, USA	Apr 2019	2 MW	Thermal runaway; delayed-ignition VCE	4 firefighters seriously injured when deflagration occurred on opening container door. Pivotal event leading to revised NFPA 855 and UL 9540A standards.
Geelong (Moorabool), Victoria, Australia	Jul 2021	212 MWh	Thermal runaway fire; HF release	Stay-in-place order for people and animals within 7 km radius. Cited directly by Prof. Marr as the comparator for the Dunnstown assessment.
Beijing shopping mall, China	Apr 2021	25 MWh	Thermal runaway; VCE	3 killed, 1 injured. Explosion on rooftop installation.
Warwick, New York, USA	Jun 2023	Not disclosed	Two separate fires on consecutive days	Multiple container losses; incident led to calls for revised state-level regulation.
Moss Landing Phase 1, California, USA	Jan 2025	300 MW / 1,200 MWh	Major thermal runaway fire lasting several days	1,200 residents evacuated; HF plume confirmed; Highway 1 closed; approx. 25 metric tonnes of heavy metals deposited on adjacent wetland. Complete loss of facility. Cleanup estimated at 2 years.
Xerotech / Claregalway, Co. Galway	2022	Not disclosed	Fire	Cited in Irish planning objection context. Local equestrian and agricultural land use affected.

Escondido, California, USA	2022	Not disclosed	Container fire	Air monitoring confirmed HF release; shelter-in-place issued; no long-term public health impact reported.
South Korea	2017-2019	Multiple sites	Series of fires; 23 BESS incidents in 3 years	Korean government investigation found systematic safety failures. Triggered global reassessment of BESS fire safety standards.

The pattern across these incidents reveals two consistent features. First, fires at scale-up facilities are not reliably prevented by suppression systems designed for smaller installations. Second, the emergency response consequence radius for a major BESS fire extends well beyond the site boundary into surrounding residential, agricultural and equestrian land. At Lime Down, the concentration of high-value equestrian activity within that consequence radius is exceptional.

4. Equine Sensory Physiology and the Solar Farm Component

4.1 The Equine Visual System

The equine visual system is shaped by millions of years of evolution as an open-grassland prey animal. The horse has one of the largest eyes of any terrestrial land mammal, positioned laterally on the skull to provide a near-panoramic visual field extending to approximately 195 to 228 degrees of unioocular vision. Only two small blind spots exist: directly behind the poll and in a cone approximately 90 to 120 cm in front of the face.

The equine retina has a horizontal visual streak rather than a central fovea, giving broad horizon-focused awareness rather than a small area of sharp central acuity. Objects in the peripheral visual field have very low resolution but are exquisitely sensitive to motion. This is not a limitation; it is the primary survival function of the equine visual system. Motion detected in peripheral vision reliably triggers an alerting or flight response. The motion does not need to be dramatic or fast. Slow, large-scale movement across a wide arc falls within the stimulus parameters most likely to engage this response.

The horse's pupil is horizontally elongated, enhancing sensitivity to stimuli across the horizon. The retina has a rod-to-cone ratio of approximately 20:1, providing superior sensitivity to brightness contrast and to light moving against a background. The tapetum lucidum amplifies available light, making even subtle changes in reflected luminance perceptible. A single-axis tracking panel array, whose faces rotate continuously through the day, whose reflected and absorbed light profile changes with sun elevation and cloud cover, and whose shadow patterns shift hour by hour, presents an ongoing, unpredictable and species-specifically alerting stimulus.

4.2 Why Habituation Arguments Fail for Tracking Systems

Habituation is the mechanism routinely invoked by developers to dismiss equine concerns about landscape infrastructure. It requires a consistent and predictable stimulus. A single-axis tracking array is by definition never the same twice. The angle of panels changes continuously; reflected light intensity varies with sun position, cloud cover and season; shadow patterns shift continuously; inverter and transformer noise varies with power output and switching cycles. The equine nervous system cannot habituate to a stimulus that is not fixed.

The guidance from the British Horse Society on solar farms and equestrians was developed in the context of fixed-tilt, static panel arrays. Applying this guidance to a tracking system without acknowledging the dynamic nature of the installation is a methodological error. Evidence from wildlife research confirms that ungulates including roe deer and reindeer show avoidance behaviour and elevated faecal cortisol concentrations near operating wind turbine installations. These are animals sharing the fundamental prey-animal sensory architecture with horses and obliged to remain in the vicinity. Avoidance in the data does not mean no response; it means the response is behavioural displacement and chronic stress activation rather than flight.

4.3 Acoustic Sensitivity and Inverter Noise

The horse has a hearing range of approximately 55 to 33,500 Hz with peak sensitivity between 1,000 and 16,000 Hz. This range overlaps substantially with the principal acoustic output of grid-scale solar installations, in particular inverter harmonics and transformer hum. Inverter noise is characteristically tonal and intermittent, varying with load conditions and switching cycles. This is the type of acoustic stimulus that most reliably prevents habituation in horses: not uniformly loud, not continuous, but unpredictable in its timing and character.

No equine audiogram has been applied to the predicted noise environment in the developer's assessment. No evaluation has been made of inverter harmonic frequencies against equine peak auditory sensitivity. The interaction between acoustic and visual stimuli as compounding factors has not been considered.

4.4 Stress Physiology and Reproductive Consequences

The physiological stress response in horses is mediated by the hypothalamic-pituitary-adrenal (HPA) axis, activated by any stimulus perceived as threatening or novel. HPA activation produces cortisol release, mobilises metabolic resources and temporarily suppresses non-essential functions including reproductive endocrine function. Chronic or repeated HPA activation has effects extending beyond the acute stress response, impairing immune function, compromising gastrointestinal integrity and having direct suppressive effects on the reproductive hormone cascade.

Research measuring faecal cortisol metabolites in mares attending artificial insemination centres confirms that environmental novelty produces measurable cortisol elevations even without overt handling stress. Maiden mares in unfamiliar environments showed faecal cortisol concentrations more than three times those of habituated animals. Stressful events impair reproductive efficiency through glucocorticoid-mediated inhibition of hormone secretion, and the periconceptual window (approximately days 10 to 40 of gestation) represents the period of greatest vulnerability to stress-induced early embryonic death.

In a landscape with multiple active stud operations, this is not a theoretical concern. Badminton and its surrounding yards handle mares and foals of very considerable value during precisely the months when the solar installation's tracking system is most active and the breeding season is at its most critical. No assessment of this risk appears in the developer's submission.

5. Identified Deficiencies in the Developer's Assessment

The following six deficiencies have been identified across the equine and BESS safety elements of the Environmental Impact Assessment. Any one of these individually would undermine the reliability of the developer's conclusions. Together they render those conclusions unsupportable.

DEFICIENCY 1: Absence of Veterinary or Equine Behaviour Input

The developer's assessment contains no veterinary evidence, no equine behaviour expertise and no input from any practitioner with professional knowledge of equine physiology or welfare. This is the foundational deficiency from which many of the others flow.

By contrast, the Dunnstown BESS proposal in County Kildare, at roughly one quarter of the scale of Lime Down, attracted a detailed expert opinion from an RCVS and European Specialist in Equine Internal Medicine within the planning process. No equivalent input has been sought or provided for Lime Down, notwithstanding the significantly greater scale of the BESS component and the exceptional concentration of equestrian activity in the surrounding landscape.

The Inspectorate should not treat the developer's conclusions on equine welfare as carrying evidential weight in the absence of any specialist input.

DEFICIENCY 2: Static Panel Guidance Applied to a Single-Axis Tracking System

British Horse Society guidance on equestrian impacts from solar developments was developed for fixed-tilt, static panel arrays. The Lime Down development incorporates single-axis horizontal tracking systems in which the panel faces rotate continuously through the day. The distinction is fundamental.

A static panel presents a fixed visual stimulus that in principle permits habituation. A tracking panel presents a continuously changing stimulus with variable angle, variable reflected light intensity, variable shadow pattern and variable acoustic output. The equine visual system is specifically adapted to detect and respond to large-area motion in the peripheral visual field. Applying static panel guidance to a dynamic system without acknowledging this distinction, or conducting any analysis of it, is a methodological error that invalidates the assessment's conclusions on visual impact.

DEFICIENCY 3: No Species-Specific Acoustic Analysis

The acoustic assessment treats predicted noise levels in terms of human residential amenity standards. No equine audiogram has been applied to the predicted noise environment. No assessment has been made of inverter harmonic frequencies against equine peak auditory sensitivity of 1,000 to 16,000 Hz. No consideration has been given to the tonal and intermittent character of inverter and transformer switching as a specific trigger for equine alerting responses.

Without veterinary interpretation of the acoustic data, any noise assessment in relation to equine welfare is incomplete.

DEFICIENCY 4: No Assessment of Breeding Season Vulnerability Windows

The assessment contains no recognition of the specific windows of heightened equine reproductive vulnerability during which environmental stressors carry disproportionate risk. The periconceptual period, the periparturient period and the early foal-at-foot period each present risks that are not present to the same degree at other times.

In a Thoroughbred context the breeding season runs from mid-February, with covering concentrated between February and May and foaling from January onwards. A development whose operational profile is constant year-round must be assessed against the period of greatest equine sensitivity. The developer has not done this.

DEFICIENCY 5: Dismissal of Riding Routes on Grounds of Usage Volume

The assessment dismisses riding routes in the area on the basis that they are not heavily used. This reasoning misunderstands how risk operates in an equestrian context. Risk is a function of consequence as well as probability. A route used occasionally by a young horse in schooling, a mare with a foal at foot, or a horse encountering solar infrastructure for the first time carries the same potential for a severe or fatal accident as a heavily used route.

This approach is inconsistent with BHS guidance that all routes used with horses should be assessed, and inconsistent with standard risk assessment practice across other sectors where consequence severity is weighted alongside frequency.

DEFICIENCY 6: Inadequate BESS Hazard Assessment: Scale, Precedent and Consequence

The BESS hazard assessment does not appear to engage with the specific risk pathways identified in the published literature and documented in real incidents: thermal runaway cascade, vapour cloud explosion from accumulated flammable gas, toxic gas plume including hydrogen fluoride and hydrogen cyanide, and contamination of watercourses from firefighting runoff.

The Lime Down BESS is reported to be approximately four times the scale of the Dunnstown facility that prompted expert veterinary concern in 2021 and approximately the scale of the Moss Landing Phase 1 installation that was evacuated in January 2025. The consequence radius for a major incident at this scale has not been mapped against the surrounding equestrian landscape.

No toxicological assessment of HF plume risk for horses in the vicinity has been provided. No modelling of firefighting water drainage pathways and their relationship to local watercourses has been provided. No equine-specific emergency response protocol has been specified. These are not minor omissions; they represent the core safety case for the most hazardous component of the development.

6. Conclusions and Recommendations

The developer's Environmental Impact Assessment does not provide an adequate equine assessment and does not provide a credible safety case for the BESS component at the proposed scale. The equine assessment was prepared without veterinary input, applied guidance designed for static installations to a tracking system, conducted no species-specific acoustic analysis, ignored breeding season vulnerability and failed to identify equine businesses as sensitive receptors. The BESS safety documentation does not address vapour cloud explosion risk, does not include a quantified HF plume assessment for the proposed scale, does not model firefighting water drainage pathways and does not engage with the evidence base from documented incidents at facilities of comparable scale.

Professor Marr's expert opinion at Dunnstown in 2021 established a clear principle: a BESS facility of this character, located in close proximity to high-value equestrian operations, requires specialist veterinary input and a detailed, site-specific hazard assessment. Neither has been provided for Lime Down. The proposal is four times larger than the Dunnstown facility. The evidentiary obligation is correspondingly greater, not lesser.

Inspectorate requirements:

1. Require the developer to submit a properly conducted equine impact assessment prepared by a suitably qualified veterinary surgeon or equine behaviour specialist, using methodology appropriate to a single-axis tracking solar installation and addressing each of the six deficiencies identified in this report.
2. Require that any such assessment specifically addresses breeding season vulnerability windows, reproductive risk to mares and stallions in adjacent operations, neonatal foal risk and the acoustic profile of inverter and transformer output as measured against the equine audiogram.
3. Require that equine businesses in the area are formally identified as sensitive receptors and that adequate mitigation is proposed, evaluated and conditioned for each affected business.
4. Require the developer to submit a full hazard methodology assessment for the BESS component that addresses thermal runaway cascade, vapour cloud explosion risk, HF and HCN plume modelling at the proposed scale with consequence radius mapping, firefighting water runoff containment capacity and drainage pathway analysis, and an equine-specific emergency response protocol.
5. Require that the BESS hazard assessment is reviewed by an independent specialist in battery safety, not by the developer's own consultants.
6. Treat the existing equine impact and BESS safety assessments as insufficient to discharge the relevant requirements pending submission of the above.
7. it is requested that conditions be imposed sufficient to protect against the identified risks during both construction and operation. These should include acoustic monitoring referenced to equine audiogram thresholds, operational restrictions during defined breeding season windows proximate to known stud operations.
8. It is requested that the bunded containment for BESS firefighting water is of adequate capacity.
9. It is requested that an agreed emergency response protocol with the local fire authority is formulated specifying the consequence radius for a major incident and how horses will be evacuated to safety.

Appendix A References

All sources cited or drawn upon in the preparation of this report are listed below by reference number.

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END OF REPORT

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Veterinary report

Lime Down Development proposal

Introduction

I have been asked to comment and discuss veterinary concerns over the development of a large solar energy plant development project in the North Wiltshire area. I have been provided with a description of the development phase of the project along with a description of the completed site.

My comments are restricted to my professional capacity as an Equine Veterinary surgeon and do not include my personal opinions on the environmental impact of the development that I have documented and submitted elsewhere. My comments will include welfare and commercial concerns.

Background

I have been a veterinary surgeon for 43 years and for most of that time have been in purely equine practice. In particular, I have been involved in equine reproduction and stud medicine and I am the retained vet for a number of large studs within our practice area.

I am employed by B&W Equine Vets, a large multi centred practice covering Gloucestershire and Wiltshire. I am based at the Willesley branch which is situated approximately 5 miles from the centre of the proposed development.

B&W have the following client types within a 5 mile radius of the site;

1. Stud clients. 8 commercial studs producing thoroughbred or sports horses for sale.
2. Professional competition yards. This category includes eventing, dressage, showjumping and polo yards.
3. Hunting yards. Primarily associated with the Beaufort Hunt.
4. Private yards. Family run yards with pleasure horses and children's ponies. Numbers per yard vary between 1 and 5 horses.

There will be other veterinary practices that service clients included in the above categories in the development area over and above those serviced by B&W.

Veterinary concerns

1. Noise both during the development process and ongoing operational considerations.

The development process will necessitate huge numbers of lorries and HGV vehicles in the area along with construction noise including chain saws and pile driving. Ongoing noise will include inverters and associated infrastructure.

Horses are fight and flight animals and there are real risks of injury to themselves and their riders from unusual noise. They have very good hearing, far better than human hearing.

Young horses (foals, weanlings and yearlings) are particularly susceptible to noise, and I have had numerous examples where they have been spooked by loud noise and have injured themselves either by galloping and slipping within the field or by breaking through fencing. Lacerations from the latter have been extensive and in some cases life threatening.

Clients riding pleasure horses will be at risk from the noise and appearance of construction traffic during the development period. Riders must use country roads as part of their excursions and many are narrow and winding. Lorry and other HGV drivers do not always have the knowledge or consideration to slow down or stop when approaching horses that other rural road users do. Injury to horse or rider or both may result.

Horses from all categories can react unpredictably when being handled (groomed, shod, veterinary treatment etc) to unusual noise, again risking injury to themselves or their handler. Young horses are particularly sensitive, so stud clients probably will quite rightly be most concerned about potential implications.

2. Access

All equestrian properties necessitate a certain amount of light service traffic in and out. Feed merchants, farriers, staff and clients are examples. Most veterinary visits are not emergencies but occasionally they are. Delays in attending because of construction diversions, temporary road closures and slow HGV traffic could have disastrous consequences. This has occasionally been an issue with roads closed for other reasons, but would be a higher risk during the development phase.

3. Dust and toxic gas

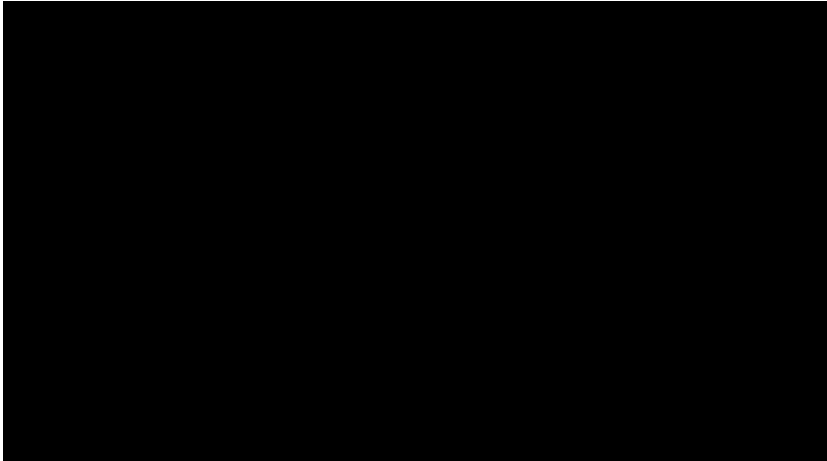
Horses are athletic animals and reliant on a healthy respiratory system for performance. Inhalation of dust or toxic gases can cause primary disease and an increased likelihood of developing chronic respiratory conditions such as inflammatory airway disease and equine asthma.

There will be risk from dust during the development process, particularly for properties immediately adjacent to the development site.

Probably more concerning is the risk from a hazardous incident at the Battery energy storage system site. The implications of this have been discussed and submitted for consideration in detail elsewhere. In brief, a fire at the site could result in the release of a toxic gas plume consisting of a variety of gases with hydrogen fluoride being the most concerning. I would see this as a constant worry during the lifespan of the site and could result in significant injury and disease to the horses of my clients in the area.

4. Commercial considerations

As described, B&W Equine vets have a large number of clients in the vicinity of the Lime Down development. The concerns 1 – 3 listed above will be at the least an annoyance to some clients, and at the worst have considerable deleterious commercial implications for other clients. As a practice and business, we are concerned that some clients may decide to move themselves and their horses and businesses elsewhere. This would affect us and the rest of the local community who are dependent on the equine establishments in the area for their business.



A Review - Large Scale Infrastructure Projects and Their Impacts on Studfarms

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ABSTRACT

Industrial-scale solar and wind energy developments are central infrastructure developments to enable global decarbonisation strategies. However, substantial infrastructure placement in proximity to equine studfarms in Ireland raises significant concerns regarding animal welfare, operational viability, and rural economic stability. Developers and planners have often claimed that there is a lack of information on infrastructure developments related to equine health and welfare. This is not the case and so this review synthesises peer-reviewed literature and international planning precedents to evaluate the physiological, behavioural, and management impacts of renewable infrastructure on Thoroughbred horses kept on studfarms. Our findings indicate that noise, light pollution, visual flicker and dust, fire hazards and restricted access all pose substantial risks to equine health and safety, particularly for pregnant mares and foals. Independent environmental impact studies and implementation of effective mitigation strategies are essential. Other countries have adopted policy decisions in relation to industrial scale renewable energy developments and equine welfare and it is vital that Ireland should also create and enforce similar policies.

Keywords: Equine welfare, renewable energy, studfarm operations, noise sensitivity, planning policy, Ireland

INTRODUCTION

Industrial-scale solar and wind energy development is central to global decarbonisation strategies and the pursuit of renewable energy targets. As nations accelerate their climate agendas, large-scale renewable infrastructure has emerged as a key component of energy policy. Consideration of the potential adverse impacts of these developments on highly sensitive pre-existing infrastructures, such as adjacent studfarms, has received little attention to date.

Ireland's equine studfarms are internationally recognised for their contributions to national and international elite Thoroughbred breeding, rural employment, and animal welfare. Ireland is the third largest producer of Thoroughbred foals in the world – only the USA and Australia have more foal births, and the annual Irish Thoroughbred foal crop exceeds the combined totals produced by the UK and France (Weatherbys 2025). Studfarms occupy a critical niche in Ireland's agricultural economy, combining high-value investment with rigorous standards of equine care and performance. Beyond their economic significance, Irish studfarms embody a tradition of excellence in equine genetics, welfare, and global competitiveness (Department of Agriculture, Food and the Marine, 2022).

The significance of the need for reconciliation of industrial-scale infrastructure projects with preservation of the bloodstock industry is illustrated by the fact that some 2,400 acres of County Kildare are either approved or applying for permission for these developments. This area contains literally thousands of Thoroughbred mares, foals and yearlings, based in Kildare's 744 breeding operations, which represent a significant proportion of Ireland's racing and breeding industry which is worth some €2 billion annually to the Irish economy (source - HRI 2023).

Industrial scale infrastructure developments create *de facto* environmental disruptions that have the potential to impair equine health and behaviour, posing risks to both horses and handlers. Ireland has no policy in relation to the siting of industrial scale solar and wind turbine installations in immediate proximity to studfarms and this has been left to developers and the planning authorities by default.

Neither the developers nor the planners have any authoritative guidelines that they must consider in this context and have in more than one instance appear to have drawn upon inappropriate information to satisfy themselves that they have taken into account the significant animal welfare issues that can arise from inappropriate infrastructure placements.

Drawing on peer-reviewed studies, this review examines the multifaceted impact of industrial solar and wind installations on horse welfare and studfarm functionality. The following synthesis evaluates the scientific evidence surrounding renewable infrastructure and its influence on equine health, behaviour, and farm management and makes a series of recommendations for developers, planners, studfarm management and Government.

1. Renewable Infrastructure and Environmental Stressors

Industrial solar and wind installations introduce a range of environmental stressors that may affect equine welfare. These include elevated noise levels from construction and maintenance activities, increased airborne particulates / dust, artificial light fluctuations, and visual flicker from rotating turbine blades.

(a) Noise, light flashes and turbine flicker

Horses have been shown to have significant right forebrain dominance, i.e. they are exceptionally adept at processing sensory stimuli (Johnson et al. 2019). Vocal communication/whinnying by horses conveys information on their sex, body size and identity, and allows them to decode information (Lemasson et al. 2009).

Because they are a prey species, the sensory systems of horses have evolved to enable a prompt detection of potential danger, through a combination of visual, auditory and olfactory cues (Christensen et al. 2005, Saslow 2002, Tierartzliche Praxis 1997) and unexpected and hitherto unknown noises elicit rapid flight reactions more frequently (Christensen et al. 2005, Algers 1984). Horses are most easily scared by noise that arises outside their field of binocular vision.

Hearing ability is very important to the survival for a horse and its ears can pick up sound at a lower volume and a greater distance than will be detected by a human (Saslow, 2002). A horse's range of hearing is greater than a person's to higher frequencies (over 33 kHz in the horse compared with under 20 kHz in humans).

Horses can exhibit unpredictable anxiety behaviours during any noise producing events, including sweating, trembling and intense escape attempts, which may cause severe accidents for the horse

and the rider/handler. More than 84% of horses showed immediate avoidance and/or attempts to flee after perceived threat (Scopa et al. 2018).

Injury to those persons who work with horses is a significant occupational hazard and can extend to thousands of accidents with associated fatalities (Holler 1984, Gimsing 2001). Dealing with an anxious or fearful horse exacerbates this risk.

The results of a recent study (Riva et al. 2022) have confirmed that noise anxiety is a growing behavioural problem that leads to important welfare concerns for all horses, and that very severe injuries can occur because of noise events that result in related, unpredictable and very severe anxiety. Riva et al. 2022 have also shown that the effects of noise-related anxiety can persist for hours or even days after the noise event.

“Noise aversion” or “noise anxiety” are terms used when an animal over-reacts to noise. Unpredictable noise causes the greatest fear reactions. These noises can have long-lasting effects and have been reported to adversely affect food intake, growth and production rates (Broucek 2014; Tracy et al. 2007, Head et al 1993).

Severe noise anxiety is reported to cause serious welfare consequences, impacting both the physiology (e.g. gastrointestinal signs/colic, sweating) and behaviour (e.g. frantic running, collisions with and breaking fences) of the horse (Riva et al. 2022). Very anxious horses showed signs of noise reactivity frequently and their reactions did not improve with time (i.e. they do not habituate to these stimuli).

Light flashes and unknown odours have also been reported to be potent inducers of fear reactions (Gronqvist 2016, Dai et al. 2020). It is noteworthy that compared to visual and olfactory stimuli, unexpected unknown noises seem to elicit rapid flight reactions more frequently (Christensen et al. 2005, Algers 1984).

There is a high rate of incidence of injury (26%) among horses rated as either anxious or very anxious in the face of noise and/or light-related flashes, and simply moving horses to adjacent paddocks was found to be ineffective in 37% of cases (Gronqvist 2016). Noise has also been shown to elicit restlessness, vocalisation and colic/gastro-intestinal disturbances (Dai et al. 2020).

Noise arises during multiple phases of the construction and subsequent day to day running of these industrial/utility scale solar energy plants. It arises from multiple use of band saws and other equipment used to prepare the site by removal of trees and other vegetation. It arises as a result of the relentless repeated and unpredictable impact noise due to pile driving of literally hundreds of thousands of steel supports for the solar panels and the solar panels that are then erected on them. Pile or rotary driving for the mounting frames of the PV panels and security fences would occur throughout the construction process.

Typical rural background noise in agricultural areas ranges from 30 to 45 dB(A) depending on wind, vegetation, and machinery activity. The normal background noise on a quiet stud farm environment is 25 to 35 dB. ([ps://ia.cpuc.ca.gov/environment/info/aspen/cresseygallo/fmnd/5-12_noise.](https://ia.cpuc.ca.gov/environment/info/aspen/cresseygallo/fmnd/5-12_noise/)) Light machinery (e.g. tractors idling or distant chainsaws) may produce 50–65 dB(A), while the heavy equipment used in major infrastructure (e.g. piledrivers used for mounting solar panels) can create noise levels of 80 Decibels and can have an additive 10 Decibels of associated vibration. Noise is measured on a logarithmic (not linear scale) in which a 6dB increment can represent a doubling of the baseline noise, and thus an increase from 50db to 70dB represents a four-fold increase in noise. These potential noise levels have been recognised to cause “cosmetic damage to the external surfaces of

nearby buildings”, i.e. it is sufficient to crack the external plasterwork on houses. Significant noise will also arise from the thousands of HGV movements necessary to deliver and install multiple solar panels and their mountings and inverters and similarly for wind turbines. Noise also arises when the industrial-scale plants become operational, in normal usage and when faults occur within them. These noise levels therefore far exceed the ambient acoustic threshold for equine comfort. There is therefore an essential need for to include site-specific acoustic modelling and mitigation in compulsory environmental impact assessments (EIA's) near studfarms. There is no legal obligation on developers or planners to ensure that EIA's are carried out and documented by impartial and objective providers.

Developers have not acknowledged the need for EIA's and have repeatedly cited a conference proceedings presentation on noise levels recorded at the Melbourne Cup as part of the Autumn horse racing carnival in Australia, which had a crowd of some 120,000 people in attendance (Huybregts, 2008) as baseline for extrapolation to studfarms in terms of noise tolerance. The noise exposure (LAeq,15 minutes) of horses during this and another major racing event was measured at 58-62 dBA in the stables (rising to 66-68 dBA during helicopter flyovers), and 65-70 dBA in the stalls. The Clerk of the Course's horse was exposed to 76 dBA LAeq,6h at Randwick Racecourse during the New Easter Carnival and 85 dBA LAeq,6h at Flemington during the Melbourne Cup. During the Melbourne Cup, the noise exposure (LAeq,15 minutes) of horses in the stables was measured at 54-70 dBA. Nevertheless, a recommendation was made that, if possible, noise levels not exceed 65dBA LAeq.

This figure has been adopted by both developers and planners. The responses of experienced mature racehorses to noise levels of up to 76dBA and 85dBA at the Melbourne Cup and other racing carnivals or to an arbitrary limit of pf 65dBA bear no relationship to the quiet peaceful agricultural environment of 25 35dBA that is universally acknowledged to be essential for Thoroughbred breeding and for the raising of foals and yearlings. Importantly, the author has stated that he never intended that his report would be used in this way (Huybregts - personal communication).

Another study (Le Blanc et al 1991) has also been used in an inappropriate way by developers who have sought to dismiss noise appraisal as a significant factor in the assessment of the impact of their projects on studfarms. Le Blanc et al 1991 examined the effects of exposure to jet aircraft noise on Thoroughbred mares. Importantly, the study did not include mares with foals at foot. The mares were only exposed to jet noise while they were in the confines of their familiar stables where they were unlikely to injure themselves during a behavioral flight response. This experiment did not measure the responses of mares kept in larger open or novel spaces. Nor did it use live flyovers where the mares might see as well as hear the planes. However, since all of the mares in this experiment showed flight behavior during at least the first simulated jet noise event, it is likely that in a larger spaces i.e pasture, the flight responses could result in a greater speed of gait (gallop) and distance covered. The authors stated that this increase in speed and distance may increase the risk of injury by running into objects. This study therefore cannot be taken as a baseline for noise level tolerance for mares and their foals on studfarms.

Developers and planning authorities have used these inappropriate measures because they report that there are no studies of the adverse effects of noise on mares and foals in the literature and that those quoted above are thus the benchmarks. This approach fails to recognize that any such experimental study would never be licensed because it would contravene all animal welfare licensing considerations. Reliance on observational field studies as quoted in this review, is therefore essential.

Highly sensitive mares and newborn foals are particularly vulnerable to environmental stressors. O'Connor & Walsh (2021) emphasised that pregnant mares exhibit heightened sensitivity to noise and light fluctuations, which may interfere with gestation and increase the risk of premature birth or

behavioural distress. Smith et al. (2020) reported that foals exposed to elevated noise levels during early development showed signs of sleep disruption, increased startle responses, and reduced social bonding behaviours and Green et al. (2021) noted that neonatal horses are especially susceptible to visual flicker and tonal noise, which can impair rest cycles and contribute to developmental instability.

Chronic exposure to such stimuli may result in heightened stress responses, altered behaviour, and compromised physiological stability as evidenced by Jones et al. (2019) who examined sensory sensitivity in horses, highlighting their vulnerability to environmental stimuli and the implications for welfare management. In addition, McBride & Mills (2012) explored psychological factors affecting equine welfare, emphasising the role of environmental consistency and stress mitigation and Green et al. (2021) investigated the impact of wind turbine noise and flicker noted increased agitation and avoidance behaviours in horses exposed to nearby wind farms. Exposure to these stressors may undermine welfare outcomes and elevate safety concerns for both animals and personnel alike.

The cumulative impact of noise, light fluctuations, and visual flicker may thus significantly adversely affect equine physiology and increase the likelihood of injury or behavioural instability (Smith et al., 2020; O'Connor & Walsh, 2021; Green et al., 2021). Thompson & Hannan (2023) presented evidence on circadian disruption in horses, linking artificial light exposure to hormonal imbalance and sleep disturbances. Green et al. (2021) also reported that horses exposed to wind turbine flicker exhibited signs of visual stress and disrupted rest patterns, suggesting a link between flicker frequency and behavioural instability.

(b) Dust

Dust arises during any type of construction. Construction dust is recognised as not just a nuisance, it is a real danger to the lung and many common construction processes can create high dust levels especially during industrial scale developments. The equine lung is particularly susceptible to inhaled dusts (Couetil et al 2016) and dust induced equine inflammatory airway disease/equine asthma is performance limiting and frequently chronic. Any condition that is performance limiting is disastrous for the Thoroughbred horses that are raised on studfarms.

(c) Fire hazards

Fires can and do arise on industrial scale solar plants. There are multiple recent reports of their occurrence throughout the world. Fire and smoke are particularly potent inducers of panic in horses. Attempted rescue of horses terrified by fire is highly dangerous for all associated personnel.

Statistics revealed by the Australian Photovoltaics (PV) Institute showed that between 2018 and 2020, PV installations increased less than threefold, whereas the data from Fire and Rescue New South Wales(NSW), however, reveals that the number of solar fires attended by firefighters in the same period rose sixfold. The report also looks at a study by the UK's BRE National Solar Centre - entitled "FIRE AND SOLAR PV SYSTEMS - INVESTIGATIONS AND EVIDENCE". The study provided a detailed investigation into a total of 80 potential PV-related fire incidents that led to the overall conclusion that researchers "strongly suspected a degree of under-reporting, especially amongst solar farms and domestic thermal events that were resolved by a solar installer/maintenance engineer." Furthermore, it explores how this lack of transparency could prevent the industry from establishing an accurate baseline to continuously improve best practice. The report goes on to establish three root causes for photovoltaic fires, namely: 1) error in the design system, 2) a faulty product(s), or 3) poor installation practice. According to the report, the photovoltaic components that present the greatest fire risk are DC isolators, which cause approximately one third (33%) of solar fire incidents. However, DC connectors and inverters can also pose significant risks (Reassurance 2022). Solar panels contain silicates and other toxic chemicals, which when released from an industrial scale solar plant can be inhaled in the resultant smoke. Firefighters must have

appropriate all-weather access to the entire solar plant because fire can arise anywhere at any time within it. Inadequate roads within the plant can result in failure of access and ineffective firefighting. The run-off of water used to extinguish solar panel fires will also contain multiple toxic chemicals which will inevitably contaminate surrounding pastures and draining waterways.

Placing of solar panels and inverters immediately adjacent to stables, foaling units, hay and straw barns, equipment sheds and fuel stores that are part of the essential infrastructure of studfarms risks spreading fire originating in the industrial solar development onto the studfarms themselves. Furthermore, and also importantly, a fire arising on the studfarm can spread to the solar plant.

(d) Restricted access – its implications for the management of studfarms, insurance and investment

Studfarms have a 24/7/365 requirement for immediate access for the very wide range of support services and the multiple inward and outward movements that are inherent to this activity. Inward and outward freedom of access is essential for veterinary services - because life threatening illness and injury requiring immediate treatment and/or hospitalisation can arise at any time of the day or night. There is a constant demand for free access by staff, feed merchants, farriers, and all of the other myriad of associated support suppliers. The contention that this traffic flow can be readily managed without significant interruptions, by stop and go signs, on minor roads, which will then be filled with an enormous increase in HGV traffic - does not withstand scrutiny, as can be attested to by most private citizens who have found themselves experiencing prolonged delays under such circumstances.

Very many high value Thoroughbred horses are insured through underwriter syndicate members of the Lloyds Livestock Committee in London. Many of these horses, singly or collectively, are insured for substantial sums. The Lloyds Livestock Committee have advised through personal communication that the normal terms and conditions of their all-risks mortality policy are null and void if horses are knowingly maintained or placed in situations of risk. They have advised that policies for horses on studfarms immediately adjacent to industrial scale solar plants or wind farms may be subject to significant additional charges and exclusions or may be forfeit altogether.

Many of these farms hold stock for major international investors in Ireland's bloodstock industry. These investors have multiple alternative options available to them in this country and in competitor countries. They will not leave their horses in such hazardous circumstances. The result will inevitably be closure of studfarms, an unnecessary loss of rural employment and reduced net inward investment and reputational damage.

2. Mitigation Strategies

The European Commission (2020) has issued guidance on environmental impact assessments for renewable energy projects, recommending mitigation strategies to reduce ecological and agricultural disruption and Green et al. (2021) have emphasised the importance of turbine placement and construction timing to minimise disruption to equine routines and reduce stress-related incidents.

However, many management strategies used in efforts to control the effects of noise have been shown to be ineffective (Gronqvist, 2016). Placing horses in stables to try to prevent adverse effects is also unsatisfactory as those in single stables exhibit even stronger reactions to unknown stimuli, with an increased risk of accidents and adverse effects on welfare, which can include long term behavioural abnormalities (Lesimple et al. 2011). Sedation can often give disappointing results and

cause undesirable side effects (Dai et al. 2020) and long-term sedation and or stabling is impractical and inhumane.

Farm managers must navigate logistical constraints, including altered traffic patterns, restricted land use, and increased biosecurity risks from increased personnel and equipment movement, requiring enhanced sanitation and access control protocols. All mitigation strategies - such as buffer zones, noise barriers, and dust suppression - all of which require careful planning and resource allocation (Murphy & Keane, 2021; European Commission, 2020; Green et al., 2021). Developers and planners must be aware of and proactively manage and consider resolving the inherent conflicts between construction timelines and breeding or foaling seasons, necessitating coordination to avoid peak sensitivity periods and temporarily reducing turbine speed or halting operation during sensitive periods (e.g. foaling season or early morning rest hours) to minimise tonal and amplitude-modulated noise (EIAR – O'Reilly & Carr, 2024). Installing physical barriers such as earth berms, vegetation screens, or acoustic fencing to absorb and deflect sound waves (Fehily Timoney & Co., 2024) and using blade orientation and nacelle positioning to direct noise away from sensitive receptors (European Commission, 2020) have also been advocated as has scheduling construction and maintenance activities outside of breeding and training hours to avoid peak stress periods (Murphy & Keane, 2021).

“Foaling Area Protection” has also been advocated by locating foaling areas at maximum distance from construction zones and turbine installations, but relocation of foaling units is impractical and industrial-scale encroachment on these facilities should not be permitted under any circumstances because of the significant adverse impacts on animal welfare (reference?). The use of acoustic shielding and visual barriers to minimise exposure to noise and flicker (O'Connor & Walsh, 2021; Smith et al., 2020) have also been recommended but not implemented.

Veterinary involvement in environmental impact assessments and planning consultations to ensure welfare-sensitive siting and mitigation (Irish Planning Institute, 2023) has been recommended to include regular veterinary monitoring of behavioural indicators in pregnant mares and foals during construction and operational phases (Green et al., 2021; Thompson & Hannan, 2023). Such veterinary monitoring seems to have been seldom implemented. Similarly, Equine Emergency Response Planning i.e. the development of contingency protocols for behavioural distress or injury linked to environmental stressors, including rapid veterinary intervention and temporary relocation option has not received the essential attention that it must have.

These strategies should be tailored to site-specific conditions and integrated into planning applications and environmental impact assessments (EIA's) to safeguard equine welfare.

3. Policy Considerations and Future Research

Balancing renewable energy development with equine welfare necessitates informed policy frameworks. Regulatory bodies should incorporate equine-specific impact assessments into planning procedures for solar and wind installations near studfarms. EIA's are currently not mandatory and this review highlights the fact that they are essential in this context and must be commissioned by the planning authorities to avoid the inherent conflicts of interest that arise when they are produced by developers.

Further research is needed to quantify long-term effects, identify thresholds of tolerance, and develop evidence-based mitigation protocols, however, there is an immediate need for collaboration between energy developers, veterinary scientists, and agricultural stakeholders (Royal Society, 2022; Irish Planning Institute, 2023). Policy-oriented contributions from the Royal Society (2022) and Irish

Planning Institute (2023) align in advocating for equine-sensitive planning. The Royal Society sets a broad interdisciplinary agenda, while the Irish Planning Institute translates this into actionable protocols. The Royal Society (2022) emphasised the importance of sustainable energy development that coexists with agricultural practices, advocating for interdisciplinary collaboration and the Irish Planning Institute (2023) addressed planning considerations for renewable energy near equine facilities, proposing equine-specific assessment protocols.

4. Recent Planning Authority Statements (2025) and Planning frameworks in other countries

Recent statements from Irish planning authorities underscore the growing tension between renewable energy expansion and the protection of sensitive agricultural sectors, including studfarms.

An Bord Pleanála (2025) reported that of the 69 renewable energy cases reviewed in 2023-2024, several wind and solar farm applications were refused due to conflicts with local Development Plan policies. Notably, objections citing proximity to studfarms were among the reasons for refusal in multiple wind farm appeals. In several decisions, the Board cited concerns over elevated noise levels and their potential impact on equine welfare, referencing submissions from veterinary experts and local stakeholders. The Board emphasised the need to balance strategic infrastructure development with environmental and agricultural sensitivities.

The European Union (Planning and Development) (Renewable Energy) Regulations 2025 introduced new definitions and criteria for renewable energy projects, including co-located energy storage and solar installations on artificial surfaces. While the regulations streamline approval processes, they do not yet include specific provisions for equine welfare, prompting calls for sector-specific amendments.

The Climate Action Plan 2025, published by the Irish Government, outlines regional quotas for wind and solar capacity and proposes extending the lifespan of existing installations. However, the plan also acknowledges persistent local objections - particularly in rural areas with studfarms - and suggests that future planning must address these concerns through targeted mitigation and stakeholder engagement.

These developments highlight a policy crossroads: while Ireland accelerates its renewable energy goals, planning authorities are increasingly recognising the need to safeguard high-value agricultural sectors like Thoroughbred breeding. The integration of equine welfare assessments into planning protocols remains a critical next step.

Several EU member states and international jurisdictions have already adopted planning frameworks that address the intersection of renewable energy infrastructure and equine welfare (references?). In France, the Ministry of Ecological Transition mandates buffer zones of up to 500 meters between wind turbines and sensitive agricultural operations, including studfarms. French planning authorities also require site-specific environmental impact assessments that consider animal welfare. Germany's Federal Emission Control Act includes noise thresholds for rural zones, with specific provisions for livestock operations. In Lower Saxony, home to several major equine breeding centers, regional guidelines discourage wind turbine placement within 1 kilometre of studfarms. In the Netherlands, equine welfare is integrated into spatial planning through the 'Ruimtelijke Ordening' framework, which emphasises stakeholder consultation and adaptive zoning. Dutch municipalities often require

equine-specific mitigation plans for renewable energy projects near riding schools and breeding farms.

Outside the EU, Australia's New South Wales planning authority has issued guidance (reference?) for wind farm siting near equine facilities, recommending minimum separation distances and noise modeling. In the United States, Kentucky's Equine Industry Planning Board has advocated for local ordinances that restrict wind turbine development near Thoroughbred farms.

These international precedents highlight the feasibility and importance of integrating equine welfare into renewable energy planning. Ireland can draw on these models to develop robust, evidence-based policies that protect its bloodstock industry while advancing climate goals.

These international precedents highlight the feasibility and importance of integrating equine welfare into renewable energy planning. Ireland can draw on these models to develop robust, evidence-based policies that protect its bloodstock industry while advancing climate goals. These could include the creation of 500m to 1 kilometer buffer zones, as in France and Lower Saxony, or three times the turbine tips height in New South Wales. Mitigation measures such as sound barriers must be installed at the expense of the developer, not the adjacent studfarms and provision for halting operations during sensitive periods such as during essential equine rest periods and the foaling season must be included in these policies.

Ireland's *Animal Health and Welfare Act 2013* provides a robust framework for the protection of animals, and the *Animal Welfare Strategy 2021–2025* reaffirms the Government's commitment to continuous improvement. However, the *Planning and Development Act 2000* does not require planning authorities to consider animal welfare laws when evaluating applications. As noted in recent legal scholarship: "The general approach of planning authorities in the Republic of Ireland is not to have regard to animal welfare matters at the planning stage." — Strauss M (2020).

The *Planning and Development Act 2000* must therefore be amended to require planning authorities to carefully consider and document how they have considered animal welfare legislation and the issues identified in this review when assessing developments adjacent to, or otherwise impacting or potentially impacting, on studfarms. Independently commissioned EIA's and veterinary-reviewed Animal Welfare Impact Statements must be included in this legislative amendment

CONCLUSIONS

Industrial renewable energy development offers significant environmental benefits, yet its intersection with equine welfare demands careful scrutiny. Irish studfarms represent a unique agricultural sector where animal welfare, economic investment, and cultural heritage converge. Protecting these values requires a nuanced understanding of how solar and wind infrastructure influence equine health and farm operations. Through interdisciplinary research and responsive policy, stakeholders can foster coexistence between renewable energy goals and the preservation of equine excellence.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest related to the content or findings presented in this review. [REDACTED] is the part-owner of a small equine studfarm.

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